Professional development of
Teacher Educators

Bringing together
policy, practice and research

4th ATEE Winter Conference – University of Coimbra

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Association for Teacher Education in Europe
Vereinigung für Lehrerbildung in Europa
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The MOFET Institute

PROCEEDINGS

4th ATEE Winter Conference

Professional development of teacher educators
Bringing together policy, practice and research


Governo da República Portuguesa

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Professional Development of Teacher Educators: Bringing Together Policy, Practice and Research. Proceedings of the 4th ATEE Winter Conference

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Introduction

From 2 to 4 April 2012 the University of Coimbra hosted the 4th Winter Conference of the Association of Teacher Education in Europe (ATEE) about The Professional Development of Teacher Educators. This Winter Conference was jointly organised by the University of Coimbra, the Mofet Institute (Tel Aviv, Israel) and the Research and Development Community (RDC) of ATEE: Professional Development of Teacher Educators (PDTE). The Mofet Institute is the only institute in the world that has as its main purpose the professional development of teacher educators. The ATEE consists of about 25 each covering an important theme related to teacher education. Each year one of the RDCs organises a Winter Conference about their specific theme. As far as we know the 2012 winter conference is the first conference about the Professional Development of Teacher Educators. 200 participants from over 30 different countries (including New Zealand, Mongolia, China and Bahrain) wrote history in Coimbra with contributions about the challenges and opportunities for teacher education for the future - with special attention to those who educate teachers: the teacher educators.

Various topics were discussed. As in the first section of these proceedings there were some very interesting presentations about the teacher educators. In these, questions were raised such as: who are the teacher educators? What are our origins? What is our identity and how should this identity develop? In other presentations, participants wondered what the main aims of the profession of teacher educators are or should be and what these mean for teacher educators. Different ways of professional development of teacher educators and its effects were reviewed. Finally practices and research related to quality of teacher educators and the assessment of these qualities were discussed.

Teacher education is changing constantly and the impact of national and international policies on the structure and content of teacher education were discussed with passion. Too few teacher educators are currently involved in political discourses and decisions about the work of teacher educators are often taken without consulting them - despite the fact that these decisions influence the work of teacher educators. Many participants advocated the develop of a strong professional of teacher educators to give them a clear and distinct voice in the debate about the future of teacher education

One of the main changes in teacher education is the increasing attention for teacher practice and the development toward school-based teacher education. The teachers in school who supervise student teachers are given – and take – more responsibility in educating their new colleagues and are developing an identity as school-based teacher educators. Institute-based teacher educators and school-based teacher educators as a team should not only ensure that

school students can practice teaching, but also - and especially – they need to develop rich learning environments in schools to enable the learning of all teachers. Papers that were discussed during the conference – and are brought together in section 3 – discussed question as: What knowledge and skills do school-based teacher educators develop? What is their identity as teacher educators who work as teachers in schools? What do they need to acquire the needed knowledge and skills?

Quite some papers at the conference and in these proceedings addressed a development that is not restricted to teacher education, but is – and will be even more – changing or society and education: the use of ICT. Obviously, the use of new technologies with its advantages and disadvantages in teacher education were discussed, but more specifically the presenters focussed on the use of ICT as a means for teacher educators to support teachers to work with ICT in their classrooms.

The theme Professional Development of Teacher Educators also allowed for contributions about the work of teacher educators with their students, for the curriculum and learning processes (section 4). In addition to focus on educating teachers for specific school subjects, there was also interest in issues such as citizenship, multiculturalism and students with special needs, for primary, secondary and vocational education. These subject arise from the challenges presented by the daily work of teacher educators. It made participants more aware of the relationship between the learning of student teachers and that of ourselves as teacher educators. To ask ourselves constantly why we do what we do and how we do it.

Teacher educators in many countries are not only responsible for pre-service education, but also for in-service teacher education. As the contributions in section 5 show, working with experience teachers, asks for different pedagogical approaches and thus for different competences of teacher educators. Although there is globally much research about the professional development of teachers, there is still little attention for those who ‘in-service teacher educators’, to the extent that there is no word for them in the English language.

This brings us to the last section which consists of papers that address how teacher educators, teachers and their students learn best. Most authors of the papers in section 6 agreed on learning in ‘communities of learners' and 'communities of practice' as an effective way of learning for beginning and more experienced practitioners. These words indicate that we are gradually moving away from working in isolation - that as long been synonymous for the teaching profession and thus of teacher educators. Sharing is becoming a feature of professional development within the profession of teacher educators. But also the development of professional knowledge is an important tool in the development of the work of teacher educators. Research of teacher educators is prerequisite for the further development of a body of knowledge that helps us understand the work and identity of teachers and teacher educators and improve it. All papers at the conference showed how important research is for the development of the profession of teacher educators, but in the last section some papers specifically address this issue.

Three key note lectures were held during the conference. Jean Murray (United Kingdom), Anja Swennen (the Netherlands) and Jaime Carvalho de Silva (Portugal) made a valuable contribution to the various themes. Jean Murray laid a solid theoretical foundation in her presentation, giving insight into the research that is important for teacher educators. This presentation, which was based upon theoretical ideas from studies of space / time and the history of teacher education, also illuminated the ways in which the spaces of teacher education are integral to the historical

and contemporary practices, social relations and professional identities of teacher educators. Anja Swennen focussed on the characteristics of the profession and identity of teacher educators and what being a teacher of teacher means for the pedagogies teacher educators use to educate future teacher, such as congruent teacher education. Jaime Carvalho de Silva described the Portuguese educational system – past and present-day - and made an insightful connection between the development of that system and the development of teacher educators in Portugal. The key notes of Anja Swennen and Jaime Carvalho de Silva showed what the roots of our profession are and how teacher education developed over the course of time into a profession that has acquired a form position in higher education. All speakers noted that researchers and policy maker increasingly recognize the vital contribution of teacher educators to the education of teachers, and thus to the quality of education. This also creates an obligation for individual practitioners and for the profession of teacher educators for continuous improvement and innovation, for commitment to the development of the profession and for involvement in the discussion about the future of teacher education

The conference reminded us that the profession of teacher educator is versatile, challenging and complex. In the coming years we will cooperate at international, national and local levels and bring together teacher educators, researchers (and more so teacher educator-researchers) and policy makers to contribute to the further development of teacher educators and their profession. We invite you all to become a member of the RDC Professional Development of Teacher Educators and participate in this international network for the professional development of teacher educators.

Anja Swennen

- Web sites organizersThe University of Coimbra, Portugal (http://www.uc.pt/en)
- The MOFET Institute, Tel Aviv (http://www.mofet.macam.ac.il/english)
- Research and Development Community (RDC); Professional Development of Teacher Educators of the Association of Teacher Education in Europe (ATEE) (http://pdte.macam.ac.il/

Professional development of teacher educators

BECOMING A TEACHER EDUCATOR: EXPERIENCES WITH A SPECIAL INDUCTION PROGRAMME FOR BEGINNING TEACHER EDUCATORS

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Abstract

Literature reveals that beginning teacher educators are dealing with organisational and professional difficulties in their induction period. At the Teacher Education Institute of Fontys University of Applied Sciences in Tilburg, The Netherlands, a special induction programme was developed for the induction period. The programme was designed using recommendations from literature and focused on both organisational induction as well as professional induction. This programme was evaluated through an inquiry. Experiences of participants and as non-participants in the programme were taken into account. The evaluation reveals that all beginning teacher educators (participants as well as non-participants) have learned a lot from their colleagues, for example through conversations or while preparing lessons together. The majority of the participants hold the opinion that the goals of the programme have been reached and they appreciate the programme for the possibility to exchange experiences with other beginning teacher educators.

Keywords: beginning teacher educators, induction period, professional development

Introduction

In the past few years, there has been a growing interest in the position of beginning teacher educators. In the book 'Becoming a Teacher Educator' (Swennen & Van der Klink, 2009), several chapters deal with this topic. Several authors write about stress and the uncertainty of beginning teacher educators during their first years in the profession. Beginning teacher educators have to get acquainted with the organisation they work at (organisational induction) and have to grow within the role of teacher educator (professional induction). This dual professional development is the responsibility of both beginning teacher educators themselves as well as of their organisation. At Fontys Teacher Education Institute Tilburg (The Netherlands), a special induction programme was designed to support beginning teacher educators in their induction into the organisation and into the profession. The question for this paper is whether this induction programme helped the participating beginning teacher educators in their induction.

Theoretical framework

Being a teacher educator is a profession, although in most countries, there is no special course or degree to become a teacher educator. Most teacher educators get to know the profession through learning on the job. But being a teacher educator requires special skills and attitudes and beginning teacher educators often struggle with the diversity of tasks in their job. Several authors have been writing about the induction period of teacher educators (see for example Murray, 2008, Murray & Male, 2005; Swennen & Van der Klink, 2009, Van Velzen et al, 2010)

and the challenges these beginning teacher educators face. There seem to be two main categories of challenges, namely organisational and professional challenges.

Swennen, Shagrir and Cooper (2009) describe examples of *organisational induction*. Beginning teacher educators face challenges like workload (a combination of a new organisational setting, new tasks and the wish to perform well) and a sense of isolation (the feeling that you are the only one with this problem, the feeling that you are thrown in at the deep end of a pool, a lack of peers in the same situation). Moreover, a lot of beginning teacher educators feel stressed by their teaching load in combination with the task to do research. Swennen et al also describe the 'clash of ideas and ideals' (Swennen et al., 2009, p. 96), which refers to a collusion of ideas about education between the beginning teacher educator and his or her colleagues and students. And of course, beginning teacher educators have to get used to the specific rules and working habits of the organisation. Murray (2008) mentions another organisational issue, namely a very fast development from 'novice' to 'expert', due to a lack of personnel, which forces the novice teacher educator into a full responsibility for a subject or series of lessons in which he or she is not yet an expert. This forced responsibility for something that is new for the novice causes a lot of stress and uncertainty.

Professional induction is about the development of the specific tasks of a teacher educator. Murray (2008) describes a few examples of challenges experienced by beginning teacher educators, such as uncertainty about their role as teacher educator, uncertainty about teaching (young) adults, uncertainty about whether they have sufficient content knowledge. Getting acquainted to being a teacher educator also means to get acquainted to new roles and tasks.

Not only those people who are really new in this profession, but also the ones with experience in education and (a lot of) experience as a teacher, are 'novice' in the profession of teacher educator. Morberg and Eisenschmidt (2009) describe this as 'second-phase induction', referring to the second time you have to get acquainted to a profession. According to their description, the first induction phase is 'the phase new teachers go through when they start working in schools after finishing teacher education […] '(Morberg & Eisenschmidt, 2009, p. 104). According to Morberg and Eisenschmidt, no matter how experienced a teacher, entering the profession of teacher education requires socialisation and learning and thus can be seen as second-phase induction.

Why is this transition into being a teacher educator so special? In an international interview study, 25 experienced teacher educators were asked which 'concerns' they experienced when they started as a teacher educator (Kools et al., 2010). At the start of their career, teacher educators not only mentioned the age of the students, struggles with developing teaching materials and managing tasks, but also stressed the responsibility they felt for being a teacher educator and being responsible for educating good quality teachers. A teacher educator is the 'teacher of the teacher' and this requires special skills. Murray and Male (2005) introduce the term 'second order practitioner' to define the task for teacher educators to teach, besides teaching a subject, also about teaching and being a role-model as they teach. Not only the subject that is taught is important, but also the teaching methods and pedagogical approach of teaching in itself becomes part of the teaching process of teacher educators. This is an extra task compared to the work of a teacher. Apart from this, students in higher education are at a different stage in life, which hinders the reliance on previous experiences as a teacher in primary or secondary education (Rieg & Helterbran, 2005).

Empirical research on the induction phase of teacher educators still is scarce (e.g. Murray, 2008; Murray & Male, 2005; Van Velzen et al., 2010). At this moment there is not yet much knowledge about the process of induction. Therefore the inquiry we report on in this article is interesting, because it focuses on the experiences of beginning teacher educators who take part in a special induction programme.

Framing the issue in practice: research question

At the Teacher Education Institute of Fontys University of Applied Sciences, Tilburg, the Netherlands, students are being educated to become teachers in secondary and vocational education. At this Institute, several new teacher educators are appointed every year. Most of them already have (a lot of) experience as a teacher in secondary or vocational education, others have other kinds of working experience.

An explorative enquiry amongst beginning teacher educators who had already been working at the Institute for a year revealed that the majority of them would have liked some kind of support during their first year. They mentioned several challenges: organisational challenges (planning, getting to know the organisation, rules and procedures), work related challenges (planning of tasks, workload) and task-related challenges (theory on teaching methods, how to cope with adult learners). These challenges are the same as those mentioned in the literature, although it is remarkable that the specific challenge of being a 'second order teacher' was not mentioned.

The Fontys Teacher Education Institute highly values a smooth induction of beginning teacher educators, so that they soon feel at ease in their new profession and at the institute. Giving extra attention and specific support to beginning teacher educators matches this vision. In order to meet the needs of beginning teacher educators for support during their first year, a specific induction programme was designed. Goals of this programme were to help teacher educators to get to know the institute and the organisation, to realize what it means to be a second order teacher, to discover own talents and challenges and to help them to create a network of colleagues for organising extra support.

In order to observe whether the goals of the induction programme were reached and to get an impression of the experiences of beginning teacher educators with this programme, the programme was evaluated by means of an inquiry. The research question was 'what value does an induction programme provide for beginning teacher educators and for the organisation?' Two sub questions are distinguished: (1) 'how do beginning teacher educators evaluate the support *in general* that they receive at the institute?' and (2) 'how do beginning teacher educators who participated in the induction programme evaluate this programme?".

Methodology

Research setting

The design of the induction programme heavily builds on recommendations from literature in which the importance of organisational as well as professional induction is stressed (Swennen & Van der Klink, 2009; Smith, 2003; Van Velzen et al., 2010). Goals of the induction programme were twofold: (1) getting used to the institute (getting to know people, procedures, gaining insight into tasks) and (2) growth as a teacher educator (getting insight into what it means to be a teacher educator, insight into the role of 'second order teacher', reflecting on their own functioning, improving teacher educator competencies, gaining self-confidence as a teacher educator). The induction programme itself also contains an organisational and a professional component.

To support *organisational induction*, each beginning teacher educator gets his or her own 'buddy', a colleague from their own team. The buddy has the following tasks:

Introduce the beginning teacher educator to the colleagues of the team;

Familiarize the beginning teacher educator with procedures and regulations within the team about exams and assessments, schedules, assignment of tasks, etc;

Acting as the first source of information for all kinds of questions related to the tasks, the content of lessons, teaching habits etc.

The *Professional induction* takes place through a series of meetings with other beginning teacher educators and a supervisor. The supervisor is the person who facilitates the meetings, encourages the participants to share their experiences and shares expert knowledge on the role

of teacher educator. At the start of the academic year, these meetings are scheduled every week; later on, the frequency diminishes. During the meetings both knowledge transfer as well as supervision takes place. Every meeting starts with the introduction of a specific theme. In the second part, the beginning teacher educators exchange their experiences or bring in specific problems. In the meetings, the focus is on awareness of becoming a second order teacher, by discussing the Dutch job profile for teacher educators[1]. Other issues that might be discussed are: how to teach in higher education, what are specific competencies in supervising students, workplace learning of students, etc.

Participants

In 2010-2011 the induction programme described above was introduced as a requirement for all new appointed teacher educators at the Fontys Teacher Education Institute Tilburg (The Netherlands). Despite the obligation to participate, not all new colleagues could take part in the programme, due to problems with working hours and scheduling of lessons or non-compatible other tasks. Thirteen out of 29 beginning teacher educators participated in the programme. Although the programme was planned to start at the beginning of the academic year (September), due to practical reasons, the first meeting took place in November.

Research instruments and procedure

A questionnaire was designed, based on literature (Dengerink, Kester, Lunenberg, & Korthagen, 2007; Smith, 2003; Van Velzen, Van der Klink, Swennen & Yaffe, 2010). The questionnaire consisted of questions about the evaluation of the support in general (for example: what kind of support did you get and to how do you appreciate that support?) specific questions about aspects of the programme (for example: what aspects of your functioning have been supported by the programme; do you think the goals of the programme were reached?) and some background questions about the beginning teacher educators themselves (for example: previous working experience, tasks at the institute).

The questionnaire was sent to all new teacher educators who started in the academic year 2010-2011. Furthermore, at the end of the programme, an interview was held with the supervisors of the programme. In this interview, the supervisors were asked to look back on the programme, to mention successes and hindrances and to think about recommendations for improvement of the programme.

Data analysis

The questionnaires were processed into an SPSS-file and analysed. Because of the small numbers of participants and respondents, no statistical tests could be performed. The analysis thus only consisted of calculating means and frequencies.

The interview with the supervisors was analysed by careful reading. The analysis was directed towards finding recommendations for the programme.

[1] In the Netherlands, the Dutch Association of Teacher Educators has defined a job profile, see www.velon.nl (in Dutch)

Findings

Background of the beginning teacher educators

In the academic year 2010-2011, 29 beginning teacher educators were appointed at the Fontys Teacher Education Institute Tilburg. All 29 received the questionnaire, 17 of them responded (response rate = 58%). From these 17 respondents, 11 participated in the programme, 6 did not. Two of the 17 beginning teacher educators did not have any previous teaching experience, the others (n=15) had experience as a teacher in secondary or vocational education or as a teacher educator. Besides teaching their subject (e.g. math, Dutch, science), most beginning teacher educators had extra tasks, such as supervising student teachers during their school practice (n=9, 53%), counselling of study progress of student teachers (n=11, 65%) and/or supervising student teachers in doing action research[2] (n=5, 29%).

Support in general

At Fontys Teacher Education Institute, several kinds of support are provided for beginning teacher educators as well as for experienced teacher educators. There are three kinds of support: (A) support directed towards a specific task (like supervision of study progress); (B) professional development activities directed towards tasks (action research or teaching methods) and (C) general support (by a colleague or manager). Beginning teacher educators were asked to rank the different kinds of support they received (see table 1). Rankings rated from 1 (very poor) to 10 (excellent).

Table 1**.** *Ranking from 1 to 10 of different kinds of support (1=very poor, 10= excellent) by beginning teacher educators, ranked from high to low. The number of respondents that received each kind of support is noted (n). The three kinds of support in* ***bold*** *were part of the induction programme, these are only ranked by participants of the programme. The letters A, B, C in the first column refer to the type of support: A=task oriented, B=professional development and C=general.*

A=task oriented; B=prof. Development; C=general	Appreciation of different kinds of supervision	Mean ranking 1= very poor 10= excellent				
				scores		
		Mean ranking	n	min	max	Std dev
A	preparing lessons or teaching (parts of) the programme together with a colleague	8,7	17	7	10	0,92
C	Conversation (informal) with colleagues	8,6	18	7	10	0,98
A	Individual supervision by a colleague on the task of counselling students in study progress	8,3	6	8	10	0,82
C	**Individual supervision by my 'buddy'**	**8,0**	**10**	**6**	**10**	**1,05**
C	**The meetings for beginning teacher educators (=the induction programme)**	**7,6**	**11**	**6**	**10**	**1,13**
B	Individual supervision by a colleague on teaching 'methodology'	7,5	2	7	8	0,71
C	**Lesson observation(s) by my 'buddy'**	**7,3**	**4**	**6**	**8**	**0,96**
A	Individual supervision by a colleague on the task of supervision student teachers' school practice	6,6	7	1	9	2,76
C	Individual supervision by the team leader	6,5	15	1	9	2,26
A	Communal meetings for supervisors of student teachers' school practice	6,1	8	3	10	2,29
B	Communal meetings with other teacher educators who teach 'teaching methods'	6,0	3	3	10	1,41

[2] Student teachers conduct action research during their school practice as part of their graduation assessment.

B	Meetings for teacher educators who are guiding the student teachers doing action research	6,0	6	3	8	1,79
A	Communal meetings for teacher educators who have the task of counselling students in study progress	5,5	4	4	7	1,29
C	The written information in the brochure for new colleagues	5,1	13	2	8	2,12

Table 1 presents both the number of beginning teacher educators that received a certain kind of support as well as the ranking that was given to that kind of support. The majority of the beginning teacher educators (n=15) had individual supervision from their manager. All beginning teacher educators had collegial conversations and they appreciated this very much (mean ranking 8,7). Also preparing lessons together with a colleague (mean 8,7) receive a high score. In table 1, three kinds of support were only present in the induction programme, 'individual support from my buddy' (mean 8,0); 'meetings with other beginning teacher educators' (mean 7,6) and 'observation of a lesson by my buddy' (mean 7,3). The rankings for these kinds of support are high.

In addition to a ranking for the different kinds of support, beginning teacher educators were also asked to validate to what extent support had been helpful to improve certain aspects of their performance. The results are presented in table 2.

Table 2. *Mean score (4 point Likert scale, 1= very much/ 4=very little; the lower the score, the better the support is valued) on the effect of received support on performance, ranked from low to high*

The support had a positive impact on	mean	N	Std dev
insight into my role as 'second order teacher'	2,15	13	0,69
the way I construct my lessons, use teaching methods and construct assessments (teaching methods)	2,19	16	0,91
insight into my own learning and development	2,33	15	1,05
Building a network of colleagues within the teacher training institution	2,44	16	1,09
Classroom management	2,47	15	0,83
My own functioning in cooperating with colleagues	2,53	15	1,13
The way I interact with student teachers	2,56	16	1,15
Organisation of my tasks as teacher educator (e.g. own time management, registration of student progress, procedures)	2,56	16	1,21
Adjusting my teaching behaviour to individual needs of student teachers	2,86	14	0,95
Building a network with others outside the institution (e.g. schools, experts)	3,43	14	0,76

Table 2 shows that, according to the beginning teacher educators, the support mostly had an effect on improving 'gaining insight into my role as a second order teacher' and 'the way I shape my lessons'. Other outcomes are that the support helped beginning teacher educators 'to gain insight into their own learning and development process' and into 'building a network of colleagues'.

Through an open-ended question, beginning teacher educators were asked to describe what kind of support was most helpful in improving their performance. Analysis of the open-ended questions reveals that colleagues are the source of support most mentioned. Colleagues serve as sparring partners, serve as role-models to be observed by beginning teacher educators, or provide content knowledge while preparing lessons together. The 'buddy' is also often mentioned as a highly valued source of support.

For one aspect, namely 'gaining insight into my role as second order teacher', the meetings of the induction programme are mentioned to be the most valuable support.

Evaluation of the Induction Programme

The participants of the induction programme (n=11) were asked to quantify to what extent they think the programme helped them to improve certain aspects. In table 3 the results are presented. According to the participants, the programme mostly stimulated the two aspects 'gaining insight into the profession of teacher educator within the Fontys Teacher Education Institute' and 'reflecting on my own functioning as a teacher educator'. The programme was less supporting in 'gaining insight into tasks within the institute'.

Table 3**.** *Opinion of the participants (n=11) of the outcomes of the induction programme on a 4-point Likert scale (=1 strongly agree; 4= strongly disagree), ranked from low to high*

Through the induction programme....	mean score	N	Std dev
I gained a proper insight into the profession of teacher educator at the Teacher Education Institute Tilburg	1,91	11	0,539
I reflected on my functioning as a teacher educator	1,91	11	0,831
My competencies as a teacher educator have increased	2,0	10	0,471
I gained a proper insight into the profession of a teacher educator as 'second order teacher'	2,10	10	0,994
I built a network within our Institute of colleagues I can rely on for questions or problems	2,18	11	0,982
I gained more self-esteem as a teacher edcuator	2,20	10	0,789
I was able to get to know the routines and procedures at the institute	2,27	11	0,905
I gained a proper insight into my tasks at the institute	2,73	11	0,786

Participants' suggestions for the Induction Programme

To evaluate the induction programme, participants were asked to mention some 'do's and don'ts' with regards to the induction programme. In answer to this open-ended question, participants could express their opinions and write down recommendations for the programme. Participants often expressed their appreciation of certain elements of the programme. They really appreciate the meetings for the possibility to exchange thoughts, problems and ideas with other beginning teacher educators and finding a reference group in them. More specifically they value the overarching character of the meetings: exchanging thoughts with beginning teacher educators who work in several different teams. They also praise the confidentiality within the meetings; there is an atmosphere of 'safety' which enables participants to show their vulnerability. Another positive aspect is to have a point of contact within one's own team, the colleague who functions as a 'buddy'.

Quotes from beginning teacher educators:

'sharing experiences as beginning teacher educators, the pitfalls, the moments you learn something'

'being a group, supporting each other, having conversations with each other, sharing difficult moments, hearing about solutions somebody else has found, learning from each other'

'the frequency of the meetings is good, as is the safe atmosphere. I like the division between this group and the team where I work'

'talking in small groups from different teams and exchanging experiences with each other'

The participants also have suggestions for improving the induction programme. Most often mentioned are suggestions about scheduling and planning of the meetings: the participants would like the programme to start right at the beginning of the academic year (as was originally

planned). They also stress that beginning teacher educators should be enabled to participate, by scheduling their other lessons around the induction programme (thus providing them with time in their schedules to participate). A couple of participants would like to have more specific subjects in the programme, e.g. literature to study or theoretical input. They do stress the importance of exchanging experiences with other beginning teacher educators, but they would appreciate some extra support around practical issues like developing teaching materials or theory about teaching methods and discussing literature. Some participants ask for more structured meetings. Another recommendation is to make participants formulate individual learning goals and to stimulate them to work on these goals systematically.
Quotes from beginning teacher educators:
'Schedule the meetings at a moment when most beginning teacher educators are able to attend'
'More obligation to participate, less voluntary participation'
'Meetings with a theoretical input'

Evaluation by the supervisors of the programme
The questionnaire revealed that most beginning teacher educators fulfilled several different tasks (see the first part of this section). In the interview with the supervisors of the programme, they mentioned that in the meetings, they got the impression that especially the task to supervise student teachers in their school practice is problematic for beginning teacher educators. Being a supervisor for student teachers, the beginning teacher educator is confronted with large numbers of students, a broad variety in student teachers and different kinds of school practice assignments, a broad variety of stakeholders (student teachers, teachers from the school, staff) and a lot of tasks which are difficult to organize. The task of counsellor for study progress is also difficult for beginning teacher educators, because they are not yet familiar with regulations and procedures themselves, which makes it difficult to advise student teachers on this topic. The supervisors of the programme got the impression that the teams in which beginning teacher educators are appointed sometimes struggle to offer the right amount of support. At the meetings, the participants expressed both discontent for too much support (getting a too small number of tasks or not being able to work autonomously) as well as discontent for too little support (having to work on one's own, or colleagues who argue 'you can do this easily!").

Conclusion, discussion and recommendations
Literature reveals that beginning teacher educators are dealing with several challenges in their induction period. Supervising beginning teacher educators can help them to get acquainted with the organisation and with the profession of teacher educator. In this paper, an enquiry is described which was aimed at determining the experiences of beginning teacher educators with a special induction programme. The induction programme consisted of two components, namely (1) supervision by a 'buddy' (a colleague) from the team and (2) meetings with a supervisor and several other beginning teacher educators. The question in this enquiry was 'what additional value does an induction programme provide for beginning teacher educators and for the organisation?'.

Conclusion
Most importantly, the inquiry reveals that all beginning teacher educators (participants and non-participants in the induction programme) have learned a lot from their colleagues, for example through collegial conversations or by preparing lessons together.
The majority of the participants in the induction programme hold the opinion that the goals of the programme (getting used to the institute and growth as a teacher educator) have been reached. Both components of the programme, supervision by a 'buddy' and group meetings, are

highly valued. The participants of the programme appreciate the programme for providing the possibility to exchange experiences with other beginning teacher educators and for finding a reference group in them. The findings of this inquiry lead to the decision of the management of the Fontys Teacher Education Institute Tilburg to offer this induction programme to all new teacher educators. The programme was slightly adjusted and started again at the beginning of academic year 2011-2012 with the new colleagues that were appointed in that year.

Discussion

This inquiry was based on findings in the literature in which challenges of beginning teacher educators are described. Recommendations for the supervision of beginning teacher educators from previous research (Murray, 2008; Van Velzen et al., 2010) have been taken into account when designing the induction programme. In the enquiry that is reported on here, the experiences of the participants were the focus of this research. Although it is hard to compare experiences of participants and non-participants due to small numbers, findings suggest that the programme has had 'additional' value for participants. The findings of this inquiry contribute to the underpinning of the benefit of induction programmes for beginning teacher educators. It would be interesting for future research to investigate the content or the length of programmes.
The profession of teacher educator is an extraordinary profession. The Dutch Association of Teacher Educators has even developed a 'knowledge base' for teacher educators (see (http://www.kennisbasislerarenopleiders.nl/ , in Dutch) and a job profile for teacher educators. The Association is also investigating whether there is a need amongst teacher educators for specific training programmes. The induction of beginning teacher educators into the profession, therefore, is an important topic. By offering an induction programme to beginning teacher educators, an organisation clearly states that professionalization into the profession of teacher educator requires special attention. The organisation also shows that the quality of teacher educators is an important matter to the organisation. Furthermore, the organisation shows awareness of the responsibility as an employer to support the growth of a new employee into this profession.
Literature (e.g. Swennen et al., 2009) mentions that it takes at least 2 to 3 years for a person to develop a professional identity as a teacher educator. This does not mean, however, that the growth comes to an end, because professional development is a continuous activity (Kools, 2011) and further development within the profession is always necessary (Smith, 2003). The induction programme is the first stepping stone for beginning teacher educators in a personal professional development route in which a lot of different professional development activities will follow.
New teacher educators need to grow into the organisation and into their role as teacher educator and they need to cope with workload and a huge quantity of tasks and responsibilities (see also Murray, 2008). In the induction programme described in this paper, attention was paid to growth within the organisation and growth within the profession. That does not mean, however, that all problems of beginning teacher educators are solved. The fact that beginning teacher educators have a lot of tasks and responsibilities mainly has to do with the way things are organized at the workplace. In addition to offering supervision to help beginning teacher educators, the organisation should pay attention to assigning tasks to them that they can fulfil according to their capacities and that fit their position as a beginning teacher educator. Supervising student teachers in their school practice might not be a suitable task for every beginning teacher educator, because it involves a high amount of responsibility.
Most beginning teacher educators do find their way into the institute and the profession, also without a specific induction programme. This inquiry reveals that non-participants in the induction programme also grow into the profession. In their 'spontaneous' induction programme they rely on experienced colleagues and learn from conversations and cooperation

with them. The induction programme, however, eases the induction just a little bit more by providing the beginning teacher educators with special attention and a 'safe' environment to develop as a teacher educator.

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AN INTERNATIONAL EXPLORATION ON PROFESSIONAL DEVELOPMENT OF EXPERIENCED TEACHER EDUCATORS: HOW DO THEY KEEP UP?

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Abstract
The attention for teacher educators as professionals and their professional development is indeed increasing. While much of the attention has been directed to novice teacher educators little has been paid to experienced teacher educators and their particular developmental activities. This paper presents findings on teacher educators' professional development. 25 interviews were conducted, mainly with experienced teacher educators in Israel, The Netherlands and Japan.
Teacher educators' concerns vary across their careers. During their induction they are rather focused on surviving, whereas later on in their careers their concerns are linked to their own professional identity and their students as individuals. A large number of participants were involved in research and they all experience research as an important mean for their professional development. All participants were involved in formal and informal learning activities and they have plans for their further professional development but sometimes foresee hinders, like resources and time, to realize their plans. The interview data did not provide any strong evidence to suggest country-specific patterns.

Introduction

There is growing recognition that teacher educators can only continue to act as professionals if they are engaged in further professional development throughout their entire career. In the slipstream of the broadly shared views on improving teacher education there is a growing focus on the qualities of teacher educators involving in teaching the next generations of teachers (ETUCE, 2008). This attention remains mainly on workforceconcerns without implementing concrete policy measures for improving teacher educators' qualities (Snoek, Swennen & Van der Klink, 2011).
Teacher educators themselves as a professional group are increasingly aware of the need for increased professional learning and they acknowledge the importance of being, or becoming, lifelong learners who keep in touch with the latest developments and insights in their own field. In this paper we use the international term 'teacher educator' broadly to include school-based teacher educators as well as teacher educators employed at teacher education institutes. The research into the professional learning of teacher educators is emerging and mainly focused on the first career stage, the induction of teacher educators (Murray & Male, 2005; Murray & Jones, 2008; Swennen & Van der Klink, 2009; Van Velzen et al., 2010). Other phases during the teacher educator's lifespan have yet received less research attention but there exists growing research interest, which is reflected in a number of studies that has been recently published (see, for

example, the 2010 special issue of Professional Development in Education, edited by Swennen and Bates).

This paper investigates the professional development of experienced teacher educators and adopts Kari Smith's conceptualization of professional development as a development that takes place after a person has started working as a teacher educator. There is however no fixed route to be followed in professional development, nor is there an end to the development as long as teacher educators work in their profession (Smith, 2003, p. 203). This paper contributes to our growing understanding of teacher educators' professional development by investigating professional development in very different countries. The next section presents the different aspects of professional development that manifest in contemporary research. Then the methodology and findings are discussed. The paper concludes with a brief discussion of the main findings and some recommendations for further research.

Investigating teacher educators' professional development

Different approaches can be used in examining teacher educators' professional development; some of the most well-known from the scholarly literature will be briefly summarized hereafter. As research on induction has revealed, the professional developmental activities and goals vary per career phase. In the induction phase the main goal is merely 'to survive' and to find out what it means to be a teacher educator (Murray & Male, 2005), whereas in the further phase of one's career the involvement in coordinating and managerial duties, research and mentoring become more far more apparent, especially for those who desire a career trajectory with promotion. The quality of teaching, to excel in developing curricula and learning materials and to become research-active also increases the more experienced a teacher educator becomes with institutional pressure to maintain high standards of research outputs, Higher Degree by Research completion and success in winning competitive grants and tenders. This latter is especially important for advanced academic promotion since the number of publications in refereed journals serves as the main criterion for it (Smith, 2005).

Professional development comprises numerous types of learning (Ben-Peretz, Kleeman, Reichenberg, & Shimoni, 2010), ranging from implicit ways of learning to deliberate undertaken actions to advance one's own competences. As Eraut (2004) argued the literature on professional learning is mainly focused on the tangible forms of learning, and does not capture tacit ways of learning, which also applies to the research on teacher educators professional development endeavours. There is, however, evidence suggesting that less formal, less-intentional and unconscious learning activities shape one's professional development more significantly (Marsick, 2006) which justify to increase the research efforts into this area (Van der Klink, Boon, & Schlusmans, 2012).

Professional development is related to various goals, ranging from meeting one's own needs and aspirations to meeting the quality requirements sets by others like the teacher education institute, the government or the teacher education profession. The past decade there has been much discussion on teacher educator standards, for example in the Association of Teacher Education in Europe (ATEE). Especially the standards themselves, who maintains and monitors the standards, and how and for what purposes they are put into practice. It goes without saying that any emergence of a set of standards will have an impact on teacher educators' professional development and yet it remains unclear how standards and requirements actually contribute, positively or negatively, to teacher educators' ongoing professional development. In the Netherlands, for example, standards were developed and safeguarded by the professional association for teacher educators (Velon) (see Koster & Dengerink, 2001) and since their introduction about a decade ago a considerable number of teacher educators undergo assessments based on these standards and were consequently included in the national register. So far the benefits of being a registered teacher educator are doubtful since Dutch teacher

education institutes do not include registration as a criterion in their policies concerning career development and selection procedures (van der Klink, 2011).
Next to external drivers that shape teacher educators' professional development, most of their learning stems from their own, mainly individual, ambitions to advance their professional performance. Most learning is centred on the individual teacher educators who, consciously or less consciously, are engaged in activities contributing to professional growth. Their learning endeavours differ in their contribution to professional development; some activities seem more beneficial than others. Especially self-study and inquiry are often seen as important activities to further one's professional development (Cochran-Smith, 2003; Lunenburg & Willemse, 2006), since these activities support teacher educators in gaining insight into their own roles, assumptions and values, their professional knowledge and practice, their own as well as their students' learning.
There appears multiple ways to encourage teacher educators' professional development. Smith (2003) pointed at organizing opportunities that are reasonably easy to implement, like, for example, organizing regular staff meetings, the use of action learning within teams, arranging feedback from supervisors, colleagues and students, observations of experienced colleagues. Next to opportunities some inhibitors are frequently mentioned, like the lack of time, a considerable workload, lack of resources, absence of managerial attention and reinforcement for professional development, an unproductive working climate, etcetera (Van Velzen et al., 2010; Van der Klink, 2011). On the individual level there too exist barriers that hinder professional development like the fear for change and the lack of interest in innovative ideas. Professional development is not only about learning, but also comprises unlearning and challenging one's own beliefs and views which requires that professionals leave their comfort zone and for many this is an unwanted and unpleasant experience (Smith, 2003).
To summarize there are different approaches that can be chosen for investigating teacher educators' professional development. Four of these that are frequently mentioned in scholarly literature have been briefly discussed. What generally lacks in the literature is any attention for international comparison of professional development practices between countries. As research on teacher educators' induction demonstrated much can be learned from comparing across countries (Van Velzen et al., 2010).

A global perspective on teacher educators' professional development

One of the issues to consider from a global perspective is the possible tension between the need to attend to local particularities and the need to be aware of general patterns and apparent commonalities across localities.
Teachers in Europe are educated in a wide variety of institutes and by a wide range of curriculum models (Euridyce, 2002; 2011; Hudson & Zgaga, 2008; 2010). In their analysis of curricula in teacher education Snoek and Zogla (2009) point out that even though the main aim of teacher education is the same throughout Europe that is, the education of future teachers, the underlying ideas, the different national contexts and the educational systems are different. They suggest these differences to have a major influence on teacher education curricula. In an attempt to comprehend teacher educators' identities Murray, Swennen and Shagrir (2009) present illustrations from their national contexts in order to acknowledge the specificity of teacher education, educational policies and practices and note their influence on teacher educators' work and identities.
The recognition of the 'flatness' of teacher education is echoed in the report issues by the American Educational Testing Service (Wang et al., 2003) following the results of the 1999 TIMSS (Third International Mathematics and Science Study). The researchers surveyed the teaching policies of seven countries whose students performed as well or better than students from the United States in mathematics and science. These were: Australia, England, Hong Kong, Japan,

Korea, Holland and Singapore. The authors point out that many of the components pertaining to teacher education and developments are similar and at the same time certain specific aspects are substantially different. One of the main trends that are present in many different countries is that teacher education is increasingly allocated in higher education. In Australia, England, Japan, Slovenia and Spain a process of 'universification' has taken over. That means that teacher education institutes and the teacher educators working within them now have to adhere to the imperatives of the university sector including engagement in research.

Research question and methodology

The research question concerned in this study focused on experienced teacher educators' ongoing professional development activities and how these may contribute to the further development of their qualities and the kinds of factors (person-related and institute-related) that impact, positively or negatively, their own professional development. The study focused on teacher educators with at least 5 years and no more than 20 years experience as a teacher educator. In total 25 teacher educators from a range of nine different countries participated in the study.

A highly structured interview guideline was adopted to ensure sufficient opportunities for comparison between the interviewees' answers. Interviews were conducted by members of the RDC 'Professional Development of Teacher Educators'. Existing research instruments were inspected and all RDC members were involved in the process of composing the interview guideline. All interviews have been transcribed, and were sent to the interviewees for their approval of the interview report.

Initialanalysis of the interview texts revealed broad themes and then deeper analysis (Van der Klink and Kools) using the qualitative analysis program Atlas.ti 5.0 was conducted. Per interview question codes were appointed to text fragments and consequently all fragments with the same code were carefully examined, which often resulted in adding sub-codes. The sub-coding was performed based on the principles of 'grounded theory' (Glaser & Strauss, 1967), letting the codes emerge 'naturally' from the data. Some fragments were difficult to classify and/or only emerged once, these fragments received the sub-code 'uncoded'. After reviewing the results on every sub code, some sub codes which only occurred once were after all added to the 'uncoded' group. Several measures were taken to safeguard the quality of the analysis. When interview fragments were difficult to interpret sometimes the interviewer who conducted that particular interview was consulted for additional explanation. Member check of the broad themes took place by presenting a first draft of the results at the ATEE 2011 conference for an international audience of teacher educators.

Findings

As Appendix A displays the majority of the interviews were held with teacher educators from The Netherlands, Israel, and Japan. Five of each of these three countries, respectively. Interviews with teacher educators from Australia (1), Czech Republic (1), Flanders (1), Slovenia (2), Spain (2), Turkey (2) and United Kingdom (1) also occurred resulting into a total number of 25 teacher educators.

Backgrounds

The majority of the participants was female (16 =64%) and between 40-49 years old. More than half of the interviewees (15= 60%) earned a master degree, the other 8 (32%) posses a PhD degree. The experience as a teacher educator differed from 5 to 20 years; many participants (13= 52%) have 10-15 years of experience. Three interviewees had more than 15 years of experience whereas for the remaining 7 interviewees their experience was less than 10 years. The majority of the participants had teaching experience before they were appointed as teacher

educator. Eleven worked as a teacher in secondary education, six worked as a teacher in primary education, one worked as a teacher in vocational and adult education, and another one was lecturer within a university. Next to teaching experience five participants also had experience in non-teaching jobs, such as a position at the Ministry of Education, or developer of course materials.

Most participants worked at a university (17=68%). Five participants worked (also) at an autonomous teacher education institute and three (also) combine their work as teacher educator with job positions at another institute for higher education.

Seventeen participants taught student teachers in primary education, also seventeen worked with student teachers in secondary education. Most participants (18 = 72%) taught in more than one type of teacher education program. Twelve of them both taught student teachers in primary education as well as student teachers in secondary education. Several participants (5=20%) taught in-service teachers as well.

Figure 1 shows that teaching methods or pedagogy is the major part of their work, varying from 10% to 90% of their working hours. The second major part is the supervision of students' school practice, varying from 5% to 80% of their working hours. Most participants (15=60%) are also involved in teaching subjects (i.e. maths, language), varying form 10% to up to 70% of their working hours. Finally, two participants mentioned that next to teaching duties they also had to perform managerial tasks.

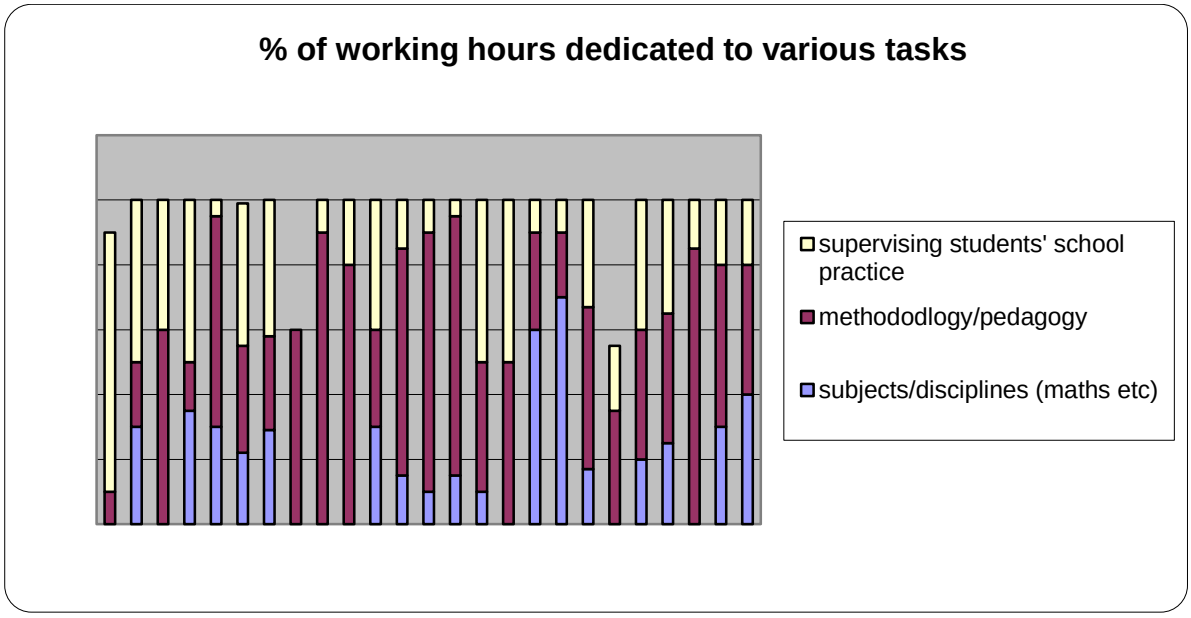

Figure 1. *Working hours divided over various tasks*

Being engaged in formal and informal learning activities

Apart from one Japanese participant all other participants are attending, or were recently involved in, formal learning activities, like trainings, seminars, workshops and courses about rather different subjects, ranging from teaching subjects, the use of ICT, pedagogical and general teaching skills. Most of the formal activities mentioned have a limited length, ranging from one to several days.

After mentioning the activities, the participants were invited to rate them on a scale from 1 (low level of supportiveness to professional development) to 5 (very high level). Not all participants rated their activities but in total 53 activities were rated and the scores indicate that participants were rather satisfied with the attended formal learning activities, since only 5 activities received a score lower than 3 (see Table 1).

Table 1. *Participants perceptions on the supportiveness of formal learning activities for their professional development*

Ranking	Frequency
1 = very low	1
2 = low	4
3 = average	11
4 = high	18
5 = very high	19
	53 rankings

Next to formal learning activities participants were invited to mention informal learning activities they are of were recently engaged in. Attending meetings, discussions, consulting colleagues are very frequently mentioned. Activities that really demand intense and close collaboration, like working together on innovative ideas, doing research together or team teaching are less frequent observed. However, participants' answers do not always provide sufficient details to assess properly the nature of required collaboration. Again participants were asked to rate the supportiveness of their informal learning activities on a scale from 1 (very low) to 5 (very high). In general, as Table 2 shows, participants experience that informal learning activities are very supportive for their own professional development, only one participant rated one of her informal activities with a 2. All other activities were considered as moderate, supportive or very supportive.

Table 2. *Participants perceptions on the supportiveness of informal learning activities for their professional development*

Ranking	Frequency
1 = very low	-
2 = low	1
3 = average	9
4 = high	25
5 = very high	13
	48 rankings

The interview data from The Netherlands, Israel, and Japan were inspected to detect country-specific patterns concerning formal and informal learning activities. The findings indicate that all five Israeli participants valued their own PhD trajectory as a means that boosted their professional growth.

Involvement in research and other scholarly activities

A vast majority of the participants is at the time of the interview engaged in research and/or other scholarly activities. The other participants were involved in different kinds of research, like for earning their PhD (mentioned by 3 participants) or conducted research closely related to their teaching subjects or to innovating their own teaching through design-based research or self-study. Next to research other activities were mentioned, like designing new courses, or adjusting courses and materials. Participants experienced that these scholarly activities were very conducive for their own professional development, their career or served more general purposes. Statements of participants show that it helps them to become a better teacher educator:

- Thanks to the research I understand better the needs of teachers, their obstacles, why they believe or do not believe in innovations. I teach better.
- It is an appropriate addition to my CV and an important asset toward my academic advancement
- It makes me a lot happier (…) it made me more confident
- Makes my thinking more realistic

Concerns during induction and current concerns

Interviewees were asked to mention their concerns when they started as a teacher educator as well as their main concerns at this very moment. In total, 22 participants expressed one or more concerns 'back then' and 23 mentioned one or more concerns 'now'. Six interviewees referred to the same concerns back then as well at this very moment, including all five Japanese interviewees. Table 3 displays the concerns and the frequencies. The frequencies reveal that some concerns are mentioned more often referring to 'back than' and other concerns are mentioned more frequent referring to 'now'. Some concerns are mentioned almost equally frequent 'back then' and 'now'. Concerns that were present at the beginning of participants teacher educator careers refer to typical induction issues ' survival and doing' , such as getting familiar with what it means to be a teacher educator, finding out what to do and wondering whether their past experience is sufficient, as the interview fragments illustrate:

- My obvious intention was developing my ability and to further professionalise as a teacher educator.
- To be able to make the mental switch with regard to the age of my students; Whereas I was experienced with high-school kids, I would have to deal with older audiences

Table 3. *Concerns participants experienced at the start of their career and in their current work*

Nature of the concern	concern back then	concern now	frequency
mentioned mainly in 'concern back then'			
becoming a teacher educator	**7**	0	7
managing student group	**6**	0	6
instruction of students	**5**	1	6
getting used to university/institute	**5**	0	5
adequacy of own knowledge	**4**	1	5
developing teaching materials	**3**	1	3
mentioned mainly in 'concern now'			
linking theory and practice	2	**5**	5
empowering students	1	**6**	6
reflection and own development	0	**4**	4
prepare students for work as teacher	0	**3**	3
mentioned then and now			
responsibility as TE	**3**	2	5
improve teacher education	2	**3**	3
stimulating students	2	2	4
maintain quality in my teaching	1	**2**	3

The concerns participants experience currently appear to be somewhat differently and refer to being reflective on one's own job and roles and attempting to look at the students with more

interest for their growth as a teacher. In fact the interview data reveal a shift from surviving and teacher-centered views towards a reflective and student-centered view, which was particularly present in the interviews with Israeli and Dutch participants:

- My interpersonal dialog: what is the "teacher educator" character I would like to achieve?!
- I have changed in the way I coach students in their development. It is my challenge to find out how I can bring a student further in his or her own process of development? I do not simply apply a technique any more (like I did when I just started as a teacher educator, because using techniques at that time provided me with some feeling of 'security'), but I am more experienced now and I have much more to offer to students.

Participants also mentioned concerns during the induction that continued to be a concern at the very moment, like responsibility as a teacher educator, the need to improve teacher education and stimulating student and 'maintain quality in one's teaching. The wish to improve teacher education applies especially to the Japanese participants:

- Accountability: To work with student teachers requires a lot of responsibility. I had sleepless nights when I observed a bad lesson; will I trust this pre-service teacher to teach my children. Will I allow generations to suffer because of my decision?
- To change a teacher education system / mechanism

Drivers and barriers for professional development

We asked participants about the factors that are encouraging for their own professional development. Only a few participants referred to encouraging conditions within their own institute, the vast majority stated that encouragements are strongly related to their own motivation and needs, as the following interview fragments illustrate:

- I haven't done enough yet with regard to conducting research. Even more so with writing. I would like to be able to share and disseminate the knowledge I have acquired
- The inner need to keep moving; the passion to keep learning
- I want to continue to develop myself. That is more a personal motive

Next to encouragements participants were asked to mention barriers that hinder their own future professional development. Not surprisingly, the lack of time was mentioned by almost all participants. This lack of time is caused by too many competing work tasks or by the difficulties related to balancing between work and other duties (family, children). Other hinders were far less observed in the findings, but nevertheless some were mentioned like the lack of positive encouragement:

- The appreciation of others (managers) here is really poor. I feel they are more happy when you do not too much because then you do not trouble them

Finally, participants were asked to mention how their own department and the broader institute supported their professional development. The answers reveal there are three reactions to professional development issues. First, there are (a few) participants that stated they experienced a supportive environment:

- I'm very much stimulated by management to get involved into professional development. There is a very positive climate toward professional development in our institute

Then there are participants that experienced mixed messages:

- The administration is providing moral support but they don't support our research and conference visits
- Lots of rhetoric here around the ready availability of support but in reality we are resource poor and cash strapped, so it is not always possible to turn good intentions into actions

And finally, some participants do not experience any support at all:

- To be honest I do not perceive any support
- I think my team leader is not very interested in what I do to develop myself

Future plans for professional development activities

Except for one Israeli participant who is on the verge of her retirement all participants have ideas about their future professional development. Participants' answers vary strongly but nevertheless there appear to exist three types of activities that are mentioned quite often.

Firstly, conducting research and writing articles appear to be very popular; it was mentioned by 15 participants.

Secondly, the desire to become more international oriented, for example through attending international conferences, ore working in international (research) projects was expressed by seven participants. Two other participants, from Spain and Czech respectively, did not really mention the international orientation but they expressed the desire to improve their foreign language (English) which can also be seen as contributing to become more active outside their own country.

And thirdly, attending courses and workshops was mentioned seven times, but the subjects vary strongly from leadership/management, teaching qualities and ICT-related topics.

Finally, the most remarkable activity was raised by the Flemish participant who wants to take time to think about a successor since he will retire in due time.

Discussion

This article is based on a research study conducted by members of the Research and Development Community 'Professional Development of Teacher Educators'. The study consisted of 25 structured interviews with experienced teacher educators with at least five years experience as such. Participants were mainly working in The Netherlands, Israel and Japan but also participants from other countries were included.

More than half of the interview participants can be regarded as being research-active and this is often perceived by them as a way to keep in touch with the latest developments and to contribute actively to enlarging the body of knowledge. Writing research articles is seen as an activity with a high learning value. Perhaps the fact that articles can be easily distributed among colleagues and can be regarded as a visible token of someone's expertise, also contribute to the positive perceptions attached to writing articles. The nature of their research endeavours is, however, not always clear. A few of them are involved in long-term research to earn their PhD degree but other interview reports are less clear or do not provide details on the nature of the conducted research activities. Nevertheless these findings do indicate that being research-active is becoming less uncommon as part of professional development, which is also advocated in present policy papers as a mean to improve the professional status of the teacher educators (Snoek, Swennen & Van der Klink, 2011). This is also strongly related to the process of universification that puts higher research demands on teacher educators to become respected in academia.

The participants' professional development usually consists of a mix of formal and informal learning activities. The fact that the interview findings indicate professional development is not restricted to informal learning, like consulting colleagues and participating in ongoing discussions can be seen as positive. Though informal learning is often perceived as important, it also holds the serious danger of not being exposed to very new ideas that are not present in the own work environment (van der Klink et al., 2012). Attending formal activities like training and workshops offer possibilities to broaden one's horizon beyond the own daily work setting. But in general attending formal training requires more efforts, since it has to fit in one's agenda and often permission of one's director is requested. Both types of learning activities, formal and

informal, are valued highly by participants. Also participants have plans for future professional development activities, formal and informal ones, and most of them had rather clear ideas about what they want to learn. However, at the same time they experience difficulties in finding sufficient resources, time and money, for their current activities and sometimes these difficulties are also echoed in their answers regarding their future plans. In mentioning difficulties for professional development, interviewees seem to focus mainly on barriers for formal activities. It seems a bit awkward to report difficulties like time and money in relation to informal learning, because informal learning often takes place during and through everyday working activities. So despite their appreciation of informal learning activities, perhaps interviewees still consider professional development more linked to formal than informal learning activities.

The findings do not allow drawing firm conclusions regarding country-specific patterns in professional development. Of course teacher education systems in Europe differ (see for example Snoek & Zogla, 2009) but that does not necessarily imply that this also counts for teacher educators' accounts of their own professional development. Perhaps we are more akin than we expected, which was also concluded by Van Velzen's et al. (2010) in their research on teacher educators induction across Europe. These observations could be seen as support for generalizing our findings but at the same time we would like to emphasise the need for further research on international comparisons of teacher educators professional development before firm conclusions are allowed.

The participants' accounts do suggest that concerns about their work and their own identity as teacher educator vary during the career. At the start of their career as teacher educator most participants experience concerns that are quite characteristic for the induction phase and that can be labelled as ' surviving in a new and complex context' as Van Velzen et al. (2010) reported in their international study on induction of teacher educators. When teacher educators become more advance their concerns change accordingly and shift toward concerns about their own identity (what kind of teacher educator do I want to become) and about their students as individuals with different ambitions and needs. Their present concerns seem related to the more 'mature' professional, who created the space for reflection and allows him/her to reflect upon educating student teachers.

As we experienced throughout the entire research project, conducting an international comparison encounters many differences that are linked to languages and cultures. We have reason to believe that concepts like formal, informal and concerns are differently understood in for example Israel, The Netherlands and Japan. We advocate that international groups as our RDC 'Professional Development of Teacher Educators' provide interesting platforms for building on sharing interpretations and experiences and building on a mutual knowledge base on professional development.

Note

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Appendix A
Backgrounds of the participating teacher educators

Country	gender	age	academic qualification	experience as TE	work base
	1=female 2=male	2=30-39 3=40-49 4=50-59 5=60-65 6=over 65	2=MA 3=PhD	Years of experience	1=university/college 2= other institute for HE 3= autonomous institute for TE
Australia	1	3	3	14	1
Czech Republic	1	3	3	11	1
Flanders	2	4	2	19	1,2
Israel	1	6	2	20	3
Israel	1	3	2	13	1, 3
Israel	1	3	2	13	1
Israel	1	2	3	8	3
Israel	1	4	3	18	1
Japan	2	3	2	12	1
Japan	2	4	2	8	1
Japan	2	3	2	9	1
Japan	1	3	2	8	1
Japan	2	3	2	13	1
Netherlands	1	3	2	12	3
Netherlands	1	4	2	10	3
Netherlands	1	3	2	10	1
Netherlands	1	3	2	10	2
Netherlands	2	3	2	8	2
Slovenia	1	4	3	13	1
Slovenia	1	3	3	10	1
Spain	2	3	3	5	1
Spain	1	3	3	9	1
Turkey	2	2	3	12	1
Turkey	2	2	3	10	1
United Kingdom	1	3	2	12	1

PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS THROUGH INFORMAL LEARNING

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Abstract

In this paper the focus is on professional development through informal learning. People learn a lot while performing tasks and doing their jobs, but they are not always aware of these processes. Encouraging the awareness for informal learning is a first step towards acknowledgement of informal learning activities as forms of professional development by teacher educators and their managers.

In this paper, we describe a procedure to encourage awareness of informal learning. The procedure consists of keeping a logbook on learning experiences during three weeks. At the end of the period the participants discussed their experiences in a meeting and analysed their own logbooks using an analysis tool. Both keeping a logbook and analysing this logbook led to a raise in the awareness of informal learning, at least, during and shortly after the intervention. The participants got to know their own learning processes, found the logbook-keeping an interesting thing to do and sometimes were surprised by the ways they learned.

Keywords: professional development, teacher educators, informal learning

Introduction

Professional development is an important issue in teacher education. Smith (2003) mentions three reasons for professional development of teacher educators, namely (1) to improve the profession (teaching student teachers), (2) to maintain interest in the profession, to grow personally and professionally and (3) to advance within the profession, promotion. Furthermore, teacher educators are expected to develop their professional abilities continuously in order to meet demands of the student-teachers they educate. So, the need for professional development is clear. But how can teacher educators develop themselves? All professional development requires 'learning'. In this paper, the definition of professional development is 'learning in order to become a better performing professional'. There are several possibilities to learn for professionals, such as formal or less formal routes and individual- or team-development. Both formal and informal ways of professional development have their advantages and disadvantages. Formal learning through a course or study offers the opportunity to broaden one's horizon by getting access to new knowledge, skills or expertise. Informal forms of learning often take place while performing tasks at the workplace. People learn from colleagues or from performing their tasks.

In a quick-scan amongst 113 teacher educators at the Fontys University of Applied Sciences (FUAS) (Kools, 2011) the five most mentioned professional development activities were reading (scientific) literature, consulting colleagues, attending conferences or study-days, experimenting with new approaches and supervising student teachers. If we look at this ranking, it is prominent

that at least three of these activities are non-formal and occur in or at work. Apparently, many colleagues are developing themselves through informal learning activities. In the quick-scan, teacher educators were asked to look back at their professional development activities of the past two years and to tick all activities they had undertaken in a list of 19 activities. In another question they were asked to use the same list of 19 activities and tick all activities they were planning to undertake in the next year. When comparing these lists, it was striking that informal activities were mentioned more often in retrospection than in future plans. This implies that the informal activities are recognised as being supportive in professional development but seem to be overlooked when planning ahead. At FUAS, professional development is a topic that is discussed at least twice a year in appraisal and assessment conversations by an individual teacher educator and his or her manager. In these conversations personal learning goals are discussed and plans how to professionalize further are made. Obviously, as we observed in the quick scan (Kools, 2011), professional development seems to be more often connected to formal learning and therefore, informal leaning activities are less likely to be discussed. This leads to the question whether informal learning is recognised and acknowledged by the teacher educators themselves and their management. Informal learning, which occurs while performing tasks - in literature referred to as workplace learning (Tynjälä, 2008)-, might be an overlooked form of professional development.

The aim of our research-group is to encourage the awareness for informal forms of professional development and – once the awareness is raised- to encourage the acknowledgement of informal learning activities as forms of professional development by teacher educators and their managers.

In this paper, we describe a procedure for encouraging awareness of informal learning. The research question in this paper is: '*does the developed procedure increase awareness of informal learning processes and outcomes amongst teacher educators?*'

Theoretical framework

In this paper, several terms are used which are intertwined with each other. To define 'learning', the broad definition of Hoekstra (2007) is leading: 'being consciously or unconsciously involved in activities that lead to a change in cognition and/or behaviour' (Hoekstra, 2007). Learning does not necessarily lead to a positive outcome, also negative or bad things are learned (!). Professional development however, only refers to positive effects. The definition of professional development in this paper is 'learning in order to become a better performing professional'. Professional development can take place in different ways. In this paper, the focus is on learning and development at the workplace, or, in other words, learning through performing the job.

Over the past two decades the interest in workplace learning has intensified (Ellström, 2001; Billet, 2002, Illeris, 2003) due to the fact that a rapid change in society and working life has taken place which caused the importance of lifelong learning (Tynjälä, 2008). According to Collin (2002), "learning is seen as a natural aspect of everyday work, and work is seen as a rich source of learning" (p.133). Learning on the job, or referred to in literature (Tynjälä, 2008) as workplace learning, can take many forms, from formal pre-set courses or training to informal and incidental learning activities (Matthews, 1999). Research indicates that informal learning moments and activities take precedence over traditional approaches of learning which comprise most forms of learning at the workplace (Day, 1998; Skule, 2004). Marsick (2003) goes even further by stating that this sort of workplace learning is often conceived as learning that is "tacit and integrated with work activities" (p.389).

The concept of informal learning can be traced to researchers as John Dewey (1938) and Malcolm Knowles (1950) who emphasized in their research the importance or learning from experiences. Several discourses around formal and informal learning indicate that there are no real fixed boundaries but that there are "dimensions of formality and informality, and ways in

which they inter-relate with each other" (Colley et al., 2002, p. 1). As McGivney (1999) states in his research, "it is difficult to make a clear distinction between formal and informal learning as there is often a crossover between the two" (p. 1). Although, informal learning has been pervasive in workplace contexts, only in the last three decades several researchers such as Marsick and Watkins (1990), Eraut (2000), Livingstone (2001) and Billet (2001) have embarked on defining informal learning. In his investigation about learning in the workplace, Eraut (2000) has a strong preference for the term non-formal rather than informal. He argues that most learning takes place outside formal learning context, and that informal learning carries connotations of "so many other features of a situation, such as a dress, discourse, behaviour, diminution of social differences − that its colloquial application as a descriptor of learning contexts may have little to do with learning per se." (p. 12). In fact, Eraut (2000) does not define non-formal learning but presents five features of formal learning and states that any learning which is not of this type, should be considered as non-formal learning.

In his research, Eraut (2000, 2004) has tried to explore the range of non-formal learning. By doing so he used a continuum with at the one extreme *implicit learning*, and at the other *deliberative learning*. However, Eraut (2000) adds one additional category between the two extremes in order "to describe situations where the learning is explicit but takes place almost spontaneously in response to recent, recurrent or imminent situations without any time being specifically set aside for it" (p.115). This reactive learning is unplanned, however, the learner is aware of it but as Eraut notes, "the level of intentionality will vary" (p.115) and for that reason will make it arguable. Additionally, Eraut adds another dimension to non-formal learning which he finds "useful in mapping the domain of non-formal learning" (p.115) and which applies to the "timing of the events providing the focus of the learning" (p.115). Combining the two dimensions enables Eraut to produce a matrix which consists of two intersecting dimensions *time of local event* and *level of intention* (figure 1).

Time of Stimulus	*Implicit Learning*	*Reactive Learning*	*Deliberative learning*
Past Episode(s)	Implicit linkage of past memories with current experience	Brief *near-spontaneous reflection* on past episodes, communications, events, experiences	*Review* of past actions, communications, events, experiences. More systematic reflection
Current Experience	A selection from experience enters the memory	*Incidental* noting of facts, opinions, impressions, ideas *Recognition of* learning opportunities	*Engagement* in decision-making, problem-solving, planned informal learning
Future Behaviour	Unconscious effects of previous experiences	Being prepared for *emergent* learning opportunities	*Planned* learning goals *Planned* learning opportunities

Figure 1. *A typology of non-formal learning (Eraut, 2000, p.116)*

Despite considerable attention of informal learning in the literature (Skule, 2004), little is known about "how it can be supported, encouraged and developed" (Marsick & Volpe, 1999, p.3). Because processes of non-formal learning stay largely invisible, teachers often lack awareness of their learning. The resultant knowledge is either tacit or regarded as a persons' general capability, rather than something that has been learned in the workplace (Eraut, 2004). In this paper, encouraging awareness of informal (or non-formal) learning processes is subject of study.

If non-formal learning processes would be recognized more explicitly by teacher educators and their managers, it could become an acknowledged component within professional development activities. In other words, if teacher educators would recognize their implicit and/or reactive learning processes (see figure 1) in past episodes and current experience, this might help them to implement them more conscious in the future.
Meirink (2007) and Van der Klink et al. (2012) have dealt with the problem to visualize non-formal learning. Van der Klink et al. (2012) interviewed colleagues in order to make them reflect on their own learning processes. In her study on learning activities of teachers, Meirink asked teachers to write down their learning experiences in a digital log (Meirink, 2007). Also Van Eekelen et al. (2005) use digital diaries in their study on teacher learning. Both Meirink (2007) and Van Eekelen et al. (2005) use diaries primarily as a data-source for their research. In the study reported on in this paper, the assumption is made that the diary-keeping *in itself* might be a possibility of creating awareness of non-formal forms of learning. Therefore, in this study, diary-keeping will be studied as a means to encourage awareness of non-formal learning processes.

Methodology

The project we report on in this paper aims at encouraging awareness of informal learning processes amongst teacher educators. The research question for this paper is:
'Does the developed procedure increase awareness of informal learning processes and outcomes amongst teacher educators?'

Research design and procedure

To encourage awareness for informal learning, a procedure was developed and studied. In this procedure, teacher educators were invited to a lecture on informal learning. After the lecture, the attendees were invited to participate in a project on informal learning. In this project, participants were asked to keep notes during a period of three weeks in a logbook (diary) about 'what they had learned'. Participants were free to choose their own frequency of keeping notes from three possibilities: (a) daily, (b) three times a week or (c) once a week. After the three-week period of keeping notes, participants were invited for a second meeting, in which they discussed their experiences and in which they were told how to analyse their notes, using an analysis-tool.
The analysis tool was developed through combining literature (Tynjälä, 2008; Bolhuis, 2009) and a questionnaire on professional development (Kools et al., 2011). The tool consist of three parts: A) information on the background of the participant (years of experience as teacher educator, gender, team, tasks, specific development goal yes or no); B) reflection on the process of keeping notes in a logbook; C) analysis of the learning activities in 'ways of learning' (through what activities is learned), 'content of learning' (what was the learning about) and 'outcome of learning' (what was learned: knowledge, insight, skill or conviction), and 'reflection on learning' (what insights did you get from analysing your learning activities). The purpose of this last part was to make visible to the participants what they actually learned and how that happened.

Research instruments and data analysis

The data for our research consist of the filled-out analysis-forms (see description in the section above) of the participants. The three parts of the analysis-forms provide the information to answer the research question. The open answers in the analysis forms were analysed qualitatively, the other answers were analysed with SPSS.

Research setting and participants

The experiment was conducted at the Fontys Teacher Education Institute. Participants work as teacher educators or have a function in the staff of the institute.

In the procedure, all teacher educators who work at the institute (n=228) were invited by e-mail to attend the first meeting. In total, 26 teacher educators (17 female, 9 male) came to this meeting and started with the intention of keeping a logbook. Of these 26 attendants, 15 (58%, 11 female and 4 male) really participated and also handed in their analysis-forms. Eleven attendants did not start the logbook or stopped in an early stage. Five of them apologized for not participating, arguing they were too busy to do this, the other seven did not react any further. Not all 15 participants could be present at the second meeting, 10 were present and five did not come to the meeting, but they filled in their analysis-form on their own.

Findings

In the description of the outcomes, the division in three parts (background of participants, experiences with logbook and analysis of learning activities) as was used in the analysis instrument is leading. First, the results are presented and after that an analytic summary of the results is given.

Background of participants

The group of participants consists of 15 participants, 11 female and 4 male. Their experience in being a teacher educator varies from being a beginning teacher educator (between 0 and 3 years of experience, n=4), having between four and six years of experience (n=1), having between seven and ten years of experience (n=6) and having more than 10 years of experience (n=4). The participants come from different teams: two from science, one from history/geography/sociology/theology, two from languages (English/German), three from maths/economics, four from biology/health and three from management.

The majority of the participants is involved in teaching (n=11) or supervising student teachers (n=10).

Also a majority of the participants had a specific development goal (n=12).

Experiences with the logbook

The experiences in keeping the logbook can be divided into three themes: frequency, experiences and insights.

The *frequency of* keeping the logbook varied from once a day (n=3), three times a week (n=2), once a week (n=2) or 'other frequency' (n=8). In the category 'other frequency' a variety of frequencies is mentioned, like four times a week (n=1), twice in three weeks (n=1) 'I stopped after some time' (n=2), 'when I felt like it' (n=1) and 'I did not start' (n=2). The time spent on writing the logbook varied: five minutes (n=5), ten minutes (n=6) fifteen minutes (n=2). There is no pattern to be seen between time spent on keeping the logbook and frequency.

The participants were asked to describe their *experiences* with keeping the logbook, choosing one or more answers from the categories 'aggravating' (n=2), 'easy to do' (n=6), 'interesting' (n=7), 'time consuming' (n=0), 'boring' (n=0), 'I felt obliged to do this' (n=3) and 'open answer' (n= 4). In the open answers two participants mention that they regretted having chosen a frequency of once a week, because they could not remember all their learning experiences. One participant mentioned difficulties in keeping the logbook, saying *'I had difficulties in determining what I could note'*. One participant used the open answer to add the comment '*very nice to do!*'. Both participants who said it was 'aggravating' elucidated their answer by saying this was because it was hard to find time to do it. Most participants added experiences in their own words, indicating how interesting of beneficial they thought the logbook-keeping was for them. The quotes are:

''*Interesting, because I became aware of what I was learning, this made me happy. I also took theopportunity to come up with actions' (resp 6)*
'insights on what new working environment means to me and how it affects me' (resp 3)
'Once a week is not enough: you lose a lot of details, you lose sharpness. At the end of the week it was hard to remember meaningful moments of other days' (resp 2)[3].
'I have made it to my daily routine, every evening before closing my computer I filled in the logbook. It was very meaningful, but a period of three weeks was enough (resp 13, quote in conversation).
'Interesting because it made me aware of what I was learning, from whom and how' (resp 13).

The last question on keeping the logbook was 'what *insights* did you obtain during the period you were keeping the logbook?". Participants could choose between 'no insights' (n=0); ''becoming aware of my own learning' (n=10) or 'other' (n=5). After reading the explanations all 'other' answers could be classified as 'becoming aware of my own learning'. Most participants also added remarks on what the logbook-keeping meant to them. Quotes are:
'I noticed that I learn from other people when having a conversation on a specific topic' (resp 1)
'I noticed that I primarily learn by being in contact with other people, so by conversations and listening to others' (resp 2)
'I became aware of the fact that I do not only learn by reading and studying, which I thought would be the case, but also by doing things together as well as talking about things' (resp 3)
'I learn a lot on my own, but also a lot from people and from events around me' (resp 6)

Analysis of learning activities
In the last part of the analysis instrument consisted of a further classification of learning activities (see table 1). First, the participants were asked to score the way they had learned. They could choose from nine options (column 1 in table 1). The second question was about the content of learning and also with this classification the participants could choose from nine options (column 2 in table 1). The third question was about the outcome of learning and participants could choose from five options (column 3 in table 1). In all classifications, participants could score more than one option and they could add their own answer as well. As can be seen in table 1, in the total group of participants all categories were chosen, indicating that all types of learning occurred (see table 1).

[3] A similar remark was given by respondent 14, in a conversation on the experiences of keeping the logbook.

Table 1. *Classification of learning activities in three questions and number of participants who scored each classification*

How did you learn/ways of learning. I learned….	n	What did you learn/content op learning. I learned about….	n	Outcome of learning	n
Through teaching	9	teaching methods	5	knowledge (theoretical)	9
Through supervising student teachers	9	educational issues	7	insight	13
By developing teaching materials	7	Supervising students	8	Skill	12
Through collaboration with colleagues	15	Performance of other tasks	9	Conviction	11
By performing new and challenging tasks	7	A subject I teach	3	Combination of 1, 2,3 and/or 4	8
By reflecting and evaluating my own working experience	10	My own research-skills	3	Other, namely…	1
Through media (book, article, movie, website)	12	My role as teacher educator	8		
Through a formal traject (course, study)	7	Vision on teacher education	8		
Through an activity outside my work	11	Use of ICT	9		
Other, namely…	0	Other, namely	3		

Between the participants individual variation was found: the range in ways of learning varied from 4 to 9; the range in content of learning varied from 1 to 9, the range in outcome of learning varied from 1 to 6. Each individual participant displays an individual learning pattern. For example respondent 1 learned in 4 different ways (supervising students, collaboration with colleagues, through media and through activities outside work), learned about one topic (role as teacher educator) and defines her outcomes as a mix of knowledge, insights, skills and convictions.

The registration of the data does not provide in making combinations between ways of learning and content or outcomes of learning.

The last question in this session was 'what insights did you obtain through making this analysis?". Participants had to answer this in their own words. Thirteen participants did answer this question, writing down their reflections on own learning. Two participants left this question blank. Quotes are:

'*I mostly learn from being in contact with other people. At this moment my learning is strongly steered by the fact that I have only just started my job as a teacher educator' (resp 1)*

'I often reflect on my daily learning experiences on my way home from work' (resp 3)

'I learn together with others, and by doing so, I develop an new style of learning [..]' (resp 5)

'There are many learning opportunities in a day – it makes me happy when I learn something new- through being aware of these moments, I start planning other activities – I like to deepen the newly developed knowledge'(resp 6)

'that I learned the most from supervising student teachers and from discussing my role as supervisor with colleagues'(resp 8)

'I noticed that I mostly learn about teaching methods and pedagogics' hardly ever take time to reflect on working experience'(resp 10).

'I am continuously learning. Reflecting on learning is very useful because it raises awareness of the learning itself and to me, this is a positive stimulus' (resp 15).

Summary of outcomes

In this section, the outcomes of the three sections - background of participants, experiences with the logbook and analysis of learning activities - are summarized. Looking at the background information of the participants, it can be concluded that there was a broad variety in participants from different teams and years of experience as teacher educator. Female participants were over-represented. From the results in the section 'experiences with the logbook', it can be seen that the all different kinds of frequencies for keeping a logbook were chosen by the participants. From the open answers, extra information on the frequency can be revealed. The participants who kept their logbooks once a week both mention that this has the disadvantage of 'forgetting' learning experiences. In the report on their experience with the logbooks, most participants mention this was 'easy to do' and/or 'interesting'. Only a few negative remarks were made. Keeping a logbook itself already led to the awareness of ones' own learning processes, as was expressed by the majority of the participants. From the analysis of learning experiences it can be seen that learning takes place through all different kinds of activities, in all different kinds of subjects and leads to different kinds of outcomes. Performing the analysis led the participants to new insights on their learning processes. For example, some participants discover that they learn a lot from other people, others discover that there are many learning opportunities in a day or that they are constantly learning.

Conclusion and discussion

In this paper, the focus was on raising awareness of teacher educators for informal learning processes. This is the first step in a larger process directed towards acknowledging informal forms of learning in professional development of teacher educators. The research question for this paper was '*Does the developed procedure increase awareness of informal learning processes and outcomes amongst teacher educators?'* The developed procedure existed of an introduction meeting in which a lecture on (informal) forms of professional development was given and attendees were invited to participate in the project , a three-week experimental phase in which participants kept a logbook and a second meeting in which participants discussed their experiences analysed their own logbooks using an analysis tool.

The results of our research show that the developed procedure is helpful to encourage awareness of informal learning processes. Both keeping a logbook and analysing this logbook led to a raise in the awareness of informal learning, at least, during and shortly after the intervention. The participants got to know their own learning processes, found the logbook-keeping an interesting thing to do and sometimes were surprised by the ways they learn. One person got so enthusiastic that she will continue keeping this logbook. She said: *'it helped me putting my thoughts on paper, it is a kind of dialogue with myself. In this logbook I write down things I learn or want to keep in mind, things I have come across by reading literature or otherwise. The logbook helps me in putting order to my thoughts.'*

The ideal frequency for keeping the logbook appears to be either daily or three times a week. The participants who kept their logbook once a week regret this because they had forgotten a lot of learning moments. The meetings at the beginning and the end of the three-week period both have a different contribution. The first meeting aimed at introducing the theme of informal learning and was meant to invite the attendees to take part in the procedure. Although all attendees at the meeting said they would take part in the procedure, not all of them did. Maybe some of them felt obliged to join and afterwards decided not to participate. Some participants did intend to join, but cancelled their participation because of their high workload. In the second

meeting, not all participants were able be come. The ones who were present discussed their experiences with the logbook and this lead to a vivid discussion on 'what is learning?'.
The analysis of the learning activities revealed once more (Eraut, 2000, 2004, Tynjälä, 2008) that people learn from and in very different situations and about different subjects. It was somewhat surprising though, that participants not only mention having gained insights, skills and knowledge, but also claim to have gained 'convictions'.

Discussion
The developed procedure with meetings, keeping a logbook and analysing this logbook lead to an increase in awareness of learning processes of the participants. The participants who joined this procedure were willing and able to reflect on their own learning experiences and write them down in their logbooks. It is possible that participants in this procedure are a select type of persons and that this made the procedure work. Less reflective persons might not write down so many learning experiences, or might not be aware of them.
The participants in this procedure more or less volunteered to participate. They voluntarily came to the first meeting and after the lecture, they were invited to participate in the procedure. Maybe some felt obliged to apply for participation or did not dare to refuse the invitation. In the end, fifteen persons did participate and eleven persons who applied after the lecture, later did not respond or signed out. The fifteen participants thus can be seen as 'volunteers', or, at least, they were willing to participate. The procedure did work for them and it raised their awareness of their learning processes. One of the participants who was reluctant and rather cynical at the start, turned out to be the most enthusiastic participant at the end. However, it remains uncertain whether the procedure would also work to raise awareness of learning processes if participants are obliged to take part. An obligation to write down learning experiences might work counterproductive.
In the procedure the logbook was kept for a period of three weeks. The length of this period was randomly chosen, accounting for the need to keep notes for a substantial period and the wish to diminish the load put upon the participants. This period proved to be just fine for the participants, it was not too long to become boring, and long enough to experience different learning moments.
The procedure took place during a period in which the teacher educators were giving lectures and were supervising students according to the normal schedule of lessons. For another experiment it would be interesting to include a different 'week', for example a week in which exams take place. It would be interesting to see if the learning activities and outcomes would differ in that situation. One participant did mention this herself. She wrote that she had learned specific things in these three weeks and that she was anxious to find out what she would learn in another week or period in the year. She actually recommends to repeat the procedure in another time of the year.
The participants had some suggestions to improve the logbook-keeping or the procedure. To improve the logbook-keeping, the suggestion was made to send an automatic e-mail every three days as a reminder to fill out the logbook or to use an 'app'on the iPad. A suggestion for the procedure was to implement the procedure of logbook-keeping and the reflection as a part of the assessment conversations with the management. Another participant suggested to use this procedure as a tool to help people who are a bit 'bored' in their job to get new energy or to look at their work from a different perspective.
The experiment described in this paper proves to be a good first step in raising awareness for informal learning processes. This is however, only a first step. There are still a lot of questions to be answered, such as: 'are their ways to assess the outcomes of informal learning processes?', or 'how can the procedure described in this paper be of use in personnel management?' or 'is

this procedure a suitable way for all colleagues to stimulate awareness of learning processes?'. These questions will be the input for further research.

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PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS AS PERCEIVED BY TEACHERS AND STUDENTS IN BAHRAIN AND KUWAIT

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Abstract
Most in-service teachers recognize that professional development can be more effective if an adequate attention is paid to the Equity and Empowerment aspects of professional development of educators. Success of professional development programs depends on how effectively they are designed to meet the needs of students and in-service teachers, and to encourage them to match between their ambitions and abilities, and to actively participate in cultural and social life of the society.
Based on this understanding, the main objective of this study was to investigate the beliefs held by in-service teachers and university students in the Kingdom of Bahrain and the State of Kuwait with regard to effective professional development of teacher educators.
For this purpose, a 40-item questionnaire was constructed by the authors, and was distributed to a random sample of 286 in-service teachers involved in Post Graduate and Continuing Education Programs in the Colleges of Education at the Universities of Bahrain and Kuwait.
The results of this study clearly indicate that Post Graduate and Continuing Education Programs at the Colleges of Education in Bahrain and Kuwait really contribute to the Sustainability and Productivity dimensions of professional development of teacher educators. The Equity and Empowerment aspects, however, need to be addressed seriously.

Background

Throughout the past 20 years, the calls for a commitment to teacher learning have increased exponentially, most likely from a confluence of forces. The standards movement is one such force. Calls for higher standards for teachers inevitably erupted alongside calls for higher standards for students. If students needed their education served up differently in order to meet new assessments and standards, it followed that teachers would need something new as well (Biggs, 2007; Darling-Hammond & Bransford, 2005).
Reformers began to note that changed curriculum and testing would not directly lead to improved teaching practices. New measures of student performance would entail new ways of teaching. Professional development was touted as the ticket to reform (Farrell, 2008).
Mounting efforts to increase the Professionalization of teachers constitutes yet another force. Groups such as the National Board for Professional Teaching Standards (1989) and the National Council for Accreditation of Teacher Education (2002) have authored mission statements and subsequent standards for professional teachers and teaching. Professional teachers require professional development.
In-Service teachers work in the field, sometimes they take further professional development courses in training institutions, at the university. And every school experience, whether it be in elementary or middle or high school, in a college or university, has the potential for teaching them lessons about what school is, what teachers do, and how people learn (Papastamatis, et al., 2009).

Practicing teachers participate in mandatory part-day or day-long workshops sponsored by their school or the upper administrative organizations. They pursue individual learning opportunities: enrolling in higher diploma and masters' courses, signing up for summer and weekend workshops, joining professional organizations. Some learning, no doubt, goes on in the interstices of the workday, in conversation with colleagues, passing glimpses of another teacher's classroom on the way to the photocopying machine, tips swapped in the coffee lounge, not to mention the daily experience of the classroom itself (Sarsar, 2008).
While workshop opportunities have been criticized for being decontextualized and contrived, Lord (1994), however, notes that these opportunities for teacher learning are happenstance, random, and unpredictable. In sum, teacher learning has traditionally been a patchwork of opportunities – formal and informal, mandatory and voluntary, serendipitous and planned – stitched together into a fragmented and incoherent curriculum (Wilson & Berne, 1999).
Studies on contemporary professional development (Meister, 2010; Morewood, et al., 2010) indicate that educators know little about what teachers learn across those multiple opportunities. Teacher lore suggests that traditional in-service programs consist of outside experts with little knowledge of local conditions who present irrelevant, sometimes amusing, often boring prepackaged information.
Hence, we have little sense of what exactly it is that teachers learn and by what mechanisms that learning takes place. What knowledge do teachers acquire across the experiences? How does that knowledge improve their practice? To what extent the professional development programs meet the desired goals of the training institution? Do these programs help to enhance the work productivity of the participants, and to empower them with new authorities? What can be said about the Programs' role in maintaining the values of cooperation and equity among in-service teachers? These questions are still left unanswered.
Based on this understanding, this paper intends to investigate how In-Service teachers perceive the effectiveness of the professional development programs running in the College of Education at the University of Bahrain. We believe that the results of this study will contribute to the better understanding of the contemporary issues of the professional development of teachers in the new Millennium.

Conceptual framework

Despite the lack of substantial empirical evidence about what teachers learn in traditional professional development activities, many educators have embraced the call for a wholesale rejection of the conventional, replacing the old with new images of meaningful professional development.
Principles for designing such work abound in the current literature. Little (1988) nominates the following features of effective staff development:
1- It ensures collaboration adequate to produce shared understanding, shared investment, thoughtful development, and a fair, rigorous test of selected ideas;
2- It requires collective participation in training and implementation;
3- It is focused on crucial problems of curriculum and instruction;
4- It is conducted long enough to ensure progressive gains in knowledge, skills, and confidence; and
5- It is congruent with and contributes to professional habits and norms of collegiality and experimentation.

Abdal-Haqq (1995) defines some important characteristics of effective professional development, claiming that it:
1- Is ongoing;
2- Includes opportunities for individual reflection and group inquiry into practice;

3- Provides opportunities for teachers to interact with peers;
4- Focuses on student learning;
5- Encourages and supports school-based and teacher initiatives;
6- Is rooted in knowledge base for teaching;
7- Incorporates constructivist approaches to teaching and learning;
8- Recognizes teachers as professionals and adult learners.

Contemporary scholars (Adey, 2004; Ingvarson, Meiers, & Beavis, 2004) currently believe that teacher's prior experiences, knowledge and beliefs factor into teacher learning, and that the context in which teachers work is believed to affect what they can do. Time, reflection, and follow-up are also thought to be important. As Ball (1996) argues: "The most effective professional development model is thought to involve follow-up activities, usually in the form of long-term support, coaching in teachers' classrooms, or ongoing interactions with colleagues" (pp. 501-502).
Other prevalent beliefs include the idea that teacher educators and staff developers should model the approaches that they are promoting, and that teachers need to own and control their professional development.
In the light of the innovations in educational thought and practice that took part in the last decade of the past century, Putnam and Borko (1997) echo the main beliefs embraced by educators with regard to effective professional development in the following principles:
1-Teachers should be treated as active learners who construct their understanding.
2- Teachers should be empowered and treated as professionals.
3- Teacher education must be situated in classroom practice.
4- Teacher educators should treat teachers as they expect teachers to treat students.

Although these principals and beliefs sound reasonable, educators still know little about what teachers learn in traditional staff development and in-service activities, and what changes professional development programs bring about in teachers' knowledge, practice, dispositions and ways of thinking in the field of learning (Torff & Sessions, 2008).
The paradigm shift in development thinking in recent years has favored the notion that professional development programs should function in consistent with the basic principles of Sustainable Human Development. This stems from the fact that development progress both nationally and internationally must be people centered, equitably distributed and environmentally and socially sustainable.
Sustainable Human Development is not limited only to generation of growth. Rather, it "equitably redistributes the returns of the growth, it regenerates environment rather than destroys it, it empowers people rather than marginalizes them, it actively enhances peoples' alternatives and widens their opportunities and qualifies them to participate in the making of decisions that directly affect their lives" (UNDP, 1998, p. 22).
Based upon the available literature of United Nations Development Programs (UNDP), it becomes possible to identify four basic components of the concept of Sustainable Human Development: Equity, Productivity, Sustainability, and Empowerment.
Equity is the focal concept in sustainable human development, which means a state of fair and equal opportunities for all. The idea of equity comprises total removal of social, legal and institutional obstacles that block access of specific groups to decision-making decisions.
In the context professional development programs, equity means giving equal opportunities for all people to join these programs based on fair and sound criteria.
Productivity is related to continuous improvement in productivity. This concept stresses close association between economic growth, equity and justice. In professional development programs this means strengthening the relationship between knowledge and work productivity.

Sustainability calls for reformation of present consumption patterns and correction of attendant disparities in the distribution of wealth and allocation of productive assets in a more equitable manner. It demands continuous strive for creativity in academic and work spheres.
Empowerment perceives people as makers of development and not simply as beneficiaries of it. In the professional development sense, this would mean that that there is a host of responsibilities that people should shoulder and a participating role, which they must play. They are not only learners, but equal partners and decision-makers as well.

Research problem
The basic function of the University of Bahrain as an important institution of social control is to build students' personality and thought, and to establish a profound base and an active environment for student learning. In such an environment, teachers are encouraged to hold consistent and reasonable beliefs about professional development, and to share these beliefs with their peers and students, thus promoting high standards of teaching and learning (University of Bahrain, 2010).
The main objectives of Professional Development Programs undertaken by the College of Education at the University of Bahrain are to provide regular year-long in-service training for school teachers, administrators, and other education personnel through enriching their skills and professional knowledge, and enabling them to keep abreast of new thinking in the field. The College also participates in pre-service training of teachers and workers in the educational field in collaboration with the Ministry of Education, Ministry of Labor and other educational and social institutions in Bahrain (Mohieldin et al., 2010).
As teachers' beliefs about effective professional development have a deep impact on their work and lives, the main target of this study was to investigate the overwhelming beliefs held by in-service teachers at the University of Bahrain with regard to effective professional development. Namely, this study is aimed at examining in-service teacher's perceptions about professional development programs in the light of four basic components of sustainable professional development, which are: equity, productivity, sustainability, and empowerment.

Method of the study
Sample
A random sample of 286 in-service teachers and students (94 men and 192 women) participated in this study. The sample constitutes about 27% of all students enrolled in professional development programs at the Colleges of Education in both Bahrain and Kuwait.

Instrument
For the purpose of this study, the author, based on the four components of Sustainable Human Development (UNDP, 1998) constructed the Effective Professional Development Questionnaire containing 4o items.
We turned to the concept of Sustainable Human Development because the basic principles of effective professional development, which were widely discussed in the available literature (Abdal-Haqq, 1995; Adey, 2004; Putnam & Borko, 1997; Wilson & Berne, 1999), seemed very close to the idea of Sustainable Human Development, and its essential components.
Furthermore, the Kingdom of Bahrain has been working hard to promote and implement human development strategies and programs in some important aspects of people's live: Education, Health, Employment, Social Care, Environment, etc. As a result of these efforts, the Kingdom of Bahrain was ranked first among Arab countries in the field of Human development. So far, Bahrain managed to keep this rank three times.

Based on this understanding, the prepared questionnaire contains 4 sub-scales, with 10 items in each of them (refer **Table: 1)**. The underlying dimensions of Effective Professional Development are:

1- Equity*:* the extent to which the professional development programs at the College of Education give equal chances to men and women to participate in staff development activities, and encourage a fair competition between both groups in achievement and work. This dimension is reflected in the questionnaire statements: 1, 7, 8, 17, 22, 28, 29, 32, 33 and 40

2- Productivity: The ability of the professional development programs to promote work productivity by aligning the content of the staff development activities with the job requirements, and cultivating the culture of discipline, responsibility, and loyalty in the working place. This dimension is represented by the following items: 2, 5, 10, 14, 16, 20, 26, 30, 37 and 39.

3- Sustainability: If a professional development program promotes sustainability, we would expect its participants to strive, in a continuous and enduring manner, to acquire self-learning skills, to achieve high level of competency in study and work, and to solve problems in a creative fashion. The following items represent this dimension: 4, 6, 9, 11, 13, 15, 23, 34, 35 and 38.

4- Empowerment: The professional development program is labeled as an empowering program if its participants are encouraged to participate in the decision-making process, to demonstrate their abilities and skills, to discover new knowledge for themselves, and to take part in the cultural and social life of the society. The following items reflect this dimension: 3, 12, 18, 19, 21, 24, 25, 27, 31, and 36.

On a 3-point scale, in-service teachers were asked to rate the extent to which they have benefited from Professional Development Programs adopted in the College of Education at the University of Bahrain in consistent with four components of Sustainable Human Development: Equity, Productivity, Sustainability, and Empowerment. Component Means and item Frequencies of the Effective Professional Development Questionnaire are presented (refer Table 1).

The questionnaire was administered to 180 individuals (64.54% female) randomly selected from students enrolled in Post Graduate and Continuing Education courses offered at the College of Education at the University of Bahrain. Students were homogenous with respect to academic, cultural, and ethnic backgrounds.

The Effective Professional Development Questionnaire was validated using factor-analytic techniques. Factor- based scales made up of the items with structure coefficients of at least .40 on a single factor (Gorsuch, 1997) produced scores with strong reliability in this data set. The alpha of the Scale as a whole was adequate (alpha = .98). Reliability coefficients measuring internal consistency for the scores on the scale dimensions ranged from .90 for scores on the Productivity subscale to .93 for the Sustainability subscale.

Table 1. *Item frequencies and subscale means of effective professional development questionnaire*

	Frequency (%)		
	Level of Program Contribution		
Items	**High**	**Moderate**	**Low**
I benefited from the Program in that I have:			
1- Realized the human aspect of professional development	13.3	44.4	42.3
2- Gained new knowledge in my field of specialization	20.6	45.0	34.4
3- Had the chance to demonstrate my abilities and skills	22.2	46.7	31.1
4- Mastered the skills necessary for continuous self-learning	26.7	41.7	36.6
5- Contributed to increased work productivity and discipline	24.4	45.6	30.0
6-Started to think in an independent and confident manner	26.7	43.9	29.4
7- Been convinced that all people should be treated equally	20.0	47.2	32.8
8- Appreciated collaboration with my colleagues	18.3	52.2	39.5
9- Acquired a desire for more reading and knowing	23.9	51.7	25.4
10- Understood how to use knowledge at work effectively	24.4	44.4	31.2
11- Raised my ambitions to improve work conditions	30.6	41.7	27.7
12- Learned how to discover new knowledge for myself	23.9	43.9	32.2
13- Shared decision-making with my colleagues	17.8	48.9	33.3
14- Read thoughtfully the available literature in my field	13.9	48.3	37.8
15- Striven hardly for high level of achievements at work	30.6	41.7	28.7
16- Dealt with the course grade as a motive for further learning	21.7	52.2	26.1
17- Learned how to compete honestly with colleagues at work	28.3	46.7	25.0
18- Realized the cultural and social aspects of the Program	21.7	47.2	31.1
19- Made sense of some critical problems of the society	17.8	46.1	36.1
20- Got the skills for improving my performance in study and work	24.4	45.6	30.0
21- Practiced the values of citizenship and loyalty at work	23.3	43.3	33.4
22- Realized the need to provide a job for every one in society	22.2	46.1	31.7
23- Obtained the ability to deal with others in a flexible manner	26.7	50.0	23.3
24- Assumed the burden of responsibility in study and work	30.0	46.7	23.3
25- Got acquainted with issues and problems of education	22.8	46.1	31.1
26- Acquired the ability to combine study with work	17.8	46.7	35.5
27- Been able to express myself openly	25.0	50.6	24.4
28- Been more capable to use knowledge in my field	23.3	50.0	26.7
29- Understood the importance of social equity and fairness	16.7	53.3	30.0
30- Drawn new plans for improving my professional career	17.8	48.3	33.9
31- Participated in cultural and social activities	14.4	46.1	39.5
32- Realized the importance of equal opportunities in the society	19.4	47.8	32.8
33- Become able to match between my abilities and ambitions	19.4	47.8	32.8
34- Acquired the critical sense of judgment	16.7	48.3	35.0
35- Obtained the ability of problem solving	20.0	48.3	31.7
36- Appreciated the values of professional and moral commitment	25.0	54.4	20.6
37- Understood the importance of training for increasing competency	25.0	49.4	256
38- Sought constantly to be diligent and creative in study and work	26.7	49.4	23.9
39- Decided to reconsider the priorities in my daily agenda	21.7	48.3	30.0
40- Realized that every one should have a right for career development	28.3	49.4	22.3

Subscale	**Mean**	**Item No.**
Equity	21.16	**1, 7, 8, 17, 22, 28, 29, 32, 33, 40**
Productivity	21.20	**2, 5, 10, 14, 16, 20, 26, 30, 37, 39**
Sustainability	21.74	**4, 6, 9, 11, 13, 15, 23, 34, 35, 38**
Empowerment	21.44	**3, 12, 18, 19, 21, 24, 25, 27, 31, 36**
Whole Scale (40 items)	**85.55**	

Findings

Responses to questionnaire items showed that in-service participants believe that the College of Education at the University of Bahrain pays an adequate attention to the sustainability aspect of the professional development (M=21.74). This is demonstrated by high percentages of students who considered that it encouraged them to be diligent and creative at work (76.1%), and gave them the opportunity for continuous acquisition of knowledge through thoughtful reading of relevant literature in the field of specialization (75.6%). The least contribution of the program is seen in the aspect of critical judgment (65.0%) and collective decision-making (66.7%).

The Empowerment aspect of the professional development programs was clearly evident (M = 21.44). Upon the competition of the professional development programs, in-service teachers expressed appreciation of the values of professional and moral commitment (79.4%) and assumed the burden of responsibility in study and work (76.7%). On the other hand, a relatively smaller percentage of teachers (60.5%) believe that the programs allowed them to participate in cultural and social activities or made sense of the critical problems existing in the Bahraini society (63.9%).

In respect of the Productivity aspect of effective professional development (M = 21.20), most teachers (75.6%) agree that they gained new knowledge in their fields of specialization, and understood the importance of professional training for increasing their cognitive and work competencies (74.4%). However, a relatively fewer percentage of in-service teachers (64.5%) think that the programs increased their ability to combine study with work, or helped them in drawing new plans for improving one's professional career (66.1%).

As to the Equity aspect of effective professional development (M= 21.16), the majority of in-service teachers (77.7%) realizes that every individual has got the right for career development, and learned how to compete honestly with colleagues at work (75.0%). The least contribution of professional development programs lie in their inability to help the participants to appreciate collaboration with one's colleagues at work (60.5%) or to match between their abilities and ambitions (67.2%).

Discussion

The results of this study clearly indicate that Post Graduate and Continuing Education Programs at the College of Education in Bahrain really contribute to the sustainability and productivity aspects of effective professional development.

Most in-service teachers recognize that professional development can be more effective if an adequate attention is paid to the human aspect of professional development. Success of the professional development programs depends on how effectively they are designed to meet the needs of in-service teachers, and to assist them in matching between their ambitions and their abilities, and in participating in cultural and social life of the society (Torff et al., 2005).

The positive impact of the professional development programs on student values, thoughts and beliefs, however, is far beyond the expectations of educators. Schools of Education are not devoting sufficient time and effort to reinforce values of democracy, loyalty, ambition, and responsibility at the University campus (Lee, 2005).

This conclusion is confirmed by many researchers who demonstrated the decreasing influence of educational institutions on student's values and orientations (Al-Hashem, Karam, & Al-Musawi, 2002; Al-Musawi, 2003; Guloom, 2001).

We suggest that there are several factors that contributed to these findings. Colleges of Education in the Arab Gulf States were mainly occupied with building themselves as strong educational institutions whose first priority was to deliver knowledge and skills necessary for the students to perform specific professions and careers required by the society. The tangible

accomplishments of the Gulf institutions of higher education in this area, however, were at the expense of the emotional and moral aspects of education.

One of the striking features of the courses taught at the Colleges of Education is their strong emphasis on the curriculum and various methods of subject matter teaching. College teachers do not usually devote enough efforts to reorient the content of the taught courses in a way that would enliven conversations and activities intended to reshape the student's thoughts and beliefs about volunteering, democracy, citizenship, loyalty and other values (Al-Mutawa & Al-Furaih, (2001).

Accompanied by deep socioeconomic changes in peoples' lives and ways of thinking, the technological advances in the Arab Gulf States inspired observable changes in the system of values in the Gulf societies that led to the priority of modern values over traditional and self-transcendence values.

This line of argument confirms the notion that prospective teachers' perceptions of and orientations to the values they are embracing might be shaped by belief systems beyond the immediate influence of teacher educators (Liaw, 2009; Meister, 2010).

Furthermore, when students are confronted with their University teacher's ideas, beliefs and values over a short time span, there is little opportunity for reflection and discussion. Future teachers need time and support to understand the intricacies of values such as democracy, equality and citizenship, given their relatively weak understanding of the theoretical foundations of human values in the contemporary age.

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THE PEDAGOGY OF TEACHER EDUCATORS: CONCEPTIONS OF MODELLING AS A STRATEGY IN TEACHER EDUCATION

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Abstract
Initial teacher education programmes often include student teachers in formal taught sessions facilitated by a teacher educator as well as more informal workplace learning from teaching experience. The formal taught sessions provide opportunities to foreground the student teachers' experiences as learners and teacher educators often use 'modelling' as a strategy. This study focuses on the conceptions of modelling held by teacher educators in two different workplace settings and the influence of context on their pedagogy. In particular it highlights the need for them to clarify a shared language and approach to modelling that enhances the learning of their student teachers.

Keywords: teacher educator; modelling; congruent teaching

Introduction

Becoming a teacher is a complex learning process involving knowing, doing and being and it requires a sophisticated pedagogy from teacher educators. During initial professional education programmes student teachers are 'learning to teach' and 'teaching to learn' (Loughran, 2006) and this signals the boundary-crossing that they are involved in when they move from formal taught teacher education sessions to teach in their own classrooms or other workplace settings. However there is debate around the value to student teachers of formal taught sessions compared to informal workplace learning from their teaching practice. In the UK the majority of teacher education programmes currently include two inter-related strands, formal taught sessions with a tutor and more informal work-based learning supported by an experienced teacher acting as mentor. Within this approach teacher educators working in more formal settings use a range of strategies to build links between taught sessions and the workplace learning strand. One of these strategies is often referred to as 'modelling' but this is a contested term with a range of possible interpretations.

This paper aims to provoke further thinking and research on modelling as a strategy within the pedagogy of teacher education and on the understanding of teacher educator pedagogy as a social and situated practice. It engages with the literature on modelling in teacher education to present current thinking within a single framework. It then draws on two empirical studies, both based on interviews with teacher educators, to highlight the varied conceptions of modelling held by teacher educators in different workplace contexts within the UK. It argues that teacher educators within their teams need to develop a shared language and approach for modelling that helps their student teachers to fully understand and benefit from the strategy.

A complex pedagogy

This section discusses some of the complexities of teacher education so that the following section, which engages with modelling as a strategy, can be understood within the broader pedagogy of teacher educators.

Taylor (2008) investigates conceptions of 'learning to teach' held by student teachers, university based teacher educators, and schools based teacher mentors, within a UK university-schools partnership. To some extent the study aligned the conceptions held with those identified in previous phenomenographic research across a range of higher education students and lecturers (Kember, 1997). Her analysis of questionnaire and interview data identifies four ways of understanding 'learning to teach' but arguably the most sophisticated conception identified went beyond transmission and apprenticeship to consider the 'student as teacher and learner'. This conception of learning to teach 'focuses in a holistic way on student learning' and 'enabling students to think critically and originally, question existing practices and explore new principles' (Taylor, 2008: 78). It is similar to Kember's (1997) 'conceptual change' category. This conception of student as teacher and learner has resonance with Loughran's idea of student teachers being involved in both 'learning to teach' and 'teaching to learn' (2006). However this leaves a key challenge for teacher education programmes of building links between formal taught sessions and workplace learning through teaching practice.

The need to link from formal learning to practice, a key challenge for all programmes of professional education, is not adequately captured by the metaphor of 'transfer of learning'. Transfer implies knowledge gained through acquisition and movement of that knowledge. Learning to teach is more sufficiently described as 'becoming within a transitional process of boundary-crossing' (Hager & Hodkinson, 2009, p. 635). This metaphor is more useful as it sees the student teacher developing their practice and identity as a teacher and crossing boundaries between formal learning settings and their own classroom as well as between the different workplace settings experienced during their programme. The becoming a teacher and boundary crossing metaphor is more aligned with situated learning perspectives (Lave & Wenger, 1991; Wenger, 1998) which emphasise the significance of context and the social nature of workplace learning. Student teachers are developing the knowledge or 'knowing' of a professional and from a socio-cultural perspective this can be considered to be mediated, situated, provisional, pragmatic and contested (Blackler, 1995). Much of the professional learning of the student teachers is likely to arise within the workplace and to be social and situated (Lave & Wenger, 1991; Wenger, 1998) but formal learning also contributes (Fuller et al., 2005).

The knowledge or professional knowing of teachers is complex and contested (Calderhead, 1988; Leach & Moon, 2000; Shulman & Shulman, 2004; Ellis, 2007) and the pedagogy of teacher education reflects that complexity. The multiple purposes of teacher educators mean that within a formal session they may introduce a key aspect of pedagogy but they might do this within the context of teaching a school curriculum subject. In this situation the student teacher is learning about teaching strategies and related learning theory but also aspects of the subject discipline and the pedagogy of the curriculum subject. In a particular learning activity the teacher educator may choose to foreground a particular element of this complex mixture but it may be helpful to consider these multiple purposes as 'layers' within the pedagogy of teacher education (Boyd & Harris, 2010).

Combining Loughran's 'learning to teach' and 'teaching to learn (2006) with these multiple layers of purpose begins to capture the complexity of teacher education. A question arises as to what extent student teachers are able to handle this complexity. Both teacher educator and student teacher need to be aware of the layers of purpose within a formal session and explicit about which of them they are foregrounding at any one time. Of course discussion of a teaching and learning issue will often range across different layers and that is to be welcomed, but it may lead to confusion rather than clarity if the discussants are not aware of the richness and complexity of the session. For example, the use of artefacts in teacher education sessions may cause confusion for student teachers if they are unsure about the purpose (Ellis et al., 2011).

A central element of becoming a teacher is to learn to see teaching from the perspective of the learners. This is reflected in the pedagogy of teacher education through the adoption of enquiry

based approaches. The completion of small scale action research by student teachers usually includes gathering and analysis of pupil voice together with other evidence of learning. The critical analysis and engagement with literature that action research requires is intended to help student teachers become critical thinkers who are sufficiently confident to question current practice and their own embedded conceptions of teaching which often may be focused on teaching as telling and learning as transmissive. Modelling by teacher educators appears to offer a strategy that introduces an enquiry based approach to professional learning and it takes advantage of the fact that the student teacher is a learner.

A framework for modelling by teacher educators

This section will now focus on modelling itself as a strategy within pedagogy for teacher education. This engagement with the literature on modelling is intended to provide a rationale for Figure 1, which is proposed as a framework that represents current thinking on the strategy. The framework represents intentional modelling by teacher educators whilst it acknowledges that all teacher education experiences are likely to have some influence on the practice of student teachers.

The basic concept of modelling in teacher education is summarised by the statement that **'**How I teach IS the message' (Russell, 1997) and more recently this has been referred to as 'congruent teaching' (Swennen, Lunenberg, & Korthagen, 2008). Teaching is congruent when it models effective teaching and learning strategies that student teachers will be able to reconstruct in their own classrooms. The congruent teaching may also display values held by the teacher (Willemse, Lunenberg, & Korthagen, 2005). A problem with using this basic concept is that the student teachers may not hear the message. They may be blissfully unaware that the teacher educator is modelling. In addition this basic concept appears to be based on an uncritical acceptance of 'good practice', that there are effective teaching strategies and learning to teach is simply building a repertoire of those techniques and applying them in your classroom practice. In the proposed framework (figure 1) for modelling based on the literature, the level of modelling labelled as 'congruent teaching' (Swennen, Lunenberg, & Korthagen, 2008) relies on the student teacher working alone to unpack the approach of the teacher educator.

Some teacher educators use 'self conscious narrative' in order to introduce explicit modelling into their taught sessions. They 'step out' of the teacher education session and explicitly reflect in front of the student teachers by thinking aloud on their design and facilitation of the session. The idea of 'stepping out' was inspired by Fowler in the French Lieutenant's Woman (Wood & Geddis, 1999) when the novel is interrupted by reflection on the author's intentions. This kind of explicit modelling is not only modelling teaching strategies and drawing the student teachers' attention to them, it is also modelling reflective practice by a teacher, although the practice involved is that of a higher education teacher. It can be argued that the modelling of being a critically reflective teacher is a higher level conception of modelling that moves beyond congruent teaching and this is reflected in figure 1.

Within explicit modelling some teacher educators attempt to link their reflections to learning theory and this is identified as level 3 of modelling within figure 1 (Lunenberg, Korthagen, & Swennen, 2007; Swennen, Lunenberg, & Korthagen, 2008). Level 4 in the modelling framework involves asking the student teachers to consider their own classroom practice in relation to the teaching strategy modelled and the points raised in the teacher educator's reflection (Lunenberg, Korthagen, & Swennen, 2007; Swennen, Lunenberg, & Korthagen, 2008).

Table 1. *A framework for modelling in teacher education based on the literature*

Modelling in Teacher Education
LEVEL ONE: Congruent teaching that models strategies and values: the teacher educator uses strategies and demonstrates professional values that reflect 'good practice' in facilitation of adult learning but may have some relevance to the context within which the student teachers will be teaching. This approach relies on the experience of that teaching to influence the emerging pedagogy of student teachers and subsequently their practice in classrooms. The teacher educator may facilitate metacognitive thinking by student teachers in the plenary of the formal taught sessions.
LEVEL TWO: Explicit modelling of critical reflection on practice: the teacher educator uses ways to explain and evaluate, in discussion with the student teachers, their design and facilitation of the taught session and the underlying values as an example of adult education. The teacher educator may 'step out' of the session and 'think aloud' in explaining and critically reflecting on their practice in the design and facilitation of the taught session. Co-teaching may be used to create a reflective dialogue between two teacher educators before opening up a discussion with student teachers. This explicit reflection models 'teacher self evaluation' and is designed to encourage reflective learning by student teachers in relation to their own teaching practice. It is used to provide insight for student teachers into the complexity of teaching and the importance of evaluation focused on learning outcomes and of trying to understand the learners' perspective.
LEVEL THREE: Linking practical wisdom to abstract theory: the teacher educator extends their explicit modelling to make some connections between the practical choices they have made in design and facilitation of the session, representing their practical wisdom as a teacher, and relevant propositional knowledge (abstract theory). The teacher educator is modelling the evaluation and application of abstract theory to the development of practice. This level raises the quality of teacher self evaluation being modelled to become more critical reflection that is capable of driving professional learning and change in practice.
LEVEL FOUR: Reconstruction by student teachers: the teacher educator may introduce an activity that requires student teachers to reflect on their own classroom practice in response to the strategy being modelled. The student teachers begin to consider how they may be able to reconstruct the approaches to teaching or professional values that have been modelled within their own classroom practice. The context of their teaching practice, including the educational setting and the nature of the learners, is likely to mean that significant work will be required to identify the implications of the modelling for their own practice.

It should be noted that in the proposed framework set out in figure 1 the levels 3 and 4 are activities that build from explicit modelling, that is not to deny that they may also be used by teacher educators in other situations.

Questioning modelling

This section considers some of the problematic issues surrounding modelling as a teacher education strategy.

The literature identifies a distinct strategy in teacher education of using a 'lesson within a session'. For example in their paper Wood and Geddis (1999) focus on a teacher education session within which an example school maths 'lesson' is being taught as a kind of role taking with the tutor playing the class teacher and the student teachers playing the role of pupils. Role taking involves switching to lessons at the level of the classroom for which the student teachers are being trained. This distinguishes it from congruent teaching which is using strategies in

teacher education, a subject discipline in higher education, that have a rationale based in learning theory and may be reconstructed for use in the school classroom. Using a 'lesson within a session' is an element of modelling in teacher education that adds complexity to the situation. Much of the literature on modelling in teacher education is based on self study but a small scale empirical study argued that student teachers *experience* the teaching by their lecturer and modelling enables the teacher educator to act as a role model (Lunenberg, Korthagen, & Swennen, 2007). These researchers argue that innovation by teacher educators, made explicit through modelling, may be powerful in influencing change in the practice of their student teachers. The study used observation of teacher education sessions and then checking of the findings with the lecturer. They found only modest amounts of modelling in the practice of their sample of ten teacher educators. Another study focused on school-based teacher educators and found that congruent teaching appeared to be widespread but explicit modelling was to rare (van Velzen & Volman, 2009).

Explicit modelling as a strategy in teacher education is not straightforward and teacher educators may struggle to recognize differences between their espoused pedagogy and their actual teaching behaviours (Loughran & Berry, 2005). Collaboration and co-teaching have been found to be useful by teacher educators in developing their modelling practice (Wood & Geddis, 1999; Loughran & Berry, 2005). In a small scale study coaching support for three teacher educators increased their ability to link theory and practice in stage 3 modelling (Swennen, Lunenberg, & Korthagen, 2008).

One of the risks of explicit modelling is that in some ways it makes the teacher educator vulnerable by requiring them to reflect publicly on their practice including all its limitations (Loughran & Berry, 2005). Occasionally students and even colleagues may take advantage of this in inappropriate ways, perhaps by citing mistakes admitted by the teacher educator as part of their explicit reflection. Accepting this level of vulnerability does not appear to be an unreasonable demand on teacher educators as they clearly hold positions of power in relation to their student teachers. However in the current context of teacher education there are relatively high levels of accountability and it would not be surprising if teacher educators felt constrained in the extent to which they are willing to make themselves vulnerable through explicit reflection on their practice during modelling.

Very little work has been done on the impact of modelling on the learning and practice of student teachers. One study investigated a large number of students completing a child development course using a quasi-experimental approach contrasting student responses to a course based on lectures versus activity based learning (Struyven et al., 2010). This study found that there was no simple link between the way student teachers were taught and their classroom practice and showed considerable critical reflection and reconstruction by the student teachers. However this study appeared to focus on the impact of congruent teaching rather than explicit modelling.

The next section introduces the two small scale studies that will be used to investigate the proposed framework for modelling and to consider some of the problematic issues surrounding its use in teacher education programmes.

Methodology

This paper focuses on the espoused practice of teacher educators. It uses an interpretive qualitative analysis of two data sets consisting of semi-structured interviews collected during exploratory studies of teacher educator practice in two different contexts. This paper draws on data from two research projects that are reported more fully elsewhere including giving voice to the teacher educator participants (Boyd & Harris, 2010; Boyd, Allan, & Reale, forthcoming).

One group of teacher educators (n=12) are based in Further Education (FE) colleges in the north of England and are training teachers to work in the lifelong learning sector or post compulsory

phase of education. This group of teacher educators are providing Higher Education (HE) teacher education programmes but in Further Education College contexts. For the purposes of this paper they will therefore be referred to as 'HE in FE teacher educators'. The student teachers taught by this group are specialists in a wide range of subjects and may teach in the College or in the workplaces of partnership employer organisations. Many of these student teachers already have an established identity within their vocational area for example as a bricklayer, hairdresser, police officer and so on. The study of these HE in FE teacher educators used semi-structured interviews of twelve lecturers based in further education colleges across the north of England. The lecturers had a range of professional experience in teacher education combined with prior vocational and teaching experience in colleges. The schedule for the semi-structured interviews included a prompt question asking about the place of modelling within their approach to teaching student teachers and this provided a data source for the current paper. A more complete report on this study of teacher educators focuses on their workplace context and gives voice to the participants (Boyd, Allan, & Reale, forthcoming).

The second group of teacher educators are based in a university department and train teachers for early years and school age phases up to secondary school level, which in England means 11 to 18 year olds. For the purposes of this paper these teacher educators are referred to as 'university based teacher educators'. The student teachers of this group are a mixture of undergraduates on three year degree programmes and postgraduates on one year courses. The study of these university based teacher educators used semi-structured interviews of nine lecturers in a longitudinal case study of a large teacher education university department. The lecturers had between five and ten years of experience in higher education roles combined with prior teaching experience in schools. The interview process asked them to bring and discuss a session plan or teaching resource and to discuss the relevant teacher education session in relation to their chosen teaching strategies. The first phase of this study is reported in full in Boyd & Harris (2010) and a paper on the longitudinal study will provide a full account and give voice to the teacher educators (Boyd & Harris, forthcoming).

The approach to analysis in the current study involved applying the framework for modelling proposed in Table 1 to the interview data. Using reading and re-reading and a constant comparative approach the data was coded in relation to the framework. However open coding was also used to capture relevant themes emerging from the data. This paper focuses on conceptions of modelling and a more complete analysis of the interviews, including giving voice to participants, will be provided by other papers currently in progress. Approval for both projects was gained through the University of Cumbria ethical clearance procedures.

Findings

The findings of the qualitative analysis are related directly to the analytical framework of modelling in teacher education (Table 1). The findings do however include emerging themes or nuances that have emerged during analysis as well as a comparison between the two groups of teacher educators.

Congruent teaching

Both groups of teacher educators recognised their use of congruent teaching. They claimed to employ congruent teaching strategies, approaches and behaviours that they hoped their student teachers would experience and apply, with different levels of reconstruction required, in their own classrooms and wider practice. The main focus of the teacher educators is on modelling of a range of strategies that may be used directly or after reconstruction by their student teachers in their own classrooms.

…as a Teacher Educator I want to be using the best, up to date, current practice in my teaching. Anyone who comes into my class I would like to think will see examples of to coin a better phrase 'Rolls Royce teaching' so in every way using all the inclusive practice, differentiating where I can but also embracing the best current practice as regards technologies.

[HE in FE teacher educator]

HE in FE teacher educators training teachers for post compulsory phase hold one conception of modelling as demonstrating what is accepted in their institution as 'good practice' in teaching:

…College has its own Teaching and Learning Model [for Further Education] that, as teacher educators, we are expected to promote…

[HE in FE teacher educator]

This model of 'good practice' is usually seen as being at the level of the College but also strongly influenced by the requirements and perspective of the government appointed quality review body who observe teaching during inspection visits. Although these teacher educators mainly see modelling in relation to teaching strategies some also claim to model values such as being student-centred or supporting the diversity of learners. Some HE in FE teacher educators did not use the term 'modelling' but when probed they described elements of congruent teaching as part of their practice. Some HE in FE teacher educators considered modelling to be only appropriate to student teachers in the early stages of training. The teacher educators linked their constrained use of modelling to the fact that many of their student teachers are in vocational subjects and teach in practical workshops and workplaces. They did not consider their modelling of taught sessions to be directly relevant to these student teachers. In some ways this reflected their limited conception of modelling which was often focused on demonstrating 'good practice' in classroom teaching rather than demonstrating critical reflection as a teacher.

University based teacher educators training teachers for school age phases often introduced the term 'modelling' unprompted into discussion of their taught sessions and were familiar with the term even if they did hold a varied range of conceptions of what it involves. These teacher educators frequently used a lesson within a session. In these cases to some degree they appear to take roles and treat the group of student teachers as a class of pupils in order to demonstrate school teaching and school classroom management:

...so I tended to model effective practice in secondary (school) classes, but I'm still wondering if modelling that is necessarily the right way that adults learn…

[university teacher educator]

These teacher educators do not distinguish clearly in their descriptions of practice between modelling and role taking.

Members of both groups of teacher educators claim to sometimes include an element of metacognition, learning to learn, for example in the plenary of their taught sessions. However for the purposes of analysis this is not considered to be explicit modelling unless some kind of stepping out by the tutor is described in which the process of metacognition is reflected on as a teaching strategy. In other words there needs to be an additional layer to the tutor's approach in order for the practice to become explicit modelling. In part this is related to the lack of distinction made by the teacher educators between their own higher education practice and the academic and age phase level of teaching by their student teachers. If this distinction is not made by the tutors in their description of modelling they are not considered to be using explicit

modelling. This lack of distinction by tutors appears likely to confuse the student teachers because the purpose of the teacher educator within a complex pedagogy is not made clear to the learner.

Explicit modelling

About half the members of both groups of teacher educators describe explicit modelling within their teacher education practice:

...it's very easy to watch someone who knows what they're doing and who's good at it but not actually realise what they're doing...so I try and make it as explicit as I possibly can...what I'm doing, how I'm doing it, why I'm doing it which is the most important thing…

[university teacher educator]

These teacher educators claim that to different degrees they think out loud and unpack the session or a learning activity within it to explain to the student teachers the choices they made in planning and facilitation. This involves some level of 'stepping out' of the taught session and some emphasis on the impact on student teachers as learners.

Linking practical wisdom to abstract learning theory

Only two of the teacher educators claimed to link their explicit reflection to learning theory and most appear to stay at the level of explaining their practice in terms of practical wisdom. One of the colleagues explicitly introducing learning theory explained that they would specifically consider this in planning so that their choice of strategy for a session would reflect the learning theory content of the session:

The organisation [and] management of the session mirrors the content, so for example if I'm doing a session on Social Constructivism…to actually get the students to talk to each other to construct their own knowledge as part of the session…

[university teacher educator]

Many of the teacher educators referred to 'practice what we preach' as an explanation of this common sense approach, this is really part of their practice of congruent teaching. For example many of the teacher educators would use assessment for learning strategies in a session whose content is assessment for learning. However, only one teacher educator, unprompted in the interviews, claimed that they would include reference to learning theory in their explicit modelling.

Reconstruction

In the data there was little significant evidence of teacher educators finding time for activities in which the student teachers were required to use critical reflection and reconstruct (or reject) the modelled strategy in relation to their own classroom practice:

…it will either be through questioning…why do you think? - or it will be me actually explaining why I'm carrying out a particular task - it's teacher education - I'm explaining the process and the advantages so that the group can not only get that those benefits which I've just alluded to but also in terms of perhaps applying it to their own teaching…

[HE in FE teacher educator]

The teacher educators appeared to expect student teachers to undertake this kind of reconstruction during their planning for teaching or their reflection between taught sessions or their work on written assignments. This reconstruction is the underlying purpose and intended outcome of the modelling and is at the heart of realistic teacher education (Korthagen et al., 2001) so that its absence from teacher educator practice seems questionable. In this sense then taught teacher education sessions might consist of a content focused session or activity using congruent teaching followed or interrupted by modelling activity working through all four levels of the framework.

Discussion

There are at least three issues arising from the analysis of teacher educator practice that deserve further consideration: clarifying how teaching may be congruent; extending explicit modelling; and the influence of teacher educator workplace context on their pedagogy.

Clarifying congruent teaching

Some of the university based teacher educators revealed a lack of distinction between role taking and congruent teaching and for them at least there appears to be considerable grey area between these two activities. In a closely related aspect they also show a blurring between demonstrating 'good practice' in teaching for the particular target age phase and using appropriate strategies for their own practice which is higher education for adults on a professional programme. This suggests that individual teacher educators, and perhaps more importantly their teaching teams, need to more explicitly develop their pedagogy and clarify the place of role play, of demonstrating good practice and of using suitable strategies for higher education.

The workplace context of teacher educators appears to influence their approach to modelling. This appears most clearly where leadership in further education colleges sets out expectations or models for teaching and the HE in FE teacher educators feel obliged to demonstrate these for student teachers. But this may also be partly because further education colleges are places of adult education so that there is less distance between the teacher education sessions and the sessions taught by their student teachers. The university based teacher educators seem to emphasise role taking more, partly because they are preparing student teachers for school age phases. In both cases there seems to be a need for more clarity by teacher educators about the purpose of chosen strategies and a more explicit explanation to be provided to their student teachers. In their study Lunenberg et al. (2007) do not collect data on congruent teaching not least because it is difficult to identify. But the current study using espoused pedagogy of teacher educators suggests that the concept of congruent teaching may be interpreted very differently by teacher educators and this might undermine development of explicit modelling.

Extending explicit modelling

The teacher educators mostly do not claim to be extending explicit modelling to build links to learning theory and this seems a missed opportunity for developing student teacher learning as well as teacher educator professional development. A small scale study has shown that coaching does enable teacher educators to strengthen their ability to make links between their practice and theory (Swennen et al., 2008). In addition, despite the considerable modelling activity identified among the teacher educators, there does not appear to be sufficient time and support provided for reconstruction of modelled strategies by the student teachers. Learning through this activity is really the intended outcome of modelling and it may be too optimistic to expect it to happen in informal ways during student teacher reflection and planning at a later time. The study by Struyven et al. (2010) suggests that students reconstruct their learning experiences in

different ways as they move into their own classrooms and stronger support for this process by teacher educators appears to be important.
Explicit modelling appears to be a strategy for linking 'learning to teach' to 'teaching to learn' (Loughran, 2006) and so for taking advantage of the position and experiences of new teachers as learners. Modelling may also be a strategy for linking layers of learning within teacher education, for example from teacher educator learning to student teacher learning. As a speculative thought, with further investigation and development, it might help student teachers in turn to model 'being a learner' for their pupils or students.

Table 2. *A layered pedagogy for teacher education*

Teacher educator learning to teach (scholarship and research)	Teacher educator teaching to learn (critical reflection / enquiry)
Teacher educator uses explicit modelling of being a teacher learning from practice	
New teacher learning to teach (taught sessions)	New teacher teaching to learn (workplace learning)
New teacher uses explicit modelling of being a learner	
Pupil / student learning	Pupil / student learning to learn

Situated pedagogy

Whilst there are strong similarities across the two groups of teacher educators it is clear that workplace context is influencing their espoused pedagogy. This seems to be influenced by more than differences in their student teacher groups, for example the quality assurance regime also appears to be significant. Further research needs to consider teacher educators working in a range of different workplaces including those working in small units and school based provision. It probably needs to include observation of teacher education sessions and analysis of student teacher perspectives. The influence of workplace context on the pedagogy of teacher educators has been revealed in the analysis and shows that support for the professional development of teacher educators needs to acknowledge this issue.

Conclusions

Overall the analysis indicates that the teacher educators in this study hold a range of conceptions of modelling as a strategy for teacher education and this supports the conclusion reached by Lunenberg, Korthagen and Swennen (2007) that there is much development work to do within the community of teacher educators on this issue. Part of this work is to identify what the term congruent teaching means and more clearly agree how it relates to demonstration of 'good practice'. The proposed framework, based on the existing literature, appears to work effectively as an analytical frame for investigating intentional modelling by teacher educators. The findings also indicate that the workplace contexts of different groups of teacher educators shapes their professional learning and pedagogy and need to be considered carefully in the development of knowledge and practice of modelling.
This paper contributes to the literature on modelling in teacher education by supporting previous study findings showing that congruent teaching appears to be widespread but explicit modelling is found far less frequently. The paper highlights the variation in conceptions of modelling held by teacher educators. It identifies the need for teacher educators to clarify their interpretation and use of congruent teaching. It also points to the significance of different workplace contexts of teacher educators. It proposes a layered pedagogy for teacher education

with modelling helping to link the layers as well as provoking reconstruction between 'learning to teach' across to 'teaching to learn' (Loughran, 2006). It argues that Russell's helpful statement of 'How I teach IS the message' (1997) might need to be refined to the perhaps less exciting but more precise 'How I continue to learn to teach IS the message'. Further research development work is needed on the impact of explicit modelling on the learning and practice of new teachers because modelling appears to be a strategy in teacher education that takes advantage of the explicit position and experience of the student teacher as a learner.

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THE PROFESSIONAL DISPOSITIONS OF PRESERVICE AND INSERVICE TEACHER EDUCATORS: A COMPARATIVE STUDY

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Abstract
In the research on teacher education, there is relatively less written on the role of inservice teacher educators than there is on the role of preservice teacher educators, and yet in many countries these jobs are enacted quite differently to each other as professional activities. This paper reports a study comparing the professional attitudes and dispositions - the ways in which they see themselves in their jobs - of these two groups of teacher educators. Analysing their stated beliefs and practices through the lens of activity theory, the study concludes that both groups saw themselves essentially as facilitators of the learning of other professional colleagues, but that preservice teacher educators felt much more constrained in being able to enact what they believe to be effective facilitative practices than their inservice colleagues.

Keywords*:* inservice teacher education, initial teacher education, professional dispositions, professional development

Introduction

There is a growing acknowledgement in the literature on teacher education that facilitating critical reflection in teachers, rather than 'teaching class', has become a normative or even primary function of the teacher educator (Brookfield, 1988; Guskey, 2003; Munby & Russell; Timperley, Wilson, Barrar, & Fung, 2007; Loughran, Hamilton, LaBoskey, & Russell, 2004). Teacher educators are increasingly seen as mentors of professional peers, rather than deliverers of skill development courses or the latest curriculum and policy information. The knowledge base of teacher education is not just a knowledge of curriculum or pedagogy but also a knowledge of the principles and practice of 'reflection' and professional mentorship.

There is also a growing, but less often investigated, acknowledgement of the existence of two basic forms of teacher education – one involving the initial preparation for teaching of neophyte/student teachers (preservice teacher education); and one involving the continuing professional development of experienced teachers throughout their careers (inservice teacher education) (Higgins, Parsons, & Bonne, 2011; Fransson, von Lakerfeld, & Rohtma, 2011; Davey & Ham, 2009). Moreover, in a number of jurisdictions, including our own, there has long been something of a professional divide between these two professional groups – the first teaching formal courses for a teaching qualification in the academy; the second working with individuals or small groups of colleagues in schools.

At the broadest level, the first of these acknowledgements implies that teacher educators' professional learning needs may be in some fundamental ways different to those of other academic disciplines, with the latters' focus on accumulating discipline-based content knowledge rather than improving facilitative practice; while the second implies that the professional learning needs of largely field-based inservice teacher educators may in some important ways differ from those of largely academy classroom-based preservice teacher educators. This study compared the professional dispositions of two groups of teacher

educators, one of preservice teacher educators and one of inservice teacher educators, both using collective forms of self-study and action research as their primary mode of professional learning.

Overview of the project and research

For three years we, the authors, had been involved in a national study of teacher educator's professional learning called the Inservice Teacher Educators Project, or INSTEP. This study investigated the professional learning of School Advisors and other inservice teacher educators in New Zealand, and developed some theoretical models for professional learning among this group of teacher educators (see: NZ Ministry of Education, 2007; Higgins & Parsons, 2011). As a follow-up to the INSTEP studies, we obtained a small grant to extend our INSTEP work into an investigation of some of these theoretical models to our colleagues working in preservice teacher education. This 'Preservice Teacher Education Project', or PRESTEP, was comprised of a developmental element and a research element. The developmental element consisted of supporting a group of preservice teacher educators (PSTEs) to engage in collective reflective self-studies aimed at improving aspects of their own professional practice, applying and testing facilitation and reflective practice models trialled during the INSTEP project. The research element, reported here, compared preservice and inservice teacher education as professional activities. The key question framing the research element of the PRESTEP project was, thus: What elements of the professional approaches and attitudes to their work of preservice teacher educators are analogous with, or different from, those of inservice teacher educators?

The extension of INSTEP's focus on inservice teacher educators to include a study of a group from the preservice teacher education community was felt to be important for a number of reasons. As a consequence of the absorption of teacher education into the universities over the last decade, and the significant increase in contractual professional development programmes commissioned by the Ministry through external providers, many teacher educators are increasingly taking roles in both preservice and inservice teacher education, or swapping between them, during their careers.

The organisational shift, moreover, also means that *both* preservice and inservice teacher educators are undergoing a common sea change with respect to (re)defining their purposes, their professional cultures, and what it is about their practices that can/needs to be improved or changed. In New Zealand, as elsewhere, this sea change is occurring as teacher education moves from its traditional location in independent Colleges of Education into the academy and/or private enterprise. Provision of preservice teacher education is now (2012) predominantly, but not exclusively, provided under the aegis of the universities, while provision of inservice education is more evenly split between the universities and contractors in the private sector. Both arms of teacher education, therefore, are currently in a state of significant redefinition and re-enculturation, as they become increasingly subject to, and defined by, the affordances and contradictions of the respective task cultures and professional learning expectations of these organisations.

Methodology

In the PRESTEP project, two self-study 'pods' of teacher educators (one 'pod' of inservice teacher educators and one 'pod' of preservice teacher educators), employed collaborative action research/self-study modes of professional learning to investigate and improve some aspect of their respective professional practices. The participating PSTEs and ISTEs contributed to the comparative study reported here through an ongoing workshop and interview process in which they critically reflected on the similarities and differences between their professional practices, and on their respective experiences of self-study as 'effective' professional learning. We

coordinated the workshops and conducted the interview/reflection sessions as the research mentors for the two groups.

The methodology for the research was broadly ethnographic in that it involved a participant analysis of the recorded archives of a series of collaborative and individual professional learning 'events' (workshops, action research planning sessions, stimulated recall sessions, formal interviews, etc). This involved the researchers working in a mentoring role with the groups over an academic year. The transcribed archives of these various learning conversations, interviews and workshops provided the great bulk of the discursive data analysed and reported below.

The preservice 'pod' of seven teacher educators consisted of five preservice teacher educators from the School of Literacies and Arts in Education at a University College of Education, and a researcher/mentor (Ronnie). In all, the preservice group met and worked with their mentor eight times over the year, five times as a group for half-day or whole-day workshops, and three times each in individual sessions with their self-study mentor.

The inservice 'pod' in the study consisted of a group of seven Early Childhood Education (ECE) Facilitators in a national teacher professional development programme for Kindergartens and Early Childhood Centres. This group met regularly with their research mentor (Vince) working in the same capacity as the research mentor of the preservice 'pod'. Additional triangulating data on the ISTE perspective was obtained from periodic interviews with Advisers and Facilitators who had taken part in previous phases of INSTEP. In all, the Early Childhood faciltator group met five times over the year for formal whole-day workshops, and the former INSTEP group met together twice. In addition, the ECE facilitators met two to three times as individuals or pairs for less formal reflection sessions with their self-study mentor.

To maximise the opportunity for inservice-preservice comparison, the members of the PSTE 'pod' were selected to ensure that at least two of the teacher educators involved had both inservice and preservice teacher education experience, and that there was at least two from each of a primary and a secondary teaching background. In addition to ensuring a mix of preservice and inservice experience in the group, and a mix of primary and secondary teacher educators, it was also felt to be desirable from the University's perspective to have a mix of more experienced and less experienced researchers in the preservice group, as the University wished to use the project as an opportunity for less experienced researchers to undertake guided professional development to enhance their research skills and profile. It was expected that the PSTE participants would use their designated 'research leave' for the project and make this their major research focus for the year.

Data collection

The main data collection for the research study occurred during the 8-10 days of reflective workshops and interviews undertaken by the respective PSTE and ISTE pods. Each of those workshops not only provided support to the pod members in planning and conducting their own self-studies and professional learning activity, but also sought the participants' reflections on, and reviewed their evidence in respect of, the two key questions guiding the PRESTEP research. For both the PSTE group and the ISTE groups, these workshops and discussions were recorded and relevant parts of each transcribed for analysis.

Specifically, the data sources included:

PSTE perspectives and experience		ISTE perspectives and experience
- Recorded archives of 5 group workshop sessions and learning conversations on PSTEs' action research projects. (approx. bi-monthly from March to December 2008) - Records and transcripts from 2-3 formal interviews between each individual PSTE and either or both researchers - PSTEs Teaching Perspective Inventory (TPI) profiles and their reflections on these. - Researcher field notes from all of the workshops and meetings above.		- Archives of 4 group learning conversations held during professional development workshops the ISTE's conducted as part of their programme of professional development as facilitators over 2008. - A recorded discussion among members of the INSTEP Consolidation Phase National Facilitation group comparing ISTE and PSTE roles. - ISTE Teaching Perspective Inventory (TPI) profiles and their personal reflections on these provided by 5 ECE Facilitators and 4 Regional Facilitators from the previous CORE Education INSTEP 'pod'. - Researcher field notes from all of the workshops and meetings above.

Analysis

Data and evidence on how the two groups of teacher educators regarded their jobs as similar and/or different to each other came from three sources: responses to questions and reflective conversations specifically directed at those similarities and differences during group workshops and individual interviews; a general discourse analysis of the various 'puzzles of practice' and current professional 'preoccupations' that the groups highlighted on the various occasions they met through the year; and their responses to, and reflections on, a Teaching Perspectives Inventory (TPI) (Pratt & Collins, 2003-8) that each of the PSTEs and ISTEs completed and used as a stimulated recall stimulus at the final reflective workshops. The discursive archives of these conversations were analysed using constant comparison and theme identification techniques (Strauss and Corbin, 1990) and are framed within an Activity Theory (Engestrom et al., 2005) perspective in the body of this paper.

Findings

Inservice and preservice teacher educators' work as professional activity

ISTEs' and PSTEs' Descriptions of their Professional Practices

When specifically asked about the similarities and differences between PSTEs' and ISTEs' jobs and functions, both groups highlighted a broadly similar range of such similarities and differences, and both groups tended to see the same things as each other as either a difference or a similarity. Examples of the range of responses that ISTEs and PSTEs gave to direct questions about similarities and differences in each other's jobs are listed in the Table below.

Similarities – ISTE perspective	**Similarities – PSTE perspective**
"The same expertise about pedagogy and teaching and learning" "Both have a knowledge of theories of learning" "The same focus on developing teachers as professionals" "Both ultimately concerned with, and measured by, student achievement" "We both deal with the tension between coverage and deep understanding – whether to stay broad and shallow or go narrow and deep" "Both learner-focused" "We both support learners" "Learner 'well-being' is the ultimate concern for both." "We both aim at developing reflective practice and a desire for learning in others" "Both have a culture of improvement – there's always room for improvement"	"We connect with the same range of communities and come from similar professional backgrounds" "We have a similar knowledge base – curriculum, forms of pedagogy, etc" "We both need to stay current with theory and curriculum developments" "We both support learners and both have a role as facilitators of learning" "We both work with adults" "Both are trying to break down barriers and challenging beliefs about learning" "We both model good practice" "Enabling others to engage in their own learning processes … scaffolding their learning and moving them on" "Both bridge theory and practice" "Being able to build relationships… and create trust"
Differences – ISTE perspectives	**Differences – PSTE perspectives**
"Working with neophytes versus experienced professionals – students bring different prior experiences to the table" "Neophytes tend to be less reflective and less familiar with the tools of reflection" "Inservice can directly affect school culture. PSTEs are much more distant from schools" "PSTEs are not as engaged with the school classroom" "ISTEs work with teachers is about better practice; PSTEs' work with students is qualification driven" "It's harder for student teachers to practise their learning while teachers are already in schools" "Different institutional cultures – PSTEs work in the culture of the university while ISTEs work closer to the culture of the schools" "Assessment for ISTEs is informal assessment of professional learning. PSTEs have more formal, summative mechanisms for assessment"	"The learners are different – ISTEs work with experienced practitioners… able to be more advanced" "ISTEs spend much more time in schools and are able to be more child focused" "Time frames are different – 1-3 year programmes in preservice versus short courses and one-off school visits" "ISTEs are accountable to the people they work with; PSTEs are accountable to the people they work for" "There are different outputs – we have to meet course objectives. Less needs-based" "PSTEs are always dealing with large groups, [whereas] there is more opportunity to individualise, coach and mentor for the ISTEs" "PSTEs have to deal with multiple influences and serve a wider variety of masters" "Different structures and work rhythms" "Different organisational cultures – universities versus schools" "Different measures of success – preservice is about assessment and grades while inservice is about evaluation and informal feedback"

In analysing these and other responses, we noted that both groups tended to describe and compare their jobs as much, if not more, in terms of its roles, relationships, beliefs and purposes, than in terms of teacher education as practical activity, organisation, content or knowledge. This was especially the case when they discussed their similarities. They did talk about both groups having a "common knowledge base", and especially the need to have expertise and knowledge about pedagogy, the curriculum and the like as elements of both jobs. But more often they emphasised the personal, 'human face' and relationship aspects of the jobs, focussing on what they were trying to achieve for their student/teachers or what kind of teacher educator they

would like to 'be', rather than the day–to-day activities they engaged in, or the things they needed to know.
They talked, for example, of their occupational similarities and differences in terms of both being "learner focussed", "concerned for learners' well-being", "committed to a culture of self-improvement", "facilitators of learning", able to "build relationships and create trust", "to develop reflective practice in others", and so on.
When discussing the differences, again there was relative consensus about what those differences might be, but also a tendency to see such differences in the mechanical, organisational and structural aspects of the job, or the functional accountabilities involved, rather than in the fundamental nature of the relationship between teacher educator and learner, in the general purpose and intent of the job, or in the knowledge and experience base required to do it well.
There was considerable commonality of perspective on what the 'person specification' for an effective ISTE or PSTE should be, and what the preferred relationship between teacher educator and their 'learners' should be, even as there was acknowledgement of the considerable organisational and functional differences in the ways in which they went about their jobs and regulated their daily work. In Activity Theory terms, they articulated more similar than different perspectives on the 'intentions', 'desired outcomes', and 'community' involved in the their jobs; but acknowledged the significant differences that existed in the 'rules', and to some extent the 'tools' and 'divisions of labour' involved.

ISTEs' and PSTEs' 'puzzles of practice'

A similar theme of the two groups identifying with each other in terms of core purpose, intentions, beliefs and relationships, but differing in available forms of implementation, is discernable in the respective 'puzzles of practice' that the two groups chose to investigate and improve as part of their involvement in the self-study aspects of the INSTEP project.
The ISTEs and PSTEs had several opportunities to highlight those aspects of their professional work that most preoccupied them, were currently most problematic or puzzling for them, or which they wanted most to improve through professional learning activities. As their form of professional learning around these puzzles or preoccupations, they engaged in formal research self-enquiries into one or more of those particular puzzles of practice over an extended period of time (up to a year). The content of those enquiry topics and their conversations around them, provide a further window into the professional dispositions, interests, and priorities of the two groups.

ISTE Action Research topics	**PSTE Self-Study topics**
How can I foster **critical reflection** in ISTE practice through 'substantive dialogue' in learning conversations	How to elicit, **articulate and challenge** student teachers' **'espoused theories'** of literacy and the teaching of literacy."
How useful is a Concerns Based Adoption Model (CBAM) in fostering **contextual responsiveness to individual needs** in learning conversations.	How to better embody **'personalised learning'** in the structure and teaching of our preservice e-learning courses." (2 people)
How can we use Social Software tools more effectively to foster **social presence and critical reflection** in online professional learning contexts	How to get more **critical reflection** from students and better manage a **'vanishing scaffold'** during Section-based mentoring conversations."
How can we promote using a combined 'Glickman-Dalton model of learning conversations respectively in fostering **collaboration and reflection** in ISTE practice	Modelling and fostering **constructive, self-efficacious reflection** in a course on personal/professional identity

Again, these tend to highlight the similarities more than the differences between them in respect of their preoccupations of practice and their professional learning needs around them. As can be seen in the summaries of the respective ISTEs and PSTEs action research topics outlined above, and in the extracts from their respective 'discourses' on their puzzles of practice below, the 'core phenomena' of interest to the two groups were clearly quite similar. Both groups were interested primarily in fostering more personalised and critically reflective approaches among their teachers/student teachers, especially through a more studied attention to the language and interactional techniques they used in those contexts. For both groups the intended outcomes of their practice with teachers and student teachers revolved around similar phenomena and themes. These included fostering criticality in reflection, meeting individual needs, challenging professional assumptions, building collaborative social relationships, and so on – themes which have been very common throughout all of the INSTEP projects involving inservice teacher educators. Like the ISTEs before them, the PSTEs were interested in learning how to move away from content-oriented, transmissive modes of interaction based on a hierarchical, 'expert-novice', relationship with their respective learner groups, towards a more reflection-oriented, developmental set of interactions, based on a collegial, critical-friends relationship.

Samples of PSTE and ISTE 'talk' about their respective puzzles of practice

PSTE - "Previous schooling experiences are key in shaping the beliefs and conceptions that preservice teachers hold about teaching. However, the major problem that we face as courses become more restricted in terms of time, and as mass lectures become more of a reality, is how do we enable student teachers to reflect deeply on their prior experiences, and be able to uncover their 'espoused theories'. I want to begin to identify effective tools which could be used to do this in a large group setting as part of the current lecturing restrictions we have.

ISTE - "Learning conversations are the means by which we articulate our core beliefs about teaching and learning, and professionally alive communities engage in substantive conversations about such pedagogy in ways that support: learning, inquiry, mutual understandings, and growth.

PSTE - "F: One issue I've got is about challenging the issues and beliefs that they have and unpacking that." Getting beyond the 'nice conversations'. It's actually about feeling uncomfortable, because that is when we challenge, that's when we make a shift and grow. For me there's always that tension between the old top heavy pouring in the knowledge and everything, versus that [other] responsibility and going into that, and seeing that that is learning. Sometimes they don't get a fair deal if they come out either affirmed or practical tips, and we get caught into that giving practical tips based on our experiences."

PSTE - "How can I make sure they understand that they are partners in the learning – that I am not going to deliver up a platter of things that they need to learn while they sit passively waiting to be served? They must be involved in the process in order to meet their individual needs!

However, it was also clear that while the central phenomena or aspects of their professional conduct that preoccupied the ISTEs and PSTEs were quite similar in focus, the respective work ***contexts*** in which they chose to investigate those phenomena were very different. Four of the five PSTEs, for example, chose to investigate puzzles of practice in the context of their formal class teaching, while only one chose to investigate their practice mentoring individual student teachers on their professional practicum placement, a part of the PSTE job that was arguably more analogous with the in-school individual mentoring typically investigated by the ISTEs. In other words, the PSTEs chose as puzzles work *contexts* where differences from the ISTEs were quite significant, but they investigated professional *practices* that were quite similar.

In discussion, the PSTEs identified two main reasons for their choice of classroom teaching as the context of their studies. The first reason was that only one in the group actually worked on

practicum placement with students whom she knew and visited more than once. The others either did not visit students on practicum placement at all in the time of their self-study, or visited only once students that they had no established relationship with by virtue of having taught them in College classes. The second even more substantive reason was that their formal classroom teaching was the area in which they felt the most tensions between the structures and systems being implemented, and the 'quality pedagogies' that they wanted to employ and improve. Their classroom teaching was the area, to paraphrase one of the PSTEs, where they felt their "being" and "believing" were "least coherent" with their "doing".

ISTEs' and PSTEs' professional perspectives

The broad conclusion we thus drew from an analysis of the PSTEs' and ISTEs' comments on the similarities and differences between the jobs, and their respective selections of puzzles of practice, was that they had very similar visions of what they would *like* their roles, practices, priorities, mentoring/pedagogical 'styles' and relationships with their teacher-learners ideally to be, but that quite different sets of institutional and professional 'culture' enablers and constraints operated on those roles, practices, pedagogies, priorities and relationships. They were, in short, doing basically the same job, and holding to similar values and philosophies, but in different organisational and operational contexts.

Further weight to the notion of sharing a common 'professional disposition' in operationally different contexts and subject to different 'rules of engagement' was provided by a comparison of PSTE and ISTE Teaching Perspective Inventory profiles (TPI) and the comments they made about these profiles.

In the last term of the year, three groups of educators were asked to complete their TPI profiles and to discuss these profiles with each other and the researchers. These groups were the 5 PSTEs, 9 ISTEs (7 Facilitators on national PD projects and 2 university-based Advisers) and 5 school teachers (3 Secondary and 2 Primary). Their respective profiles are summarised graphically in the Chart below.[4]

As can be seen in the Chart, there is a common predominance of the Nurturing *(seeing effectiveness as driven from the heart as much as the head, and based on establishing a long-term relationship with learners)* and Developmental *(planned and conducted from the individual learner's point of view)* elements among both the ISTEs' and PSTEs' profiles, and a corresponding recessiveness of the Transmission *(requiring a substantial commitment to structured action, content and subject matter)* and Social Reform elements *(seeking to change society in substantive ways or challenge dominant 'cultures')*. In the graphs, and even more so in the discussions, the ISTEs and PSTEs had about these profiles, the general pattern of perspectives that the two groups had on their respective jobs, their 'professional perspectives', were remarkably similar. The ISTE and PSTE profiles appeared much more consistent with each other than they were with the profiles of the five school teachers, and rather less variable.

Both ISTEs and PSTEs, then, tended to see their teaching/mentoring jobs as most focussed on building productive learning relationships with individual learners, acknowledging the emotionalities of building that relationship, and focussed on developing their identities as knowledgeable but, more importantly, self-critical practitioners. For both groups, 'teaching content or curriculum' and 'challenging the culture of schools' were less important aspects of the enterprise than establishing close and productive relationships and mentoring independently critical reflection.

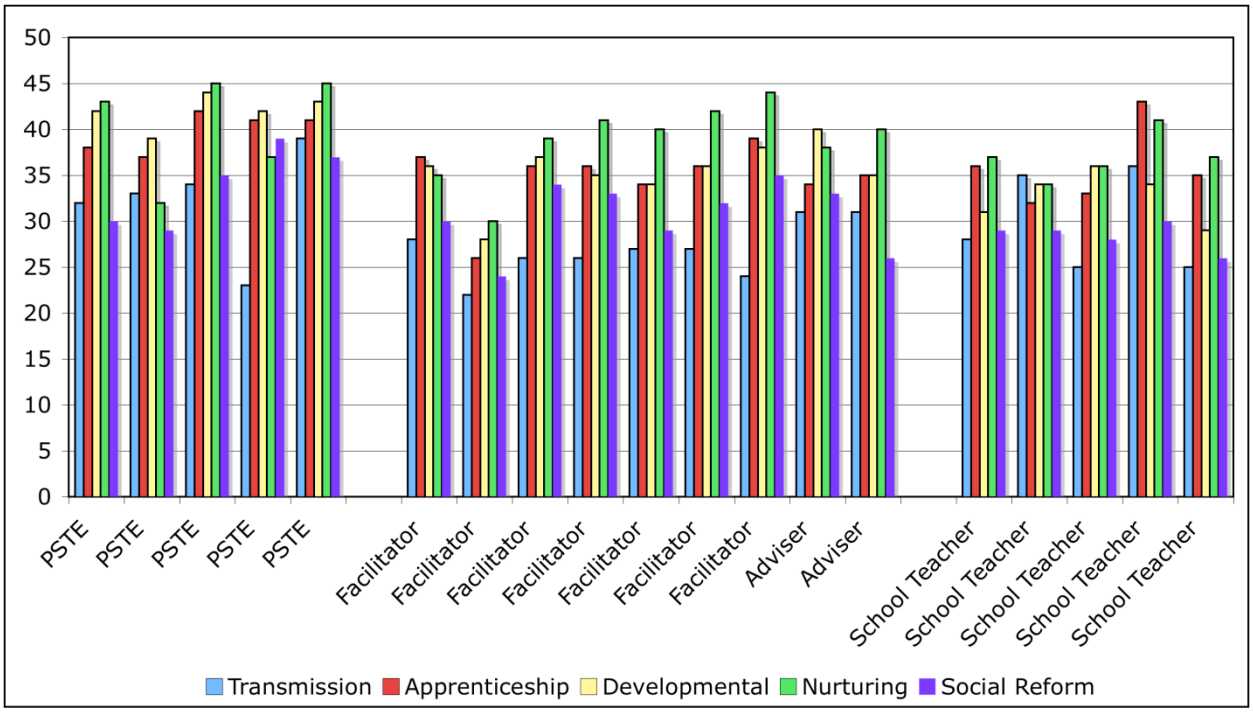

Figure 1. *PSTE and ISTE Teacher Perspectives Inventory (TPI) Profiles*

(NB: In reading the profiles a comparison of which elements are higher and lower than others within an individual's overall profile is more relevant and significant than the actual 'scores' indicated on the Y-axis. It is the balance among the elements, rather than the numeric scores, that are the indicators of a person's 'perspective').

PSTE and ISTE practice as professional 'activity'

Analysed through the discourse of Activity Theory, therefore, it would seem that the greatest points of similarity between PSTE and ISTE activity, at least as the participants in this study would ideally *like* it to be, relate to its 'intentions, 'community', 'outcomes' and to some extent, 'tools', over which they exercise some control or agency, while the greatest points of difference relate to the more institutionally determined 'rules' and 'divisions of labour' that are also at play.

The usefulness of describing ISTE and PSTE teacher education in Activity Theory terms, however, lies not so much in simply using these descriptive categories or labels to break down the broader activity into its significant component parts, as in the theory's implicit assumption that an 'effective' or 'efficient' activity system is one in which all of these various elements or component parts are *consistent with each other,* and all *positively contribute/interact* with each other to produce the 'desired outcomes'. It is less important *which* organisational rules, for example, guide ISTEs and/or PSTEs in performing their work, or even whether or not they are guided by the same rules as each other, than it is to determine whether or not those rules act as barriers or enablers to such performance, whether or not they support the goals or purposes of the enterprise and are consistent with the philosophies and values of the subjects and communities engaged in it.

A limitation of Activity Theory as an analysis tool in this regard, is that it does not of itself, automatically take account of the emotionalities of the actors around the various elements of the activity, or of the fundamental importance of 'fitness for purpose' in evaluating the interrelationship among those elements. Finding that the two jobs differ more in terms of their

respective rules, or divisions of labour than in their community, intentions, subjects or outcomes, is ultimately less important than how the participants *feel* about those differences and similarities, and whether or not they are enabling or disabling of the effective conduct of the system as a whole. Do those differences and similarities, in short, help or hinder each group in terms of being 'effective' in their apparently shared professional values, perspectives and intentions? What the differences *are* is ultimately a less interesting question that whether or not such differences enable them both to be equally effective.

As one of the PSTEs put it: "I hated being a teacher educator at first because I always felt that I never *knew* enough [content]. But now I know it's actually about *'being'* and *'doing'* – and keeping those two *coherent*."

> "The major problem that we face as courses become more restricted in terms of time, and as mass lectures become more of a reality, is how do we enable student teachers to reflect deeply on their prior experiences, and be able to uncover their 'espoused theories'. I want to begin to identify effective tools which could be used to do this in a large group setting as part of the current lecturing restrictions we have."

It would appear, at least for the PSTEs in this study, that preservice teacher educators are, or feel, significantly more constrained by many of the current 'rules' and aspects of the 'divisions of labour' operating in the academy than their inservice counterparts, and that they thus feel less efficacious in achieving the goals of the enterprise.

Although both groups espoused very similar beliefs about how best to do their jobs, the kind of relationship they desired with their respective learner communities, and the core purposes of the teacher education enterprise, they differed significantly in their relative sense of self-efficacy in embodying those beliefs in practice, in establishing those relationships, and ultimately in achieving those outcomes.

Although both groups 'talked the same talk' with regard to their professional roles, beliefs, values, relationships and intended outcomes for learners, the preservice group clearly felt significantly *less* enabled than their inservice colleagues to 'walk that talk' in their daily practice. What is more, they did so largely because of a sense of frustration at the inconsistencies they perceived between the stated goals of teacher education in their institution and what they know professionally about effective pedagogy and mentoring on the one hand, and the organisational structures and pedagogical cultures they felt obliged to work within on the other**.** As one of them put it: "There is a dissonance between what is perceived to be crucial *for* me, and what I perceive *myself* is important. The ongoing dilemma of my practice in the current environment is finding ways of ensuring my practice models what I preach."

Conclusion

The data from the first part of the study suggests that PSTEs and ISTEs have more similar than different professional 'dispositions' or 'identities' to each other. That is, they share similar visions of what they would *like* their roles, practices, priorities, relationships, pedagogies, and so on, ideally to be, and similar beliefs about the goals and purposes of teacher education. However, they also face more different than similar sets of institutional and professional 'culture' enablers and constraints operating on those roles, practices, priorities, relationships and beliefs on a day-to-day basis. Both ISTEs and PSTEs 'talk the same professional talk'; but PSTEs feel more constrained in being able to 'walk that talk' in their daily practices, especially in relation to their formal class teaching.

We feel the study has possible implications for what is understood by academic culture, especially where and how comfortably (or uncomfortably) teacher education resides within that traditional academic culture. It also highlights aspects of what institutions do to constrain or enable effective pedagogical practice. The education of future teachers may be at risk long-term if PSTEs continue to feel constrained from being able to model good practices within their own

teaching repertoire and are increasingly, and uncomfortably, moved towards transmissive, undifferentiated teaching practices.

Finally, the study has implications for the kinds of professional learning that teacher educators want/need, as it implies that those wants and needs differ from, and go well beyond, for example, what academic conferences – in many cases the only form of funded professional development available in the academy – are capable of providing.

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EVALUATION AS A SOURCE OF TEACHER EDUCATORS' REFLECTION IN THE PROCESS OF METHODOLOGY PROJECTS DEVELOPMENT

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Abstract
The key aspect of the paper, presenting a new idea to other teachers, is checking the effectiveness of theoretical proposals in practice. The aim of the project was to gain information from practitioners about how effective *frontloading* is as a method of developing students reading comprehension skills. The feedback, referring to various aspects, is of great significance for teacher educators, as it enables them to develop effective and tested tools to be used in teacher education.

Keywords: evaluation, feedback, frontloading, teacher's education

Introduction

Proving the practical effectiveness of theoretical teaching concepts is essential for their author. Therefore, before a theory related to teaching solutions can be spread it must first be verified by practicing teachers as an effective and useful tool in the teaching practice. This also pertains to the implementation of solutions developed in different educational systems since it is often the case that the ideas may have to be adapted to fit the cultural context. Each of the teachers was equipped with aids making the practical use of *frontloading* at schools possible. Their task was to conduct a lesson, note their impressions and evaluate the recommended solutions. The teachers sent their feedback via email. The results achieved have the educational value for the author of the paper and will help him develop new projects.

Method evaluation

In the first stage of the evaluation process a verification procedure should be employed, which would initially determine the potential of a given theory and its application through affirming the effectiveness of its assumptions and the suggested solutions in the context of sample projects which are to undergo testing. After the lessons based on the new ideas have been put to the test in an authentic school environment, one should obtain feedback with regard to their quality and usefulness. The measure of didactic potential of the new method should first be expressed as a function of four different factors which include:

- increasing the effectiveness of the undertaken educational activities in relation to the use of the new methods (expanding competencies with regard to reading comprehension proves that the method may be useful and may become part of the teaching resources for a given subject);
- the appeal of the lessons as seen by the participating students (student satisfaction with regard to participation in a lesson taught using the new method is a strong argument supporting its use in school);
- teacher satisfaction with the lesson (satisfaction yields greater involvement and leads to further exploration of the new method).

- organizational ease (for example, methods which are organizationally easier to implement during a lesson and fulfill the conditions *a, b* and *c* are of much greater value; they are effective, appealing to students and satisfying to the teacher).

Following the process of positive verification – identifying the strong points of a given method – the next stage may be falsification, which is identifying the weak points which may be improved. Both evaluation approaches may be used simultaneously.
All the abovementioned activities are part of the teaching evaluation process, namely reflection on the undertaken activities, which in result should provide the teacher trainer with insight about the extent to which these solutions should be promoted.

The aim and subject of the evaluation

In this project the goal was to obtain feedback from teaching practitioners regarding how *frontloading* (Buehl, 2004) as a method for improving student competencies with regard to reading comprehension would be verified by teachers in the dimensions mentioned above. The multifaceted feedback is of particular value for the teacher educator as it allows for the affirmation of the original forms or the suggested ways of reaching the desired educational goals. It also facilitates the introduction of modifications and encourages one to promote the proven tools among students and teachers.

Problem description

PISA research studies conducted in 2000 indicated the important problem in a Polish school setting with regard to developing reading comprehension skills. By these skills we mean processing information, reasoning, interpretation and reflection on the text to achieve a goal set by the reader himself. The tests revealed a rather negative state of student competencies in this area. It should be mentioned that students obtained an average result of 479 points with the European average being 500 points. In subsequent years teachers focused on practicing the specified types of exam tasks teaching their students how to solve them. As a result, in the following PISA research studies, the students obtained significantly higher results (2003 – 497/494; 2006 – 508 / 492; 2009 – 500 / 494).

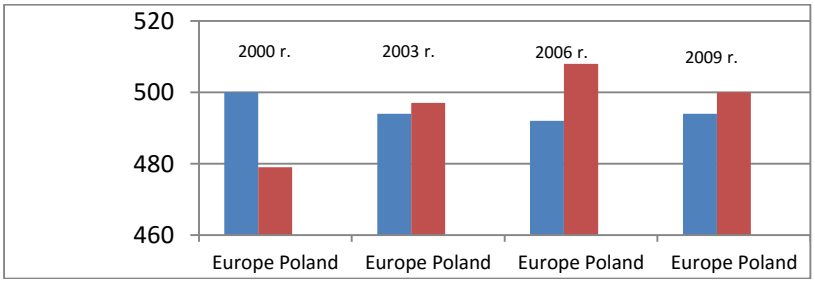

Figure 1. *The results of European and Polish students in the years 2000, 2003, 2006 and 2009.*

This result should be supplemented by the following information: Range I of reading competencies spans from 335 to 481 points (simple scanning of the text) whereas range V includes scores higher than 625 (stating a hypothesis, solving less typical tasks, connecting information, selecting arguments). Still, the level of comprehension is not satisfactory.
One of the practical issues pertaining to the more complex tasks may stem from the fact that students while reading the texts without a clear focus do not engage in the text (Duke & Pearson, 2000). They try to grasp the whole text and retain in memory both important and unimportant information. This reading approach stifles motivation and does not pique the readers' curiosity. The readers are not prepared to select information or reconstruct meaning. The individual level of reading comprehension is then a derivative of competencies with regard to reading

techniques, general knowledge related to the new material and the range of active and passive vocabulary. The aim should be to control and influence the process, and develop reading comprehension skills which should be devoid of the intuitive factor (Moore, Readence & Rickelman, 2003). *Frontloading* - or focused reading – is useful in this aspect. *Frontloading* is a method used to prepare the reader for conscious engagement with the text. Planning the process of text exploration (focused pre-reading tasks) and the possible clarification of certain while-reading tasks and post-reading interpretive/analytical tasks that relate back to the pre-reading focused tasks allow students to achieve the desired competencies that facilitate a more successful search for meaning.

Stages of the evaluation

Exploring the *frontloading* methods and the desire to implement them in Polish school settings were the starting point for the teacher educator. As an author of textbooks - which include the elements of this method – and as a university instructor I was convinced that focused reading may significantly enhance the practice of teachers. Theoretically, the techniques developed based on the assumptions of focused reading seemed appealing. However, the most important issue was the evaluation by independent practitioners in a real school setting. The process of evaluation was divided into four stages.

Stage I. In order to prepare teachers for evaluating the selected methods, separate sessions were conducted for post-graduate Polish students. These sessions focused on *frontloading*. In the first stage the teachers were divided into two groups. The first group performed a reading task without preparation and then answered questions testing the level of deciphering the meaning; the other group engaged in focused reading. The level of comprehension proved to be more satisfactory in the focused reading group, in which the teachers scored 46 out of 50 points (whereas in the first group they scored 38 points). Without a doubt, this encouraged the participants to examine *frontloading* in greater detail as the method features new, quite interesting and engaging ways of working with students that stimulate activity during the lesson.

Stage II. During the workshops the teachers were familiarized with the ideas and selected techniques of *frontloading* including *Anticipations Guides*, *K–W–L plus* (Moore, Readence & Rickelman, 2000; Buehl, 2004). As a result, every participant was asked to develop a set of activities for any given text according to the set algorithm. During presentations within the individual groups the teachers presented the results of their activities. The reconstruction of four practical units during Polish lessons in schools was recommended.

Stage III. Every teacher was provided resources about the practical application of *frontloading* in a school setting. Their task was to conduct a lesson with their students, note down their thoughts and evaluate the suggested ideas. The aim was to hold four comparative lessons based on the same reading a) using the previously employed methods b) using *frontloading*. Next, they were supposed to check comprehension of given areas, determine the level of personal satisfaction, assess student involvement and the level of difficulty concerning the use of the method in relation to other methods used previously.

Stage IV. Ten teachers conducted observations in their lessons in a familiar context over the period of one month. The lessons organized using familiar methods were juxtaposed (in the same classroom) with lessons based on the *frontloading* techniques (in a different group at the same level). After the lessons the teachers sent their comments via email. Below is a comparison of the observation results: the diagrams show the assessment of four aspects which were considered in the evaluation.

The students participating in the focused reading classes scored 8 points higher.

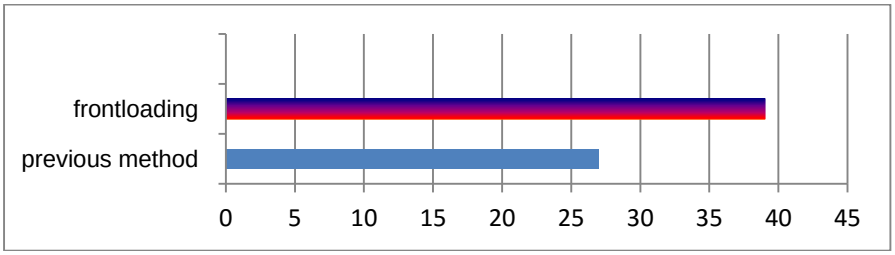

Figure 2. *Average test result – maximum 45 points.*

The teachers were more satisfied with the lesson when using *frontloading* techniques (3 points more) than when they used other tools.

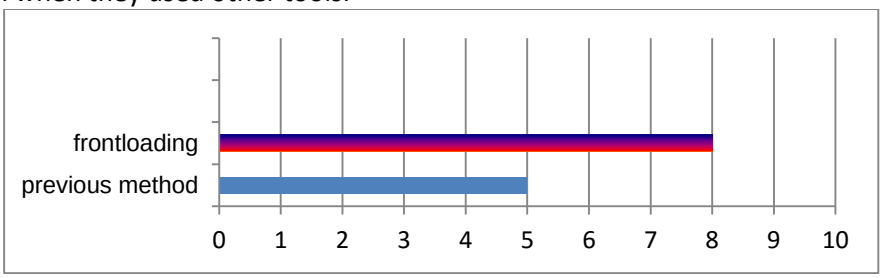

Figure 3. *Average assessment of teacher satisfaction on a scale of 1-10.*

According to the teacher, student involvement during the focused reading lessons increased by 4 points.

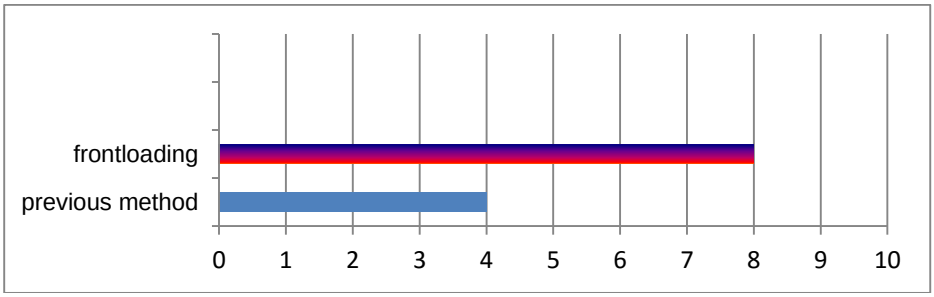

Figure 4. *Average assessment of student involvement on a scale of 1-10***.**

The focused reading lessons required more preparation from the teachers. They agreed that using this method is more challenging than using the previously implemented methods.

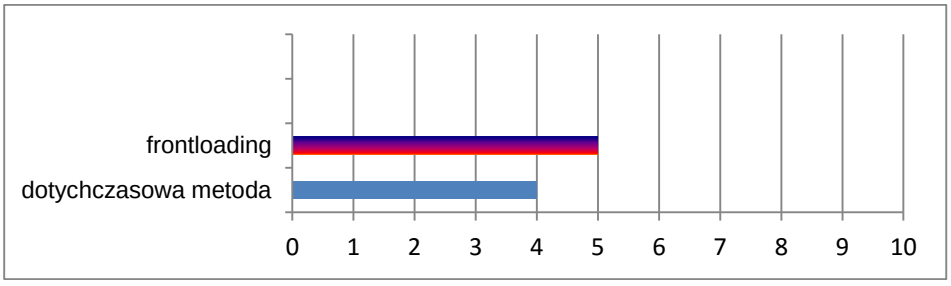

Figure 5. *Average assessment of the method's difficulty on a scale of 1-10.*

Conclusion

The comparison has revealed that the focused reading lessons using *frontloading* techniques ware better assessed in three key aspects considering the fact that only four lessons were

conducted using the specified algorithm. Although this is the first part of the evaluation process, the results may fill one with optimism as to the quality of this approach to reading. Higher results, greater teacher satisfaction with the lessons, greater student involvement all send a positive message to the teacher educator – a person implementing theoretical and practical foundations of the method and creating activities that encourage teachers to use it. In the long run one may expect that the positive evaluation of the differences will be maintained and assume that as the individual techniques are mastered the lessons will require much less preparation.

The evaluation has given the teacher educator the grounds for further development of *frontloading*, its enhancement and implementation of additional techniques in Polish school setting. More teacher groups may also be encouraged to use the method.

Equally satisfying was the evaluation procedure itself as one of the tools for assessing the usefulness of the new method of working with students. The fact that it was conducted in such a limited setting entitles the educator to repeat the assessment of the methods with a larger group of respondents. One may also be inclined to use the falsification method – the procedure used for identifying strengths and weaknesses – which in result leads to the elimination of weaker links and enhancing those which most directly determine the effectiveness.

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CONSIDERED AND COMPETENT ASSESSMENT: AN INVENTORY ON WHAT TEACHERS TRAINERS' SHOULD KNOW ABOUT ASSESSMENT

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Abstract
Quality of assessment is seen as a crucial criterion for quality of education. It is argued that assessment quality is largely determined by the assessment knowledge and skills of teachers and their awareness of high quality assessment. To date, a distinct overview on what teacher trainers' and teachers should know about assessment is missing. In this paper, we report the findings of a national SURF-funded[5] research project in which four teacher trainer colleges participated. Main aim of this project is the development of a 'body of knowledge' on assessment for teacher trainers. For this purpose, a literature study was conducted to retrieve the most documented knowledge domains on assessment. The literature review was validated by a number of e-interviews with (inter) national assessment experts. By means of a questionnaire, teacher trainers were asked to rate the learning objectives derived from the 'body of knowledge' according to the importance for their profession. They were also asked to rate the extent to which they feel competent on the presented learning objectives. Results show that the domain of assessment is complex and that more reduction and coherence is needed for the development of an unambiguous body of knowledge on assessment.

Keywords: quality, assessment, body of knowledge, learning objectives, teacher trainers

Societal and scientific developments in assessment

Assessment is more than constructing a test: it highly determines quality of learning. Assessment, including all the educational processes and instruments, is a crucial part of a teacher trainers' profession in helping students to becoming good teachers. In Netherlands, the importance of high assessment quality is prompted by three developments. First, the National Accreditation system of the Netherlands and Flanders (NVAO) states three standards strongly related to assessment quality (NVAO, 2011): (1) the intended learning outcomes of the programme are translated in in the curriculum design, (2) the curriculum, staff and programme-specific services and facilities enable students to master the intended learning outcomes, and (3) there is an adequate assessment system that proves how the intended learning outcomes are achieved. The latter standard is a so-called 'knock-out criterion', meaning that an low score on this standard implies a negative judgment for the whole programme. A second development is the role of the Examination Committees. By law, they have to be pro-active, instead of reactive, in assuring the assessment quality. They have a substantive responsibility, not only for

[5] SURFfoundation unites Dutch research universities, universities of applied sciences, and research institutions. All of these collaborate on innovative projects to improve the quality of higher education and research.

the procedures, but also for the quality of the assessment programme in terms of validity, reliability and transparency. A third development is the use of ICT in assessment, resulting in digital assessments (e.g., e-portfolios and digital knowledge tests).
Form a scientific point of view, assessment has evolved from a domain which was mainly influenced by a psychometric perspective, to a domain in which assessment is viewed as a mean to support learning (Schuwirth & Van der Vleuten, 2006). This means that assessment has a summative purpose ('Assessment *of* learning'), but also a formative purpose ('Assessment *for* Learning'). Balancing summative and formative purposes of assessment is a complex task for teacher trainers.

The impact on assessment design in teacher training
The societal and scientific developments in assessment highly impact the design of assessments in teacher training. , in three ways. A first implication is an increased variety in in assessment methods and –- instruments. Examples are the generic application of (digital) portfolios, performance assessments and competence assessments. A second implication is the need for new quality frameworks. The psychometric criteria of reliability and validity are positioned in the new learning contexts and enriched by quality criteria that are aligned with the many purposes of assessment. Three examples of new frameworks for assessment quality are developed by Baartman, Bastiaens, Kirschner, and Van der Vleuten (2006), the seven principles of Assessment 2020 (Boud & Associates, 2010) and the ten characteristics of sustainable assessments (Sluijsmans, 2010). Finally, the digital possibilities in assessment practice require new quality criteria, for example usability and criteria that prevent plagiarism.

Consequences for teacher trainers: the need for a body of knowledge on assessment
The variety of assessment methods, the complex set of criteria on what constitutes good assessment and the possibilities to use ICT in assessment practice has a large effect on what teacher trainers should know about assessment. Since recent years, many training activities have been organised to professionalise teacher trainers in assessment. Unfortunately, these training courses, workshops, or seminars do not always lead to a sustainable effect. Students are dissatisfied about the quality of assessment and teacher trainers doubt their assessment competence. Results of evaluations also reveal that the summative purpose of assessment is dominant. Teacher trainers are not trained in 'assessment *for* learning' strategies. Three observations can be drawn that account for that the lack of assessment quality:

- Teacher trainers do not explicit their assessment perceptions in relation to the quality of assessment;
- Teacher trainers are poorly trained in assessment;
- Valid and reliable instruments to measure assessment knowledge and to encourage development in assessment expertise are lacking.

The quality pyramid of contemporary assessment to frame learning objectives on assessment
To stimulate teacher awareness and competences in the context of contemporary assessment, it is necessary to describe which assessment knowledge and assessment skills is required for a high quality standard. The quality pyramid for contemporary assessment (Joosten-ten Brinke & Sluijsmans, 2010; see Figure 1) gives the opportunity to describe a knowledge basis for contemporary assessment in a structural way. This quality pyramid is developed on the basis of literature on quality criteria for assessments (see Baartman, Bastiaens, Kirschner, & Van der Vleuten, 2006; Boud, 2000; Brown, & Hattie, 2009; Draaijer & Hartog, 2007; Sluijsmans, 2008; Schuwirth & Van der Vleuten, 2006).

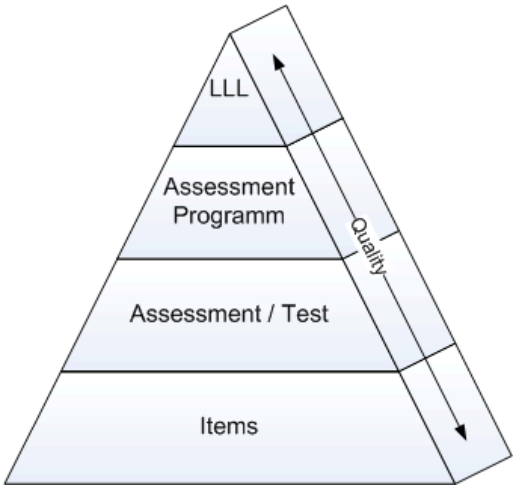

Figure 1. *The quality pyramid for contemporary assessment (Joosten-ten Brinke & Sluijsmans, 2010)*

The assessment knowledge and skills can be divided in four levels. The lowest level is about the quality of assessment tasks, assignments or items. The second level involves the quality of all assessment instruments, like tests and scoring rubrics. The third level is about the quality of assessment programmes and the highest level is about the assessment quality in terms of assessment effects on the long term.
The pyramid levels are not independent of each other. Assessment quality is secured by a strong relationship between the four levels (depicted by the arrow on the right). Weak quality on the bottom level influences the quality of the levels above. The other way around, an unclear vision on assessment will lead to doubtful quality for the program, the instruments and the assessment tasks.
In the following sections, the different levels of the quality pyramid are further described.

Quality of tasks, assignments or test items

The bottom level of the quality pyramid is about test items. Every task, assignment or question used in an assessment, whether this is a multiple choice question, an essay question or an assignment to write a paper, should fit the quality criteria of relevance, objectivity, efficiency and the difficulty, Item relevance has to do with the match between the proposed measure and the observed measure. The relation with the learning objectives is important. Objectivity means that the scoring of a test item is independent from the assessor. This implies scoring rubrics with less room for subjective interpretation and an inter assessor consistency. The efficiency criterion means that the most efficient item form should be selected if there are more equal options to choose from. Finally, the difficulty level of an item should be acceptable, given the required education level.

Quality of assessment instruments

The concept 'assessment instruments' includes all possible assessment forms with the scoring rubrics. These scoring rubrics vary from a list with right answers and feedback about the questions source to a rubric to assess the development of learners in a performance assessment. Although education practice shows different elaborations, scoring rubrics should be developed at the same time as the question development. Scoring rubrics may inform students about their develop opportunities. Every assessment has to be useful, valid and reliable. This means that

assessments should be efficient and fair, that they measure what is intent to measure and that the assessment results are consistent. In developing assessments, teacher should ask themselves what is assessed, who are the assessees, who are the assessors, how much time is available and what are the assessment criteria?
Assessment validity can be improved by the use of a test blueprint. A test blueprint gives the basis for the assessment structure. What is the content and what mastery level is required? Based on such a test blueprint, item constructors can construct several comparable assessments.

Quality of assessment programs

The second level involves the quality of assessment programs. An assessment program is the total of assessment instruments used in an educational program. A clear relation between assessment instruments used in an education program and the quality assurance for the different functions of assessment are important. In secondary education in the Netherlands there is an assessment program for the final exam phase. The question is why there is not for the other school years. What is the relation between the assessment in the starting phase of an educational program and the assessments in the final phase?
In education, the awareness increases that instruction and assessment should be in line, because the assessment quality represents the instruction quality (see Schuwirth & Van der Vleuten, 2006). This means that assessment should be more than the closing part of a course. The coherence between assessment and education (formatively as well as summatively) and the choices for assessment formats have to be balanced. This requirement is the reason to introduce an edumetric definition of quality instead of the psychometric definition. The new quality definition takes the consequences of assessment on learning into account. Baartman, Prins, Kirschner and Van der Vleuten (2007) have distinguished twelve quality criteria for competence assessment programs. The criteria are (1) Acceptability, (2) Authenticity, (3) Cognitive complexity, (4) Comparability, (5) Costs and efficiency, (6) Educational consequences, (7) Fairness, (8) Fitness for Purpose, (9) Fitness for self-assessment, (10) Meaningfulness, (11) Reproducibility of decisions and (12) Transparency. Using the appropriate mix of assessment instruments is crucial (see for example Gulikers, Sluijsmans, Baartman, & Bartolo, 2008).
The quality criteria can be used in discussions with teachers about the quality of the assessment program. By discussing the criteria and their importance in relation to the program, increases the consciousness of the teachers about assessment quality (Bronkhorst, 2009).

Quality for lifelong learning assessment

Students learn to the test and prepare themselves in different ways dependent on the type of the test (Zeidner, 1990). Education, however, should be striving for a learning attitude in which learning results remain longer available than until the exam. Learning should be sustainable, i.e, available for a longer period (Boud, 2000; Simons & Lodewijks, 1999; Sluijsmans, 2008). On the top level of the pyramid, it is about the quality of assessment for the long term. How can we take care that assessment adds to a sustainable learning result? In what way is assessment directed to knowledge and skills for the long term?
Students are not only learning in the context of school, the formal learning context. They also learn relevant things in informal and non-formal contexts. Think for examples about voluntary work, student groups, friends and family meetings. Competences acquired in these contexts may be recognized in formal education. Assessment of prior learning procedures exist to measure the worth of this kind of learning (Joosten-ten Brinke, 2008). Lifelong learning assessment requires specific skills, for example, reflection on your own learning. Knowledge and skills about

possibilities for assessment of informal and non-formal learning and the opportunities for sustainable assessment give input to the quality for lifelong learning assessment.
Assessment vision and assessment policy are components on this level of the pyramid. In an assessment policy document, the starting points and framework of an organisation in relation to the design, development, test taking, reporting and evaluation of assessment is described. What is the objective of a school according assessment and in what way is the chosen concept of education elaborated? What is undertaken to train new teachers to become on the same level as other, more assessment experienced teachers? Do teachers know the qualities of their colleagues on assessment and in what way are teachers trained to use these competences?

As assessment quality in teacher training institutes is secured by assessment quality on all four levels, the question is what teacher trainers need to know to design assessments in a way that the quality on all four levels is achieved. Therefore, this article focuses on three questions:

1. Which assessment knowledge in terms of learning objectives is important for teacher trainers?
2. How important and relevant are the learning objectives on assessment for teacher trainers?
3. How competent do teacher trainers regard themselves with respect to the learning objectives?

Method

To answer the first question, a literature study and an e-interview with international assessment experts were used to identify relevant assessment knowledge for teacher trainers. The literature search yielded 23 sources. These sources were used to formulate learning objectives on assessment. In addition to the literature study, 28 (international) assessment experts who have been publishing extensively in the field of assessment were contacted via e-mail with three questions. These questions were:

1. Which assessment knowledge should be expected from teacher trainers?
2. Could you formulate three learning objectives on assessment for teacher trainers?
3. Do you know if there are self-assessment instruments for teacher (trainers) to analyse their assessment competencies?

Ten experts replied to our mail (36%; seven international experts, three national experts).The expert answers were used to validate results from the literature study and to revise and add learning objectives.

Questionnaire with learning objectives

For the second and third research question, an online questionnaire was distributed among all teacher trainer colleges in Netherlands. Given the high number of learning objectives, four versions of the questionnaire were constructed. The questionnaire was designed according to the quality layers in the pyramid. The questionnaire included first several general background questions and subsequently the learning objectives. On each objective two questions were asked: (1) indicate the relevance for this learning objective and (2) estimate your own competence on this learning objective. Finally, the teacher trainers could add learning objectives.

Findings

1. *Which assessment knowledge in terms of learning objectives is important for teacher trainers?*

The literature review and the interviews did not led to profiles for teacher trainers' assessment competences. There are general profiles for the competences of teacher trainers in which very general statements about the assessment competence are given. "The teacher trainer is capable to develop instruments for (self) assessment of professional competence and evaluates participants' competences" in the Dutch Standards for Teachers or "[…] use a range of formal and informal assessment methods to plan for instruction, to monitor and evaluate student progress, to involve students in the assessment process, and to report student achievement to various audiences" (Standards for English language, NBPTS, 2001). Also, standards are available for specific assessment roles as for example an assessor in prior learning assessment procedures. In these profiles, competences according the different assessment phases are given, such as the relation with the candidate, procedural knowledge, personal characteristics and competent use of assessment techniques (European Vocational Training Association, 2005; Klarus, Schuler & Ter Wee, 2000). Mitchell (2006) gives an overview of assessment skills and knowledge content standards for student affairs practitioners and scholars. These knowledge and skills are related to assessment design, articulating learning and development outcomes, selection of data collection and management methods, assessment instruments, surveys used for assessment purposes, interviews and focus groups used for assessment purposes, assessment methods: analysis, benchmarking, program review and evaluation, assessment ethics, effective reporting and use of results, politics of assessment and assessment education. In total, she mentions more than fifty learning objectives. Standards for teacher assessment competencies (AFT, NCME, & NEA, 1990) established in 1990 are redesigned by Brookhart (2009). They were outdated because of the little attention given to formative assessment (or assessment for learning). In 1990 the role of the students as formative decision-makers who need to make decisions about their own learning was under exposed. Brookhart revised the standards by analysing desired assessment knowledge and skills by other researchers like for example Stiggings and McMillan (McMillan, 2000; Stiggins, 2008) and came to the following eleven standards:

1. Teachers should understand learning in the content area they teach.
2. Teachers should be able to articulate clear learning intentions that are congruent with both the content and depth of thinking implied by standards and curriculum goals, in such a way that they are attainable and assessable.
3. Teachers should have a repertoire of strategies for communicating to students what achievement of a learning intention looks like.
4. Teachers should understand the purposes and uses of the range of available assessment options and be skilled in using them.
5. Teachers should have the skills to analyze classroom questions, test items and performance assessment tasks to ascertain the specific knowledge and thinking skills required for students to do them.
6. Teachers should have the skills to provide effective, useful feedback on student work.
7. Teachers should be able to construct scoring schemes that quantify student performance on classroom assessments into useful information for decisions about students, classrooms, schools, and districts. These decisions should lead to improved student learning, growth, or development.
8. Teachers should be able to administer external assessments and interpret their results for decisions about students, classrooms, schools, and districts.
9. Teachers should be able to articulate their interpretations of assessment results and their reasoning about the educational decisions based on assessment results to the educational populations they serve (student and his/her family, class, school, community) .
10. Teachers should be able to help students use assessment information to make sound educational decisions.

11. Teachers should understand and carry out their legal and ethical responsibilities in assessment as they conduct their work.

As Brookhart states, "these standards are not complete without the supporting text" (p.4) in which for example the specific role for formative assessment is explained. An observation from the literature is that the literature on knowledge and skills on assessment not explicit address our target group of teacher trainers.

Results e-interviews

Ten assessment experts (response rate of 36%; 7 international and 3 national experts) have answered our questions. They mention the following assessment knowledge and skills as relevant:

- the translation of assessment policy to assessment practice;
- assessment design from a quality assurance perspective;
- construction of test items, scoring schemes
- knowledge of and skills to use psychometric and statistic quality measures;
- evaluation of test results to learning intentions and to improve and customize instruction;
- communication about assessment results to school, parents and students;
- giving useful feedback to improve learning;
- awareness of the subjectivity of assessment;
- able to articulate clear learning intentions and knowing how to assess;
- Insight in different assessment methods, for example use of competence assessments, standardized assessments;
- knowing principles of assessment for learning (for example in relation to self-regulation) and taken these into account in your own vision on learning; insight in the added value of assessment to higher order skills like self-regulated learning;
- having a personal views on assessment;
- understanding of the role of assessment for internal and external objectives;
- insight in the psychological effects of assessment (test anxiety);
- recognition of ethical issues in assessment;
- using ICT in assessment;
- knowing of the pedagogical function of assessment.

Four experts mention explicitly that teacher trainers should not become psychometric. However, shortcomings in the basic psychometric knowledge makes design and analyses of assessment difficult. Seven experts emphasize the importance of the capability of teacher trainers to formulate their own view on assessment and to oversee the positive and negative effects of assessment on learning.

Finally, the literature study and the e-interviews led to a list of 262 learning objectives. In an attempt to categorize these learning objectives, we used two strategies. First, we looked whether these learning objectives could be divides into categories according the assessment cycle, from assessment design, via assessment development, execution, analyses and evaluation. Second, we tried to use the levels of the quality pyramid for contemporary assessment (Joosten-ten Brinke & Sluijsmans, 2010) as different categories. We saw that for the most learning objectives we could use the combination of both categorizing systems. First we divided the learning objectives on the levels of the pyramid and within each category we divided them over the phases in the assessment cycle. So, for example, on the level of assessment instrument and the phase of analyses we placed the learning objective 'teacher trainers should be able to analyse the reliability of an assessment'. This partition led to 54 learning objectives

on the 'item' level, 127 learning objectives on the 'assessment instruments' level, 40 learning objectives on the 'assessment programme' level and 41 learning objectives on the 'LLL' level.

2. How important and relevant are the learning objectives on assessment for teacher trainers?
251 teacher trainers opened the digital questionnaire. They were coming from 17 different teacher training colleges. 57 of them only filled in their name and organisation. 194 teacher trainers started to assess the relevance of the given learning objectives. Because of the large number of learning objectives, we made four different versions of the questionnaire with overlap over learning objectives between the questionnaires to receive comparable data.
On a five-point scale we asked the teacher trainers how relevant do you find this objective for your work performance. Table 1 shows the ten learning objectives with the highest mean score on relevance. Table 2 shows the ten learning objectives with the lowest mean score on relevance.

Table 1. *The ten learning objectives with the highest mean score on relevance*

Learning objective The teacher trainer …	Mean	SD
A07. Is capable to construct test items based on the learning objectives.	3,75	,50
A03. Is capable to assess the quality of others' test items.	3,75	,50
B05. Is capable to compose an representative assessment	3,62	,49
B12. Is capable to formulate relevant learning objectives for assessment	3,60	,49
B16. Is capable to give effective, constructive an useful feedback	3,57	,50
B08. Is capable to formulate learning objectives that are feasible for students.	3,55	,51
A01. knows different kinds of test items and assessment tasks.	3,55	,68
C37. Is competent for his profession.	3,52	,50
A29. Is capable to distinguish behaviour from the person.	3,51	,61
B13. Communicates the gap between learning objectives and learning outcomes.	3,50	,50

Table 2. *The ten learning objectives with the lowest mean score on relevance*

Learning objective The teacher trainer …	Mean	SD
C02. Has the opportunity to deliver a policy document.	2,33	,56
D34. Is capable to communicate in different ways about assessment.	2,33	,70
B124. Is capable to organize assessment meetings.	2,63	,74
C05. Is capable to develop learning objectives for the total assessment programme.	2,67	,58
D11. Has insight in change processes.	2,67	,58
B47. Is capable to compare results with (inter)national results.	2,69	,71
D32. Can teach student how they become engaged students in assessment.	2,71	,69
D15. Investigates new assessment methods and their effects.	2,74	,62
D33. Knows the differences between competence assessment and traditional testing.	2,75	,53
C20. Is capable to develop a blueprint for assessment.	2,78	,58

3. How competent do teacher trainers regard themselves with respect to the learning objectives?
Also on a five-point scale we asked the teacher trainers how competent they assess themselves on the given learning objectives. Table 3 shows the ten learning objectives with the highest

mean score on the self-assessment of competence. Table 4 shows the ten learning objectives with the lowest mean score on the self-assessment of competence.

Table 3. *The ten learning objectives with the highest mean score on competence*

Learning objective A teacher trainer…	Mean	SD
A31. Can empathize with his students.	3,30	,48
C38. Knows his students and their future profession.	3,29	,55
B84. Is capable to compose a relevant and balanced assessment.	3,26	,45
B59. Is capable in using scoring models.	3,24	,44
B12. Is capable in formulating learning objectives.	3,23	,47
B14. Is capable in explaining the learning objectives in learning outcomes.	3,22	,42
D21. Is self-critical, and reflects on his own behaviour.	3,22	,52
C36. Is competent for his profession.	3,21	,46
A29. Is capable to distinguish behaviour from the person.	3,20	,46
D19. Knows his own pitfalls.	3,17	,39

Table 4. *The ten learning objectives with the lowest mean score on competence*

Learning objective The teacher trainer…	Mean	SD
C02. Has the opportunity to deliver a policy document.	1,67	,56
B44. Is capable to analyse the results in order to determine the effectiveness of students' learning.	2,00	,00
C03. Is capable in writing an assessment policy plan.	2,00	,00
D28. Knows the difference between norm related, criterion, related and ipsative assessment.	2,20	,59
C31e. knows the meaning of an assessment being 'acceptable'	2,21	,59
A40. Knows the analyses methods for e-assessments.	2,21	,62
A08. Is capable to determine the reliability of a test.	2,25	,50
B18. Is capable to give advice to students based on different information sources.	2,25	,50
B19. Is capable to use the assessment information for the learning processes.	2,25	,50
B65. Is capable to develop competence assessments to gain information about the learning process.	2,25	,50

Conclusion and discussion

The study shows that there is a lot of information on knowledge and skills in relation to assessment quality. However, the presented overviews are ambiguous in relation to the specific target group of teacher trainers. Also, the assessment experts did not gave a clear view on the expected knowledge and skills for teacher trainers.

Based on the general overviews of assessment knowledge and skills, we derived a list of 262 learning objectives. These objectives varied however in the way they were concrete to teacher trainers. Therefore, the learning objectives could sometimes be read with more than one interpretation. This may have caused effects on the results. Also the length of the questionnaire was still a problem. Although, we divided the total amount of learning objectives over four versions of the questionnaire, we see a large drop-out at the end of the questionnaire. This implies that learning objectives according the Lifelong learning quality of assessment has less response than the learning objectives on the lowest level of the pyramid.

Based on the outcomes of the questionnaire it is important to discuss further the relevance of specific knowledge and skills on assessment for teacher trainers. A first attempt to this discussion shows that the necessary assessment knowledge and skills may be related to diverse

roles a teacher trainer fulfils. A member of the Examination Committee should have more competences on the policy level than a starting teacher trainer with just a few lessons.
A next step in this research is to develop a digital diagnostic instrument for teacher trainers to self-assess their knowledge and skills on testing and assessment. In this instrument, informative feedback will be included to train the users in divers assessment topics.

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"FOLLOWING TWO YEARS OF STUDIES AT MOFET, I EXPECT TO SEE MY STAFF CONTRIBUTING AND BEING INVOLVED": BENEFITS OF PROFESSIONAL DEVELOPMENT STUDIES OF TEACHER EDUCATORS TO THE WORKPLACE AS PERCEIVED BY THOSE IN LEADERSHIP POSITIONS IN TEACHER EDUCATION COLLEGES

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Preface

Learning activities such as courses of different lengths and lectures that are centrally organized are perceived as one of the relevant professional development activities for teacher educators' professional development (TEPD) but the impact of these activities needs further attention and research (i.e., Koster et al., 2008; Smith, 2010). Professor Kari Smith of Bergen University in Norway advocates for formal, structured and centralized learning activities when she calls for 'developing regional and national resourceful professional development center for teacher educator' (Smith, 2010, 687).

Research literature on the possible contributions and benefits of formal courses of study for teacher educators is scant. This paper aims to add and enrich existing knowledge on the subject. It presents a study of the benefits of formal, structured and centralized study programs conducted at the Mofet Institute in Israel. The benefits reported in this study relate to the impact on the work-place as is perceived by those in leadership positions in various teacher training colleges.

Professional Development (PD)

Common definitions of PD relate to the advancement of particular competencies in a given field. Eraut (2004) summarized the literature on PD and pointed out three major areas of PD. They are:

(1) Openness to near learning;
(2) Development of interpersonal as well as self-management skills;
(3) Becoming competent in one' own domain.

This should be based on a sufficient knowledge base; a practical experience and on a group of supportive peers.

In the field of education PD is considered to be one of the most effective ways to improve the processes of teaching and learning. Some researchers go as far as to claim that the ultimate goal of PD is improved learning for all students and that is to be achieved via quality teaching (i.e., Darling-Hammond, 1997).

Researches have established clear links between the quality of teaching and students learning outcomes (Bransford et al, 2000). Similarly, teacher educators are increasingly being seen as key to the successful preparation of teachers (Mayer et al., 2011).

A term that is closely linked to PD is Continued Professional Development (CPD). It is used in relation to the enactment of the knowledge, skills, and understanding of individuals or groups in learning contexts that may be identified by themselves or their institutions (Kerwin-Bodreau, 2010).

In most countries in the Western hemisphere teacher education takes place in institutes of higher-education. Furthermore, in many countries (for example Australia, England, Japan, Slovenia and Spain) a process of 'universification' has taken over teacher training. As a result, teacher education institutes and the teacher educators working within them are expected to adhere to the imperatives of the university sector including engagement in research. In that

respect it is interesting to note the ideal vision of professional development as described by Ernest Boyer of the Carnegie Foundation (1987):
"All faculty members, throughout their careers, should themselves remain students. As scholars they must continue to learn and be seriously and continuously engaged in the expanding intellectual world. This is essential to the vitality and vigor of the undergraduate college". Pp. 10.
Over the past few decades, teaching has assumed an increasingly important role in higher education, challenging the central position traditionally held by research (Nicholls, 2000).

Teacher Educators (TEs)
The role of TEs is multi-faceted and complex. Smith (2011) highlights three components of the work of TEs: being a role model; being a researcher and being an administrator. However, in a recent exploratory study (Kools et al., 2011; Van der Klink et al., 2012) reports from the twenty-five participants pointed out that teaching methods and pedagogy were the major part of their work in teacher education.
Many definitions of teacher educators focus on the educator aspect of their role. Teacher educators are perceived as those individuals whose task is to train future teachers, to guide and support them in as effort to train qualified teachers (Smith, 2003; Koster et al., 2005). Others highlight the research aspect of teacher educators' role (i.e., Cochran-Smith, 2005; Lunenberg & Wilemse, 2006). Kacakci, Odabasi and Kilicer (2010) offer a comprehensive definition: "A teacher educator is an instructor who, as a trainer and as a researcher, trains teachers in higher education institutions" (pp.264).
The growing recognition of TEs as professionals entails engagement in further professional development throughout their career. Since the recognition of the teacher educator as a lifelong learning professional has only recently emerged as a topic of interest, it is not surprising that the research in this area is still limited.
Current research literature of TEs can be sorted out into several different perspectives: (a) the induction of teacher educators; (b) the first career stages and the transition from teaching in schools to teaching in teacher training programs in higher-education institutions; (c) the identities of teacher educators; (d) the characteristics and competencies of teacher educators; (e) the attempt to set standards and quality requirements for teacher educators (i.e., Koster et al., 2005; Murray & Male, 2005; Rieg & Helterbran, 2005; Murray, 2008; Koster et al., 2008; Swennen, Jones & Volman, 2010; Dinkelman, 2011; Mayer et al., 2011). The perspective of types of learning activities and the perspective of possible contributions, benefits and impact of TEPD activities have yet received little attention but there exists growing research interest (i.e., Ben-Peretz et al., 2010; Van der Klink et al., 2012).

Benefits and impact of PD
It is important to understand not just whether benefits occur, but who benefits and how these benefits occur; not just what is effective, but who is defining effective and by what measures. For example, what counts as effectiveness in PD varies by how effectiveness is conceptualized. Opfer and Pedder (2010) who set out to understand how teachers and school leaders perceive the benefits and effectiveness of CPD activity pointed out that "It is important to understand not just whether benefits occur but who benefits and how these benefits accrue" (pp. 413). Their investigation was focused on the various impacts that could result, the forms and features of activities, as well as the conditions that made effectiveness more or less likely to occur.
The impact of CPD on schools and school improvement has rarely been researched; although Bolam and Weindling (2006) for example, identify this as one of the impacts of professional learning activity. Part of the difficulty in researching the impacts of CPD has to do with the complicated causal processes at work. Establishing whether participation in a particular CPD

activity had an impact on teachers' practice is difficult despite the claims made in most of the literature (Opfer & Pedder, 2010). Pedder (2006) provides one of the few recent evidence of impact of CPD on schools, citing changes in school leadership and management practices as a result of assessment for learning activity. The potential of CPD to have impacts at any level is often dependent upon school conditions that support professional learning (Opfer & Pedder, 2010). They summarize existing literature with regard to possible contributions of PD activities as follows:
When CPD does have impact, benefit and value for money, it has certain general characteristics of CPD activities that could apply to almost any form:
- Is applicable
- Has clear aims and objectives
- Is provided by people with expertise
- Models effectives strategies
- Promotes enquiry and problem-solving

Boyd and Lawley (2009) reviewed the literature on work-place learning in academic contexts and pointed out that useful theoretical frameworks for analyzing academia work-place are situated learning theory and activity systems theory.
The situated learning theory signals the need to focus on professional learning that is rooted in the work-place context and on the learning of newcomers as they interact with experienced colleagues within a community of practice (Wenger, 1998).
The activity systems theory signals the need to focus on academic work-place as collective dynamic object-oriented activity systems in which rules, tools and division of labor shape behaviors but in which social action and contributions by participants are also able to shape the systems. Within an activity theoretical approach, the importance of history and the wider structures in influencing work-places is emphasized and the work-place is considered to include tensions or contradictions that may drive further development of the activity system.

Learning activities as part of Teacher Educators' Professional Development (TEPD)
TEPD learning activities can be divided into formal versus in-formal activities (i.e., Kools et al., 2011; Avissar & Reichenberg, 2010). Learning activities offered in a university framework (as described by Kerwin-Boudreau, 2010) and in national centers could be considered as formal activities as they are prescheduled and usually offer a course of studies and that in itself may have benefits for the participants such as a diploma, a formal certificate, an equivalent certificate and the like. Universities and other institutions of higher education have established various programs for staff development i.e., workshops of different length, semester-long courses and comprehensive programs (Kerwin-Boudreau, 2010).
Taking into account the growing inclination toward the establishment of national centers for TEPD (Holland, Norway, United States and Israel) this study has the potential to shed light on possible benefits to the work-place of in-service learning activities offered at such centers.

The context
Teacher training in Israel
Most of teacher education in Israel takes place in teacher training colleges that grant B.Ed. and M.Ed. degrees. These colleges prepare kindergarten, elementary and middle-school teachers. High-school teachers are trained in the universities, after obtaining a B.A. degree in a subject-area. Teacher training colleges reflect the above mentioned tracks (More on teacher training in Israel can be found in: Guri-Rosenblit, 1990; Mevorach & Ezer, 2010).

Higher education in Israel is governed by the Council for Higher Education Law of 1958. Teacher training colleges, the first of which were established as teacher seminars in 1914, were transformed into academic institutions of higher education beginning at the end of the 1970's. Recently the Council published the [New] Guidelines for Teacher Training (2008). The guidelines aim at diversifying the training programs, strengthening the disciplinary studies component and they emphasize the practicum while reducing the over-all number of credit hours required. These guidelines establish the structure for programs of teacher training in every academic framework recognized by the Council and every institution has to conform to them.

The School of Professional Development at the Mofet Institute in Israel

The Mofet Institute is an intercollegiate professional development institute for teacher educators from all teacher education colleges in Israel. The School of Professional Development was founded over twelve years ago. It is a national center which offers in-service courses for TEs, discussion forums, communities of learning, research and publication support alongside national and international conferences. Mofet is well recognized beyond Israel (Korthagen, 2000; Smith, 2011). As part of in-service courses, four two-year specialization programs were developed which aimed to enhance TEPD (the professional development of teacher educators). They were: (1) Mentoring and Instruction; (2) Management in Academic Institutions; (3) Research and Evaluation; (4) Information and Communication Technologies (ICT). Currently, each program consists of a total of 52 full days of study over a two-year period and includes theory, group discussions, brainstorming and a practicum. The over-all aim of the studies in these specialization tracks is to substantiate theory and link it to practice by furnishing the participants with essential tools for their work in their respective colleges. These areas of specialization are considered to be at the core of the different roles of teacher educators. The graduates are granted a diploma. The Board of Teaching Certification within the Ministry of Education in Israel recognizes this course of study as equal to studies toward a teaching certificate. This is relevant for those teacher educators whose entry into teacher education was by accident rather than design.

A Steering Committee of the school convenes four times a year. Its main mission is to follow policy implementation and new initiatives.

Evaluating these study programs has been a priority from the start. Over the years, evaluation data was gathered from three sources: (a) the teacher educators during the course of their studies; (b) graduates of the different programs (i.e., Feigin, Avissar & Kedem, 2008; Reichenberg, Sagee & Kleeman, 2010) and (c) those in leadership positions in the respective teacher education colleges. Findings from groups (a) and (b) point to a high degree of satisfaction on the part of the teacher educators who participated. The findings from group (c) are presented in this paper.

The aim of this evaluation research was to identify the benefits and the impacts of the studies at the School of Professional Development on the TEPD and on the teacher training colleges they come from.

This program evaluation was formative and participatory in nature. The researchers met frequently with the head of the school and reported to the academic school staff at the beginning, half way through the process of data collection and at the end. The feedback from the school staff had an added value to the interpretation process and contributed to shaping the recommendations.

Two questions led this investigation:

(a) What are the benefits to the workplace as perceived by those in leadership positions in the various teacher education colleges following a professional development course of study?

(b) Do the study programs have an impact on the workplace and what is it?
(The term 'workplace' refers to the teacher education colleges in the country where the teacher-educators work).

Method

Participants: Thirty-one participants holding a variety of leadership positions, representing 15 teacher training colleges (62.5% of the total number of teacher training colleges in the country). The sample was constructed so that it reflects the heterogeneous nature of teacher training institutes in Israel including large (around 5,000 students) and small size (around 1,500 students) institutes, Jewish (secular or religious) and Arabic. The following table details the participants' position and the size and sector of the college they work in:

Table 1. *Distribution of the participants (N=31) by position*

position	**sector/size**	**N**	**% of total**
Currently heads of a college	Jewish secular / large	1	3.22
	Jewish secular/small	5	16.1
	Jewish religious/large	1	3.22
	Arab/large	2	6.45
	Arab/small	1	3.22
Former heads	Jewish secular/large	3	9.67
	Jewish secular/small	1	3.22
Rector	Jewish secular/large	4	12.9
	Arab small	1	3.22
Middle management *	Jewish secular/large	5	16.1
	Jewish secular/small	5	16.1
	Jewish religious/small	2	6.45
total		**31**	99.87

*9 of these participants are graduates of the study programs at Mofet.

The instrument used was a semi-structured in-depth interview. Each interview session lasted about 90 minutes and was conducted in the interviewee's office. The process of setting up the meetings required much determination on behalf of the data collectors. (One interview was conducted over the telephone). The interviewees were asked for their opinion/perception on the following topics:

- What is the contribution of the studies at the school to the professional development of the teacher educators from the college?
- What are the benefits to the college?
- Who benefits more – the teacher educator; the college and/or the student teachers at the college?
- What are the specific impacts of the different training programs on the professional development of the teacher educators and on their professional activities at the college?

Data collection and data analysis

Following the model of participatory evaluation research (Guba & Lincoln, 1989) an on-going dialogue was carried out between the data collectors and the school staff including the head of the school.

Data was analyzed using a thematic approach (Glaser & Strauss 1967; Merriam, 2009) whereby following a mapping process of the responses to the interview questions, recurring themes were extracted with a particular emphasis on practical considerations.

Findings and discussion

This study was set out to identify the impact and the benefits to the workplace following a two-year PD study program, as perceived by those in leadership positions in the various teacher education colleges. The term 'workplace' is used here in reference to the teacher education colleges where the TEs work.

Content analysis of the interviews revealed the following themes which are actually direct responses to the research questions which were (1) what are the benefits to the workplace as perceived by those in leadership positions?; (2) do the study programs have an impact on the workplace and what is it?:

a) Benefits to the teacher educators
b) Impact and benefits to the workplace
c) Benefits to the student teachers

In general, findings show that most of the interviewees (70%) perceived the individual teacher educator as the one who benefitted most from his or her participation in a study program. Possible benefits to the college at large and to the teacher educator's students were assumed by those in leadership positions but were not backed up by evidence. At the same time, some interviewees expressed their expectations with regard to impact of a formal course of study.

Further analysis and consultation with the school staff and revealed three more themes that shed light on the perceptions of those in leadership positions with regards to the study programs at Mofet.

d) Attitudes of position holders toward the study programs offered at the school
e) Sustainability
f) Dialogue and collaboration between the school of professional development and the college

a) Benefits to the teacher educators

A unanimous agreement was found among all the interviewees: the TEs benefit from their participation in the study programs at Mofet. This perception is corroborated by findings reported by Feigin et al. (2008) and Reichenberg et al. (2010I.

Additional benefits perceived by the interviewees were:

- Networking;
- An opportunity to be updated and to acquire knowledge and skills with regard to theories on teaching and learning and teacher education;
- An exposure to modeling;
- Research opportunities;
- Acquisition of common professional discourse;
- Developing self-efficacy in particular in the areas of pedagogic instruction and academic management;
- Strengthening of one's professional confidence (that has the potential to result in initiation of new projects);
- Applying new courses of action within the work-place.

b) Impact and benefits to the workplace

Two study programs were perceived to have the highest impact on the work place: Academic Management and Mentoring and Instruction. Three heads of colleges reported they set graduation from the Academic Management program as a pre-requisite to apply for a leadership

position in the college. In addition, almost 50% of the interviewees see an important impact on the general administrative and academic management atmosphere at their respective colleges following the number of graduates from this study program. Several interviewees mentioned that there seems to be a greater benefit and impact on performance when the program is studied alongside the first years in a managerial position, something like 'on the job' training.
The target population for the program Mentoring and Instruction is mainly pedagogic instructors and lecturers with no teaching experience or training. It was pointed out that at times, studying in this program is a pre-requisite for getting a position as a pedagogic instructor.

c) Benefits to the student teachers
The student teachers are taught by the teacher educators. PD in education is assumed to have an influence on students' performance and academic achievements. In this study, the interviewees assume an indirect impact on the student teachers in particularly when it comes to graduates of the Mentoring and Instruction program and the ICT program.
It is interesting to note that in comparison with the other position holders, the nine interviewees who are graduates of the study programs see less of an impact on the student teachers and more on the teacher educators.

d) Attitudes of position holders toward the study programs
There is almost a consensus with regard to the high quality of the different study programs. This is corroborated by the variety of possible benefits mentioned (and mentioned above) Networking was recognized by all the interviewees to be most important and relevant.
The interviewees admitted that they are not very familiar with the contents of the different programs and that they are not aware of the specific processes the TEs go through during the course of the study program. Those who felt they have a better idea of 'what goes on' at the school admitted that they do not use this information in process of tenure considerations or appointments for middle management positions.

e) Sustainability
The overall impression is that the study programs a Mofet have a meaningful role in shaping TEPD within the framework of teacher education in Israel. However, it seems that better and improved follow-up measures on behalf of position holders in the colleges on the one hand, and improved measures of sharing and collaboration on behalf of the school on the other hand would raise the level of impact and effectiveness of the study programs.
Critical issues mentioned had to do with budgetary considerations and collaboration between the various colleges and the national center. Position holders from larger teacher training institutes expressed their dissatisfaction with the fact that PD budget allocations from the Ministry of Education go to the national center whereas they could offer PD learning activities on-site, at the work-place.

f) Dialogue and collaboration between the school of professional development and the college
An interesting finding was that well over half of the interviewees (N=24) pointed out that there is very little dialogue going on between them and the academic heads of the different study programs. As mentioned above, some pointed out that they are not very familiar with the content of the different programs and as a result are not aware of the processes that TEs go through during the course of their studies. Others went on to say that the diploma gained doesn't have an effect on the promotion and tenure processes at the college. This situation leads to a disparity between what is expected of the graduates in terms of initiatives and innovations within the college and what actually happens. In addition, more often than not, studying at Mofet is perceived more as a personal initiative than an institutional initiative. (This was

strengthened by the nine graduates, now position holders). Consequently, there is little continuation on the institutional level.

These findings pertain to specific PD learning activities that is, to formal activities offered at a national and centralized center. As is evident from other research endeavors, when TEs report on their learning activities it seems to be highly self-motivated (i.e., Kools et al., 2011; van der Klink et al., 2012; Avissar & Reichenberg, 2010).

These findings call for action on behalf of the School of professional Development at Mofet. Several ideas come to mind:

- There is a need for an on-going collaboration with persons in leadership positions in the different teacher training institutes. For example, to get them involved with planning and implementation of new program or with change processes in existing programs.
- The steering committee doesn't seem to fully exploit the opportunity to bridge between the school and those in leadership positions even though some are members of the committee. One action that could be taken is to invite members of the steering committee as guest lecturers in the different programs.
- Those in leadership position at the colleges are routinely invited to attend the opening ceremony at the beginning of the school year and the graduation ceremony. Sharing information about the graduates such as the topics of their final project and sharing information about specific activities conducted at the school could contribute to an atmosphere of 'togetherness'.

Since the completion of this evaluation research some of these suggestions have gone into effect. It calls for another evaluation in three or four years' time.

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ON-LINE, OFF-LINE, IN-LINE: THE CHALLENGES FACING TEACHER EDUCATORS IN PROVIDING CAREER-LONG LEARNING OPPORTUNITIES FOR LEADERS OF LEARNING

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Abstract
Teacher educators place importance on reflective practice, reflective reading, modelling, problem solving and dialogue in ensuring that professional learning remains relevant to leaders of learning. The established delivery systems for professional learning within the area of pedagogy continue to be challenged by those who subscribe to a "do more with less" ideology. This paper explores the notion that "do more with less" is not necessarily a negative ideology, but rather an opportunity to develop the confidence of learning and teaching practitioners through different modes of delivery, enhancing reflective practice underpinned by research. Specifically, this paper examines the emerging good practice in the area of Technology Enhanced Learning (TEL) that ensures that quality content is repurposed and sequenced appropriately providing a meaningful enhancement to professional learning.

Keywords: communities of practice; distributed online network; constraints; contexts; distributed cognition; leaders of learning; on-line; off-line; in-line; pedagogy; professional learning communities; professional network; social network; teacher educator; teacher education; technology enhanced learning.

Introduction

There is a considerable amount of literature discussing a range of areas relating to the notion of leadership within learning and teaching contexts (Reeves et al., 2003; Macbeath & Cheng, 2008). This paper does not set out to engage further with these discussions, but rather in framing a narrative around the belief that all educators who engage with learning and teaching (i.e. teacher trainee, teacher, lecturer and others) are leaders of learning. Teacher educators, as a distinct group of practitioners within higher education, are themselves model examples of leaders of learning, albeit as pedagogues engaged in learning partnerships with colleagues during and post training.

This paper sets out to focus on the challenges of providing professional development and training within the backdrop of perceived tensions in relation to accountability, effective management and performance of teacher educators within university settings (Blin & Munro, 2007; Mentor, 2010). In addition, the frameworks imposed by the Quality Assurance Agency for Higher Education (QAA), funding councils and other agencies challenge the established delivery systems for professional learning within the area of pedagogy, with university managers highlighting a " do more with less" ideology. Within this ideology, there is increasing support for embedding technology, which in itself is exerting pressure on learning and teaching. Kelliher and Anderson (2010) highlight "work intensification" as an unplanned outcome of changing working practice whilst Sargent and Hunnum (2009) support the development and engagement with face to face professional learning communities through the alignment and incentive management of an educator's work stream.

Face to face activities are becoming a luxury in some respects, although professional learning hubs as a combination of both face to face and online activities a preferred option for many. Discussions rarely appear to take place without the 'technology' element being present. The rhetoric of technology as 'The Panacea' against a backdrop of education establishments not investing enough into the technology mix or attempting to install new technologies at the expense of teacher educators, doing more (online) with less face to face has become the 'norm' which in turn has the potential to increase the workload of colleagues. (O'Neill et al., 2004). JISC (2011) has stressed that universities cannot slow down the adoption of technologies in supporting learning and teaching if they are to remain in the forefront of excellence in the UK. Murray (2008) highlights the work of teacher educators as "both teacher-practitioners and scholar-academics" and describes perceived demands placed upon teacher educators as "unique" in providing synergy between the professional support for teacher education and the schools' sector, and engaging with scholarship and research. Hanson (2003) highlights the views of some regarding trainee perceptions of "not getting their money's worth"; expectations of having 24/7 access to teacher educators; the replacement of face to face sessions, to a certain extent, with online content, such as, videos of lectures; power-points, [.pdf] hand-outs and an expectation of one-to-one 'drip feed' sessions to lead to successful course completion, endorsing a skewed, perceived trainee entitlement to justify their hefty course fees.

McLuhan (1961), in pre-internet days stated "We shape our tools and then our tools shape us." He believed that using technology was an "extension of our own natural faculties" and that once embedded "they existed as external and independent objects" on which we then become dependent. Baudrillard (1981), also pre-internet, recognised the impact of information overload.

"We live in a world where there is more and more information, and less and less meaning" Baudrillard (1981)

In present times however, educators recognise the benefits of utilising the wealth of resources available, but are beginning to look at the ways in which the 'knowledge' (information) can be repurposed in a deep and meaningful way. Saljo (2010) for example, refers to the acquisition of knowledge and how we master that knowledge as "a function" of the modelling tools with which we are familiar. In other words, the technology is a mechanism that aids the learning process. It is an instructional tool through which we access content, repurpose content, discuss and exchange ideas through communities of learning (hubs) and engage with on-line social and professional media. Slaouti (2007) suggests that in considering approaches to the design and implementation of learning opportunities and in accepting "understanding of learning as distributed knowledge", technology enhanced learning can complement or act as an alternative to face to face training. This has been possible, in part, through the increased computational power of new mobile technologies. These have the potential to impact on the way learners learn. The timeline of moving away from the more drill and skill computer assisted learning environments to environments influenced by social constructivist principles has almost resulted in a surge of technological gimmickry that demonstrates a tendency to discard the previous learning environments.

Historically, the old 'drill and skill' environments of the early computer assisted learning (CAL) intelligent tutoring systems (ITS), all had much to offer in that they provided an untiring teacher substitute with which learners could interact. Today's environments offer more in the human to human interaction through distributed online networks and communities of practice for example: micro worlds, virtual reality based learning systems, interactive online games, computer-supported collaborative learning (CSCL) all provide environments which have moved away from the delivery of content model. The key question however, is – are the adoption of these technologies merely to satisfy managers' agendas in 'doing more with less' or have they been adopted by the leader of learning as a tool to enhance teaching and learning? Practices

may be in-line with the demands of management but alien to the perceptions and practices of the teacher educator and the learners themselves.
Through the use of more powerful networking technologies, online portals such as databases, websites and libraries, provide no shortage of information which may in turn transform our conceptions of learning. However, consideration has to be given to how that information is packaged and presented, measuring the impact on delivery to our learners. This provides a challenge for teacher educators as they require more, not less, in ensuring that engagement through technologies remains relevant and of high quality.
In considering the appropriation, repurposing, repackaging and presentation of information, teacher educators additionally consider how learners learn; how they organise, assimilate, synthesise, decode, demystify, decipher and develop confidence in making decisions on what is valid information (or not). Learners require to develop an understanding of the 'relevance' of knowing a particular fact (Wulf & Zirfas 2007); need to establish the powers of estimation and need to be selective and engage with secure decision making skills. Confidence and decisions still lie with the teacher educator in making sense of all this. Technology enhanced learning is only a collaborative partner since it can provide the basis of developing professional communities of learning (hubs) whilst accessing the mechanistic process of calculating, searching, sorting, storing and retrieving information and facts.

Pedagogy in relation to teacher education
Teacher educators' interest in pedagogy derives from the premise that quality learning and teaching impacts on the subsequent quality of student learning. (Lingard et al., 2003). In addition, motivating learners to engage as lifelong learners beyond the rigid boundaries of institutions continues to be debated by the education community. The working paper of Zukas and Malcolm (no date - Open University) discusses how teachers [teacher educators] question their teaching through critical practice. This practice develops from belonging to a disciplinary community. When pedagogy is highlighted within a disciplinary community it establishes a situated basis for learners to learn.
"if one is able to develop systematically teaching as a distinct activity which bears no relation to context, content or purpose, it could be argued that this would then be transferable across sectoral walls. This would be the basis of a new pedagogy for lifelong learning and teaching." (Zukas & Malcolm [no date] - Working Paper - Open University).
Pedagogy of teacher education is not just a focus on the delivery of information about teaching. A teacher educator's professional knowledge is important as it can impact on both teacher training practices and quality of learning and teaching contexts for learners. It is not about the tricks of the trade, but rather about the exploration and capacity building of attitudes, knowledge and skills of teaching itself.

Knowledge management and knowledge building
Knowledge management may be described as learning strategies and information practices (Petrides & Nodine, 2003). The improvement and accountability agenda in education continues to focus discussion on how we might develop effective strategies to draw together, disseminate and connect information. Teacher educators are aware that knowledge is at the core of their work and that they should continue to improve opportunities to harness knowledge within the development of learning and teaching.
"Knowledge management builds upon collegial and professional teamwork [networks (sic)] by actively engaging people at the many organisational levels in sharing with others what they know, and what they are learning." (Petrides & Nodine, 2003, p.11).
Holden (2008) discusses knowledge building though networks and describes these as promoting outcomes of research; outcomes of collaboration; outcomes of human agency; outcomes of

mutual learning and dialogue; outcomes of knowledge management. Networks provide opportunity for teacher educators and others to build capacity and engage with the communal and scholarly investment of group members. There is a need for both learning and teaching practitioners and teacher educators to enhance their engagement beyond any established held view of the learning and teaching community. Innovative learning environments; communities of learning; engagement of learners through creative thinking and implementing an expanding range of pedagogies and learning tools, all contribute to extended network possibilities. (Laferrière et al., 2006)

Distributed cognition

Learning is both social and situated within a context. Lave and Wenger (1991), Rogers (1997), Mok (2008) and Donovan (2009) share the view that learning via distributed cognition provides opportunity to examine the process of acquiring knowledge by sharing, engaging and extending our understanding of learning and knowledge creation. Individuals working on a task will possess various skills and knowledge. They will collaborate with others by pooling resources to accomplish their task and may include the use of a range of learning tools and methodologies. Knowledge shared by individuals, enable them to engage with various communicative practices. The distribution of shared information and knowledge facilitates the emergence of coordinated ideas and beliefs, which form the basis of coordinated actions. Therefore, if acquiring knowledge and skill is more than the engagement of a single individual working on their own and without learning tools, then distributed cognition provides opportunity to identify and examine the additional tools, resources, and social relations that people draw upon to engage in acquiring knowledge.

"…with insights into how culture, history and social structures affect cognition and its distribution, these will greatly inform the design of learning environments, artefacts and learning strategies" (Mok, 2008, p. 157).

Social, professional and educational networking

Professional Networking provides the opportunity to share, communicate and develop thematic interests with peers. Learning and teaching practitioners seem to benefit from the professional knowledge and experience network membership offer. In the United Kingdom (as with other countries) there is a growing interest in the way networks provide collaboration and professional development. Carmichael et al. (2006) discuss how networks enable professional learning with subsequent impact on practice. In particular, face to face networking is popular, with support from electronic and other means. Liebermann and Mace (2008) describe learning as a social activity. Learning happens through experience and practice, with people learning from and with others in particular ways. Learning and teaching practitioners learn through doing, identifying meaning, participating with others and from a developing sense of identity. Professional learning and teacher development therefore rely on the building of learning communities. Professional networking and the development of learning communities is embedded in the work of learning and teaching practitioners. They believe that professionals within a learning community become socialized into a collaborative culture and are more adjusted to their learning and teaching context. That stated, the emergence of social networking tools appearing within higher education and in particular teacher education, poses some additional interesting possibilities.

"By 2014, the use of the Internet will increase the size of people's social networks far beyond what has traditionally been the case." (Rainie et al., 2005, 26)

There appears to be a bridging development between offline and online networks and also a blurring of professional and social networks. Ellison et al. (2007) suggest that social network sites maintain existing offline network contacts. The same perhaps can be stated for professional networks. Social networking is changing the way learners communicate. Most networking takes

place outside learning establishments, though countless Web 2.0 applications are emerging with educational potential. Web 2.0 represents the second generation of the World Wide Web that is dynamic, collaborative and interactive, where individuals share, create and contribute to global conversations. Hargadon (2009) advocates the term educational networking in utilising a set of Web 2.0 building blocks that support learning and teaching, thus moving away from negative perceptions of aspects of some social networking sites. He believes that educational networking provides an ideal context to create impact on a student's approach to learning; a learning and teaching practitioner's approach to learning; and how learning and teaching practitioners will interact with and learn from one another.

"With educational networking too, there's a higher probability of the following:

* Continuous learning can be encouraged and accomplished.
* Changing regulations, requirements, standards, and best practices can be maintained.
* Educators will be able to meet the demands for customised approaches that meet the specific needs and learning styles of all their students" (Hargadon, 2009).

As technology impacts on how we communicate, work and learn, educational networks, provide a response to rapid change by embracing new technologies that support learning and teaching contexts. Brill and Park (2008) highlight the fact that new technologies are evident in higher education research, learning and creative practice. They note that emerging technologies seem consistent with the social trend of moving from an information focus to an interaction focus.

Supporting the global teacher education community

UNESCO highlight teacher educators as key partners in improving the quality of basic education and having most impact in their education community in addressing sustainability.

"[Education for Sustainable Development] ESD is more than a knowledge base related to environment, economy, and society. It also addresses learning skills, perspectives, and values that guide and motivate people to seek sustainable livelihoods, participate in a demographic society, and live in a sustainable manner" (UNESCO 2005).

UNESCO formed a network of 30 international Teacher Education Institutions who have contributed to the formation of guidelines and recommendations on the use of education as a tool to achieve more sustainable futures. There has been progress, despite the enormity of the task in hand; however, the focus seems to have been around the subsequent impact and change on curriculum programmes, pedagogy, policy and practice within each individual institution. Although there has been a willingness to ensure collaboration in acting upon the guidelines and recommendations (and much good practice is evident), there is scope, given the concerted effort and resources that will be required over time, to utilise existing global resources in a more innovative way.

There is much to support the development of a global interactive education network for teacher educators. There are a growing number of themed electronic networks that support teacher educators not to mention the growing community of individuals who use Web 2.0 tools. Themed electronic networks may be closed networks (i.e. require registration or link with an association) or may be open to all - provided that you have the URL address. Some may be searchable electronic repositories for resources with little or no interactivity on the part of the user.

What follows is a narrative around a number of teacher educator networks, exemplifying emerging good practice, based on historical developments in relation to supporting professional learning communities through technology enhanced learning.

Supporting professional learning communities: emerging good practice

In examining the development of professional learning communities for teacher educators in England (UK), Leask (2002a;b;c;d), was at the forefront of initiating developments in relation to the creation of (i) a Teacher Training Resource Bank (TTRB), providing support for the Initial

Teacher Education community in its use of evidence to inform practice. This portal provided access to thousands of resources, such as research reports, video materials and practical - evidence informed – materials. (ii) a Multiverse portal supporting teacher educators and student teachers addressing the educational achievement of pupils from diverse backgrounds. (iii) a Behaviour4Learning portal providing access to the research and evidence base informing teacher education. (iv) an SEN portal providing resources to support teaching and including learners experiencing SEN and/or disabilities.

Although initiated by Leask and funded by the Training and Development Agency for Schools (TDA) - a national agency and recognised sector body responsible for the training and development of the school workforce, these four professional learning communities were developed by teams of highly skilled colleagues working within the area of teacher education, based within universities who held a portfolio of supporting initial, post initial and continuing professional development in teacher education. In addition to these professional learning communities, UK subject associations received funding from the TDA to develop a focussed professional learning community within their own subject area. The primary aim of these focussed professional learning communities was to provide subject knowledge and pedagogical support for colleagues who were at an early career development stage as teacher educators. What emerged was an enhanced engagement and support for all teacher educators, which in itself, was an indicator that the wider teacher educator community highlighted that these professional learning communities were supportive and relevant professional networking opportunities.

With a change in direction in 2010 from the new coalition Government in England (UK), funding for these professional learning communities ceased and the portals taken off-line. This was primarily implemented under the new Government's directive to engage with austerity measures. In addition, the directive in relation to education changed within days of the new coalition Government taking power. The professional learning communities that were taken off-line, may still be accessed through the National Archives, albeit carrying a statement that: "A new government was elected on the 11th May, therefore references to government policy on this site may not reflect current government policy. In addition, a number of documents produced by the previous government have been or are being archived. This may mean that some links to documents are temporarily unavailable. We apologise for this inconvenience."

Given the development and support for these professional development learning communities from teacher educators, there has been widespread dismay at the dismissal of this quality work and support by the coalition Government's Education Secretary. It is not within the scope of this narrative to engage with the impact of political directives on teacher educator or teacher professional development, or on wider education issues, but it does re-emphasise how education remains in a precarious position when political influences remain dominant. What is interesting to note is that there is a perceived turn around with the announcement from the coalition Government that they wish to offer the quality content of the professional learning communities as an open source resource, inviting groups or organisations to repurpose this content.

"The content from these sites has been made available under Open Government Licence for re-use and development. We encourage businesses, individuals, charities and other interested parties to use this content to create new resources for the benefit of the educational community."*(*http://www.tda.gov.uk/school-leader/school-improvement/teacher-development-hub.aspx*)*

UK subject associations have not witnessed such an impact on their teacher educator professional learning communities as these have now been incorporated into existing subject association online portals. An example of emerging good practice from these embedded

professional learning communities can be demonstrated through the Subject Association for Information Technology in Teacher Education portal (ITTE). Specifically the work of Simpson and Smith (2008) is worth highlighting where the authors discuss models of teaching, with reference to underpinning research and reading. What is central to this work and particularly unique is the bespoke creation of an open ended video resource utilising video clips that early career teacher educators might find useful in prompting discussion with students about approaches to teaching. The resource encourages student analysis and reflection, encouraging the synergy between theory and practice. Early career teacher educators are encouraged to consider providing video of their own students as an opportunity to encourage self and peer analysis and feedback. Although created specifically with aspiring student teachers of information Communication technology (ICT) in mind, the resource could in fact be repurposed for any subject learning and teaching context.

Twinning (2009a;b) is also worth highlighting for his work related to the Vital Project at the Open University. Vital provides support for educators through exchange of knowledge and expertise. The portal seeks to support the quality of learning and teaching and enhances the UK subject association portals.

In attempting to address the demise of key online professional learning communities and the availability of repurposing content under UK coalition Government's "Open Government Licence", Leask (2011) developed a collaborative portal that has the potential to connect educators internationally, so that they can share, build and access research evidence relating to effective educational practice. This portal is in a development phase, however, participants can join communities, create projects and invite other colleagues to contribute to projects and work in partnership within themed areas.

This professional learning community has been based on a similar portal developed by Leask (2006) for Local Government Improvement and Development (formerly IDeA – Improvement and Development Agency) Both these professional learning community portals have their roots in the design characteristics of the Cochrane Collaboration for Medicine (1993). The Cochrane Collaboration, is an international network of more than 28,000 health professionals in over 100 countries. The Cochran professional learning community portal supports health care providers, policy-makers, patients, their advocates and carers, to engage with the best research evidence in order to make well-informed decisions about health care. The Cochrane Collaboration portal along with the Local Government Improvement and Development portal and the Education Community portal all share the same design and content features. These features contain open and closed (requiring moderator permission) communities, access to international research papers, wikis, blogs, forums, libraries, events, newsfeeds and topic tags.

Internationally, the work of the Mofet Institute in Tel Aviv, Israel is worthy of note. The institute has developed an International Portal of Teacher Education. This professional learning community for both general and teacher educators provides knowledge exchange in the field of teacher education and education to an international community of educators. In particular, this portal enhances the support of teacher educators and their professional development.

"The portal contains abstracts of the best papers on teacher education topics from the leading journals in the world in the field as well as from international conferences on education." (http://itec.macam.ac.il/portal/FAQ.aspx)

In comparison, this portal has restricted features around what is a searchable repository for quality writing on teacher education. In particular, the content of the portal is categorised under the broad headings of Beginning Teachers; Mentoring and Supervision; Multiculturalism and Diversity; Pre-service Students; Professional Development; Research Methods; Special Education; Teaching Assessment; Teacher Educators; Teacher Education and Instruction; Teacher Education Programs; Technology and Computers; Theories and Approaches and Trends in Teacher Education. Although this professional learning community portal does not provide

the additional features originally initiated by the Cochrane Collaboration, the portal is still worthy of commendation in relation to providing one-stop access to up-to-date world research and writings within the area of Teacher Education.

There is a considerable number and type of open educational resources (OERs) and Professional Learning Communities that embrace technology enhanced learning in support of the work of teacher educators. What is important to note, is that we do not require an increase in this number, but rather consider how we repurpose these within the context of the evolving professional practice of teacher educators. The "do more with less" ideology is attractive in this context, but not at the expense of the investment of time and skill development to ensure that engagement with technology enhanced learning enhances the quality learning of learners (Jeffries et al., 2004; Ribes & Finholt, 2009).

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PROFESSIONAL DEVELOPMENT COMMUNITY: A FRAMEWORK FOR PROMOTING PEDAGOGIC CHANGE AMONG TEACHER EDUCATORS

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Abstract
Communal aspects of professional development have recently gained much attention from researchers as well as practitioners who seek to improve education at various levels. Unfortunately, serious scholarly efforts to identify and understand factors which promote or hinder this development to occur have not been found. Moreover, the indiscriminate us of the term *learning in a community* remains vague and ill defined. This chapter will shed light on the essential features that constitute one such community for teacher educators. We do this by integrating four years of research which closely examined learning and development processes within the community, presenting a fine grained analysis of its' workings and extrapolating from out data those big ideas which drive the endeavor forward and enable the teacher educators to grow professionally. In our Professional Development Community (PDC) the main features supporting teaching development were found to be: creating safe environments for learning, talk about student learning, group reflection and feedback, engaging teachers in research, and continuity. A factor preventing professional growth is retreating from the goals of the project, a phenomenon which we termed *withdrawal.* Breaking of isolation was identified as a factor which can either promote or hinder development.

Keywords: community of practice, community of learners, professional development, teacher educators

Introduction and theoretical framework

Professional development of teacher educators in the communal context

Professional development of educators is increasingly important in promoting and advancing educational practice. Studies examining conditions which promote or hinder professional learning have noted the crucial role played by collaboration in affecting significant change among educators (Avalos, 2011; Stes et al., 2010; McAlpine, 2003; Prebble et al., 2004; Gallos et al., 2005; Taylor & Rege Colet, 2009). Learning in groups has proved to be a major avenue for supporting this development and change (Lohman, 2005). Collaboration has been found to encourage development through exchanging ideas and experiences, discussion, feedback and moral support (Butler, Novak Lauscher, Jarvis-Selinger, & Beckingham, 2004; Johnson, 2003; Meirink, Meijer, & Verloop, 2007). This perspective derives from research showing that one cannot learn in a vacuum, and an expert in isolation has limited capacities (Brown, Bransford, Ferrara, & Campione, 1983; Brown, 1997). This approach views professional learning as socially and culturally situated. Instead of focusing on solitary practitioner whose professional learning is segmented from colleagues, the collaboration context emphasizes the shared work setting. In these contexts, new information and ideas emanate from interaction with others, creating a culture in which further learning is stimulated (Jurasaite-Harbison & Rex, 2010).

One model of learning in community is the community of practice (COP) (Lave, 1993; Lave & Wenger, 1991), in which a group of practitioners share common concerns, sets of problems, or passions about a topic. They deepen their knowledge and expertise by ongoing interaction towards a common goal such as professional problem solving and improvement of practice (Wenger, McDermott, & Snyder, 2002). This model, although developed in the context of business organization, has been widely applied in educational settings, where it has been characterized by teacher involvement, collaborative problem solving, continuity, and support (Opfer & Pedder, 2011; Borko, 2004).

A second model of learning in community is the popular community of learners (COL) model. Recent international focus on instructional development efforts in achieving pedagogic change (Avalos, 2011; Stes et al., 2010; McAlpine, 2003; Prebble et al., 2004; Gallos et al., 2005; Taylor & Rege Colet, 2009) has emphasized the utility of COL as a preferred means of achieving significant professional development. Although the term COL is widely used as a label for professional development endeavors, it is rarely defined or specified. For example, a recent ERIC search of peer reviewed articles using the search terms "community of learners" and "professional development" turned up 25 current results. Although authors investigated professional development projects which they entitled *community of learners*, they consistently avoided a definition of this term. In contrast to this obfuscating of the concept, Shulman and Sherin (2004) focused their use of the term on the jigsaw model, which involves interlocking domains of inquiry among the learners. This idea has been further developed in a model emphasizing interdependency. In this view, collaboration implies that teachers sharing responsibility and authority for making decisions about common practices (Meirink, Imants, Meijer & Verloop, 2010). The COL model generally denotes a group of practitioners who convene in order to learn together with the aim of deepening knowledge and understanding, through joint reflection and problem solving (Nash, 2008). The COL is distinguished from the COP in that it does not necessarily involve a common domain, and the focus need not be on practice itself.

Despite differences in focus and aims, the COP and the COL share the premise that educators can learn as well as teach in their work setting (Borko & Putnam, 1996; Hargreaves, 1994; Smylie, 1995). Theories of organizational development link this kind of professional learning with participation in institutional activities while stressing integration of work and learning as a necessary condition for development at individual and organizational levels (Hargreaves, 1997; King & Newmann, 2000; Livneh & Livneh, 1999; Watkins & Marsick, 1999; Moore & Shaw, 2005). Thus becoming a member of a community supports socio-cultural learning (ten Dam & Blom, 2006) and promotes individual professional growth as well as institutional growth and change.

The idea of improving education by developing professional learning communities is currently in vogue. Educators use this term to describe a broad range of collaborative professional development models aimed at improving teaching. In fact, these terms, professional learning communities or communities of practice, have been used indiscriminately, posing a danger of their losing all meaning (DuFour, 2004). Furthermore, the lack of clarity of the community of practice model is reflected in the inadequate conceptualization of how learning occurs in these contexts (Murray, 2008; Edwards & Protheroe, 2003).

There is an urgent need to closely examine these communities in order to identify factors that promote or hinder professional learning for the educators. This chapter integrates findings from four years of research on a community engaged in professional development. Taking a close look at our own communal context enables us to extract the core characteristics of one endeavor which may be applicable to others.

The professional development context and setting

The proven benefits of professional development in the communal context in schools framed our college's response to recent efforts by the Israeli Ministry of Education to infuse thinking

into teacher training courses at the college level. In 2008, as part of the reform agenda in schools, the Pedagogic Secretariat offered grants to colleges and universities to further this goal. Teaching practices which support higher order thinking require serious attention among teacher educators (Stes, Min-Leliveld, Gijbels & Van Petegem, 2010; Mergler et al., 2009) and include two major components, which Costa (2001) refers to as teaching *for* thinking and teaching *of* thinking. Teaching *for* thinking means that teachers create conditions that are conductive to students' thinking. Adapting Costa's ideas to college environment involves several factors including posing challenging dilemmas, enabling small group collaborations, valuing thinking as a goal, creating a climate of risk taking and modeling thinking behaviors. Teaching *of* thinking means instructing students directly in thinking skills such as making inferences from data and considering different perspectives. Teaching of thinking includes habituation of attitudes and dispositions which characterize effective skillful thinkers. This entails adaptation of new methods in college courses which promote those skills (Martin & Michelli, 2001).

To meet this challenge we established a communal model for teacher educators to share their thoughts, knowledge and practice as they learned new teaching methods in order to bring about changes in their practice. Our community provided the participating teacher educators a legitimate space for professional learning which deemed essential for professional growth to occur (Murray, 2012). In such a community the relationship between what teachers learn and what students learn is important, while the community builds outward from this essential connection (Curry, 2008; Shulman & Shulman, 2004). With the goal of improving instruction, enhancing faculty expertise and diminishing isolation, we integrated elements of the COP and the COL models. From the COP, we focused on a particular domain, in our case, thinking education, while maintaining a high level of group identity which Lave and Wenger (1991) define as community. In addition, we developed the practice of teaching for thinking and teaching of thinking, through shared readings, reflections, and classroom methodologies based on specific classroom contexts. While participants from many disciplines focused on infusing thinking into their college teaching, they also studied together academic and case material previously unknown to them. In this regard, our model incorporates elements of the COL, which in combination with the problem solving focus of the COP, formed a unique community model, which we call the Professional Development Community (PDC).

Our model differed from that of the leading institute for the professional development of teacher educators in Israel, called MOFET (Shagrir, 2011), where courses are centrally organized to serve the needs of teachers educators from around the country. Some courses deal with personal professional development aspects such as academic writing and research skills and others focus on professional practice such as using technology in college teaching. While communal elements are found in these activities, individual professionalization is emphasized. This focus premises that teacher educators will return to their respective institutions for individual implementation, rather than nurturing local cultures of practice. In contrast, our in-house PDC nurtures the implementation of innovative practices within the institutional culture which is undergoing change through the influence of the group on the college. Moreover, our communal emphasis aligns with research showing that professional collaboration is a necessary element for significant change at both individual and organizational levels (King & Newmann, 2000; Livneh & Livneh, 1999; Moore & Shaw, 2005). Rooted in the workplace, the PDC grows within the college, strengthening faculty connections for mutual support in professional learning both within and outside of the group activities. This communal culture of professional development enables implementation of school wide innovation, such as the state wide thinking agenda suggested by the Pedagogic Secretariat (Zohar, 2008).

Another important difference between our PDC model and that of the Mofet institute relates to the presence of an "in house" moderator. While relaying on an external expert to lead the PDC at the initial stages, the local moderator acts as a leader on a daily basis. Although a participant

of equal status in the community, he is also perceived as a mentor for consultation and support. The leadership role of the PDC will eventually be transferred to in-house moderator.

We established four separate yearlong PDC's for teacher educators to infuse thinking into college level teaching. The first phase of each PDC consisted of exposure to aspects of teaching thinking (Ritchhart, Church, & Morrison, 2011). Initially participants explored current theories in thinking education, read research and case material and explored possible implementations. In the second phase participants were expected to change their college teaching by including thinking skills (Presseisen, 2001), thinking frames (Perkins, 1986), thinking routines and the language of thinking (Ritchhart, 2002). Participants documented these teaching experiences as a basis for analysis and collegial discourse. The process encouraged applications of new pedagogy and nurtured interactive feedback. The final phase involved joint investigation of pedagogy and practice through group reflection.

Each of these PDC'S met monthly for a total of ten sessions. Participation was voluntary, presuming that adult learners must set their own goals for continued professional development (Knowles, Holton, & Swanson, 1998). Teacher educators came from a variety of academic departments and varied from year to year (see Table 1). Each PDC group was unique in its composition, though some teachers joined the project for more than one year.

Table 1. *Academic department of participation teacher educators by year*

Year of PDC	Academic Departments Represented*
PDC1	Bible Early Childhood Education Educational Foundations (Research, Assessment, Sociology, Psychology, Internship Supervision) Mathematics
PDC2	Early Childhood Education Special Education Educational Foundations Linguistics English
PDC3	History Bible Educational Foundations Mathematics Computer Science English
PDC4	History Bible Educational Foundations Mathematics Computer Science English Early childhood education

Modes of data collection and analysis

In order to understand how teacher educators dealt with the challenges of our PDC, in each year we collected data on individual level and group level learning processes as well as implementations of participants. Data collection methods included (1) interviews with teacher educators three times throughout each year long PDC resulting in 12 subjects interviewed over the four year study (2) a group interview at the end of each year long PDC (3) teacher educators' reflective writing throughout and at the end of the project (4) recording of the PDC sessions (5)

attendance records and researcher field notes. These data were analyzed qualitatively to identify professional development processes and outcomes relating to change in pedagogic practice. We examined the structure of the narrative material using form based analysis (Lieblich, Tuval-Mashiach, & Zilber, 2004), investigating meaning in the narrative by tracking its development over time. Our focus included awareness of attitudinal changes and steps taken toward adaptation of new methods. This analytic approach highlights teachers' thinking about their own development rather than tracking actual changes which occurred. Grounded theory analysis (Strauss & Corbin, 2008) was used for coding data to generate preliminary categories from which we gained understanding of factors promoting or hindering teacher educators' learning within a community. For a thorough description of data collection and analysis methods of each separate research project please refer to Hadar and Brody (2010, accepted) and Brody and Hadar (2009).

Outcomes: Essential features of professional development in community

Factors promoting learning and implementation

Several factors were found to be critical in promoting change in practice:

Creating a safe environment for learning

Scaffolding the child's first attempts to ride a bicycle provides a suitable allegory for professionals learning innovative methods which may seem ominously unattainable. Initially, we might run after the child in his first trials, providing a path, direction and some pointers to get started on the dangerous journey. Likewise, we scaffold the experience with encouragement, support and coaching. The process is repeated as the child builds her own confidence and begins to ride independently.

For change to happen, learners need to feel safe, seeing a manageable path, realizing the possibility of new habits, while garnering support for their fledgling endeavors. They also need assurance that taking chances will not jeopardize their current sense of identity and wholeness. True communities provide peer support and motivation for pushing forward. As Knowles, Holton and Swanson (1998) suggested, a key requirement for effective adult learning is the creation of a nonthreatening learning environment in which participants feel psychologically safe to express themselves openly. In our PDC we found that assuring a safe environment is crucial in promoting change in practice. Acquiring positive attitudes towards thinking education was predicated on teacher educators expressing themselves openly, sharing opinions freely and reflecting on their role in a team of equals. Teacher educators described their need for community which is both safe and but values risk-taking. Our PDC provided a venue for talking about mistakes while attempting new teaching methods. Fear of experimenting was effectively addressed by members speaking openly about their attempting new methods, successfully or not, and receiving informative and supportive feedback. Looking at, commenting on, or questioning personal practice can be a difficult and uncomfortable position for teachers (Snow Greeno, 2005), but in the PDC teacher educators showed empathy and support for one another, making implementation an attainable goal.

A safe professional development environment enables teachers not only to explore new ideas but also to challenge their own assumptions. This process includes openly sharing thoughts, and questioning conclusion about partially formulated ideas. Open collective reflection scaffolds building on the ideas of colleagues, which deepens and enriches both thinking and insights.

The essential elements of a safe environment for teacher learning:

- institutional support and equal status of participants;
- opportunities for training and non-threatening classroom practice;
- support to overcome fear of "unsuccessful" implementation;
- peer and professional coaching aimed at implementation;

- group norms legitimizing daring in pedagogic implementation;
- group rewards for innovative thinking and experimentation;
- empathy and understanding of differences among pedagogic approaches.

Talk about student learning

Teacher educators typically work in conjunction with others on a departmental level, but they rarely speak about actual student learning with their colleagues. Instead they tend to focus on teaching practices in isolation from student learning. Our PDC participants felt this deficit including it as a motive for joining the group.

Ample research attests to the value of having teachers come together to talk about their teaching (Scheerens, 2010). In their review of research on Professional Learning Communities, Stoll et al. (2006) claim that focus on student learning is a common dimension found in a variety of communal professional development practices. Two exemplary models of using talk about student learning to promote teachers' professional development are the Visible thinking Project and the cultures of thinking project at Project Zero, Harvard graduate school of education (Ritchhart, Church & Morrison, 2011) and the early childhood centers in Reggio Emilia, Italy (Rinaldi, 2006). In both contexts, a rich culture of discourse about student learning informs daily practice. In our PDC, talk about student learning stimulates teacher educators to analyze students' oral and written responses in order to understand consequences for their teaching practice. This shift from a focus on teaching to a focus on learning had profound implications for teacher educators' learning process.

It has been found that teacher educators often complain about student non learning, rather than examining with their colleagues how students actually learn. The PDC gave our participants the ability to go beyond these usual complaints by engaging in meaningful discussions about teaching and learning processes. Improving teaching was driven by talk about student learning, a discourse which binds collaboration with instructional improvement.

Talk about student learning enabled teacher educators to assess their pedagogies of thinking education by understanding students' progress in learning how to think on higher levels. The discussion included examples of students' actual thinking processes and activities in class and their difficulties with higher order thinking. In addition, teacher educator's shared their views about the meaning of engaging students in thinking activities. In some cases talk about a particular student's learning pushed forward the PDC discussion by heightening awareness of how a thinking routine could have been used more effectively in diverse learning situations. This discourse played a critical role in the transformational learning of teacher educators.

Essential elements of talk about student learning include:

- focus on student thinking instead of their "non learning";
- use of student generated artifacts or other evidence;
- meaningful discussion about the learning process;
- honest assessment of pedagogies in light of student learning.

Group reflection and feedback

As teacher educators worked on infusing thinking into their courses, the PDC provided varied opportunities to deepen and share thoughts through written and oral reflection. Each meeting began with reflection on recent experiences with thinking education, using both structured routines and open formats. This group reflection provided a dynamic source of learning for individuals as they reached new understandings about their own teaching.

Secondly, this reflective discourse engendered group feedback, promoting a deeper understanding of what it means to engage college students in higher order thinking. As each participant reflected on their practice, they stimulated their colleagues to respond expansively,

thereby enhancing communicative dialogue. “A snapshot of current thinking and progress” (Ritchart, Church, & Morrison, 2011, p. 231), reflection in the community invites feedback and helps others explore new ideas about teaching and moves thinking forward.
A third benefit of group reflection is scaffolding new practice. Teachers who openly reflect on implementing innovative practice provide for their colleagues a model of daring in teaching. By speaking honestly and thoughtfully about practice, participants create mutual expectations of commitment to implementation. Beyond this depositional challenge supporting change on a general level, feedback also spurs innovative pedagogic decisions. This process builds foundations for action plans for future implementation as group members visualize how they can strengthen their practice to support student learning. As suggested by York-Barr, Sommers, Ghere and Montie (2001), reflection creates an opportunity for teacher educators to consider both dilemmas and successes in teaching and to engage in peer coaching by suggesting instructional possibilities. A culture of mutual reflection is essential not only for learning but also for action in a community.

Essential elements of group reflection:
- enhances individual learning;
- invites communication by giving feedback;
- provides foundations for and scaffolds action among other group members.

Engaging in teacher research
Integrating teaching with research on practice is considered by some researchers to be an essential element in improving teacher education (Cochran-Smith, 2005). Others claim that teacher research is necessary to enrich the knowledge base of teaching and teacher education (Lunenberg, Loughran, Schildkamp, Beishuizen, Meirink, & Zwart, 2007). Teacher educators who continually study their own actions, reflect on them, collect data that documents students’ responses create and recreate teacher education as a living theory (Russell & Loughran, 2007; Hamilton & Pinnegar, 2000). In addition engaging in research in a micro community enhances teacher educators’ research capacity (Murray, 2009). Involvement in both research and practice enables teacher educators to take on dual roles in the college. The first is helping degree candidates become teachers and the second is enhancing their professional work by investigating their own practice (Cochran-Smith, 2005; Murray, 2009). This trend reflects a reconceptualization of the role of teacher educator and the kinds of knowledge and skills teacher educators ought to have.
Our PDC defines participants as research practitioners with an emphasis on connecting action and analysis, inquiry and experience, and theorizing and teaching. Participants in our community were encouraged to engage in action research, self-study, and other forms of practitioner inquiry. In order for this process to flourish, we created conditions for mutual supported by helping participants understand and code data, and deduce practical and theoretical implications. Collaboration in inquiry enhanced teacher learning by shared reflection on individual research projects which helped practitioners broaden perspectives on their own teaching. Insights thus gained, lead to reframing conceptual foundations, which is in itself a transformational process (See for example, teacher research such as Dusting, 2002; Senese, 2002, 2004; Austin & Senese, 2004).
Both professional and financial support for these research projects was provided, thus emphasizing the activity’s importance. Involvement in research as well as the PDC is not an easy task. Only teacher educators who participated in the community for more than one year were able to incorporate these components into their teaching. For veteran PDC members, the research endeavor promoted professional growth by enhancing personal as well as student

learning. This commitment to the inquiry process helped participants improve practice and in some cases lead to innovations useful beyond their own courses.

Essential elements of engaging in teacher research:
- improvement through empirically based insights;
- reframing the role of teacher educator;
- mutual support through collaboration and reflection;
- commitment to the research process.

Continuity

While our PDC was initially for a one year period, many participants sought continued communal support by remaining in the group year after year. Pedagogical change takes time, suggesting that an initial period is needed to establish trust and shared meaning with other group participants. For those who achieved change in practice, ongoing support was especially critical in the first two years. Only after beginning implementation, participants developed a sense of the types of support they needed. While implementation begins after a long learning period (Brody & Hadar, 2011) failure to receive crucial support may result in dropping out or in extended withdrawal or stasis.

The need for continuity relates to individuals sharing with peers their commitment to the goals of the PDC. Although breaking of isolation occurs within the community, it is an ongoing process. By the fourth year, our PDC began to exhibit features of an organizational culture, with behavioral norms and group identity. As relationships between participants deepened, the community extended beyond the monthly meetings to the teachers' room, email communications, and other informal networking. Thus maintaining membership in the community is not only about reading one more article together or engaging in one more session of peer reflection. It is about confirming ongoing pedagogic change despite its risks and hazards. Part time college teaching can be a lonely endeavor, and engaging in pedagogic innovation can be even more isolating. Continuity of community overcomes this isolation, enabling individuals to try out new ideas knowing that peers will provide necessary emotional, social and intellectual scaffolds.

Essential elements of continuity:
- extended time for professional growth;
- correlation between seeking continuity and pedagogic change;
- developing organizational culture;
- scaffolding innovation.

Factors promoting and/or preventing learning and implementation

Breaking of isolation

Breaking of isolation was valued by all participants as a crucial feature of the PDC. This phenomenon in some cases supported and in other cases obstructed professional learning and pedagogic change. Isolation was found to be a major motive for joining the PDC. Our data clearly reveals the feeling of extreme isolation among teacher educators. Small teachers colleges in Israel are characterized by a high percentage of part time faculty who teach one day a week at different institutions. Academic departments are limited to a few instructors, with little professional interaction. Teachers hold masters or doctoral degrees, and many have qualified for their position by years of teaching in the schools (Alon & Lifschitz, 2003). This factor leads to a compromised professional identity which hovers between the school classroom and the halls of academia (Poyas & Smith, 2007). Such uncertainty strengthens both personal and professional isolation in the workplace. Expressions of isolation were common not only in the teachers' room but also in departmental meetings.

Our PDC provided teacher educators an opportunity for breaking personal isolation. Joining the group was considered an opportunity to get acquainted with other faculty and to enhance a sense of belonging to the college. The PDC enabled the participants to deepen their acquaintance over an extended period of time, with a focus on common goals. Some participants reported a sense of commitment first to the process and then to other group members. As personal relationships were formed, participants spoke of closer connections which included consulting with each other as a team. The social benefit of the PDC was obtained through joint exploration of the common topic. Personal friendships carried over to the social realm as signified by meaningful interaction in the teachers' room.

Breaking professional isolation was also an achievement of the PDC. Although teacher educators typically work in conjunction with others on a departmental level, they rarely talk about actual teaching or student learning with colleagues. The departmental organization of higher education discourages interdisciplinary discourse. Further, within the departments of small teacher colleges only one to two experts for each subject are hired (Trower & Gallagher, 2008), resulting in limited opportunities to discuss student learning and share work related problems, successes and dilemmas. Typically, college teachers take sole responsibility for course content. Interaction among faculty is often limited to cordial everyday talk instead of issues about student learning. When collaboration is promoted within the institutional culture, collegial interchange frequently stops at the classroom door. Teacher educators expressed a need to break their professional isolation when seeking solutions to pedagogic problems which arise in their work. Thus they looked to the PDC to address this reality though collaboration on teaching thinking, a shared topic which they genuinely cared about. They expected the group to provide collegial support not found elsewhere.

The theme of isolation was also at center stage when the teacher educators described the PDC outcomes. Initially, discourse on a topic of mutual interest was the major component of breaking isolation. As the program developed, participants emphasized practice, including trying out new methods and discussing failures and successes in an effort to involve others in their own learning. In this regard, the breaking of isolation enhanced teacher learning which the goal of the PDC was.

However, the breaking of isolation did not always enhance teacher learning, rather it was found in some instances to obstruct development and growth. This deleterious effect was the result of some teachers forming alliances with colleagues who chose not to implement changes in their courses. These alliances were strengthened by a shared belief that they are already "teaching thinking," thus obviating the need to change their practice. For these individuals, breaking isolation prevented transformational learning. These participants shielded themselves from change, as members of the recalcitrant group reinforced each other's current practice.

Essential elements of breaking isolation:

- salient motivator for joining;
- address personal and professional issues;
- significant collegial interaction;
- alliances as a factor in opposing change.

Factors preventing learning and implementation

Withdrawal

Communities which are organized for the purposes of professional development most often have an agenda of change along parameters determined by the initiators of the project. While initially participants identify with the explicit goals of the project, they consistently withdraw from these goals as demands are placed on them to change their practice (Brody & Hadar, 2011). In all of our PDC's, we found different motivations for withdrawal as well as varied levels of

intensity of this distancing from the project goals. Some participants were more interested in receiving confirmation of their own professional competence rather than expanding their repertoire of knowledge and skills. These teachers had initially joined the PDC out of genuine interest in a topic which they already felt that they were addressing. A prior sense of expertise bolstered their existing self-image instead of spurring honest examination of their practice. Teacher educators also prevented themselves from changing their practice by using material from the PDC to relabel their habits of teaching with more professional language. Similar to those who used the PDC to confirm their own expertise, these teachers wanted to appear current by using new terminology. They maintained a stance that they were not changing their practice, rather they were calling it by a new name. Another facet of withdrawal is teacher educators' focusing on roadblocks to implementation without attempting to overcome these difficulties. By identifying factors which would make it impossible in their eyes to implement change, they avoided innovation, but still felt good about themselves as professional teacher educators. This strategy takes the onus of change out of their hands and places it squarely on circumstances beyond their control. Yet another form of withdrawal was found among novices who chose to enter a moratorium from change. This stance involved passively learning about innovative practice without active implementation. These fours versions of withdrawal illustrate the utility of this stage for the teacher educators as they struggled to maintain their professional self- image in the face of an agenda of change. Thus teacher educators became non-learners for the short or long term. Those who succeeded in emerging from withdrawal experienced significant professional growth, while others never allowed themselves the opportunity to move beyond current practice.

When viewed as a necessary stage in the professional development of teacher educators in a community, the phenomenon of withdrawal serves as a possible steppingstone for some or a roadblock for others. In some cases it signals the severance of the individual from the group, resulting in the teacher educator dropping out. In terms of community, the withdrawal phase seems to detract from joint enterprise and shared goals. Rhetoric at this stage is individual and inwardly focused. As such this stage may be viewed as an important hurdle to overcome in order to move on to more productive aspects of the communal effort.

Essential elements of withdrawal:

- consistently follows initial enthusiasm for the project;
- alienation from the goals of the project;
- active use of strategies which avoid change in practice;
- continues in stasis, dropping out, or awareness of the possibility of change.

Implications for professional learning of teacher educators

Our discussion in this chapter focuses on the big ideas that characterize a professional development community and explain how a group of educators move beyond collaboration to achieve productive interdependence. The need to address this issue stems from Little's (2002) premise that "If we are to theorize about the significance of a professional community, we must be able to demonstrate how communities achieve their effect" (p. 937). The importance of our analysis lies in the clear delineation of how the community works to promote professional growth and change. In this discussion we rely on four years of research on the creation and maintenance of a professional development community for teacher educators and from prior experiences with other groups of teachers. Our PDC is built from elements of both a community of practice (Lave, 1993; Lave & Wenger, 1991) and a community of learners (ten-Dam & Blom, 2006). As those theoretical elements coincide they create the basis for a group of professionals aiming at broadening their knowledge while implementing their learning in their practice and "solving" various implementation issues that arise throughout the process.

As detailed above, we have unpacked the meaning of a professional development community by illuminating the core principles that exist in our PDC. While some of these principles promote group and individual development, others hinder, and still others have a dual effect. These core factors occur simultaneously and were found to interact (Hadar & Brody, accepted). The interdependencies between these factors create the uniqueness of an effective community professional development model.

The contribution of this chapter to the professional development of teacher educators lies in our analysis of the community as a potentially powerful tool for promoting growth and change. By identifying the factors which promote as well as hinder growth, this analysis enables initiators of professional development endeavors to better understand their own projects in light of these findings. In designing opportunities for teacher educators to grow professionally, planners might want to take into consideration those factors which promote growth. This means promoting a safe environment by insuring a noncritical and supportive framework for sharing one's teaching practice. Planners would also want to legitimize talk about student learning as a crucial aspect of professional change in practice. For teacher educators, such a discourse focuses their teaching practice on how their students learn and consequently on how to promote this learning.

Our findings suggest the utility of a long range plan for professional development by including teacher research as well as continuity among the goals. Moreover, scaffolding teacher research is worthwhile because it encourages teachers to examine innovations and invest themselves in pedagogic change. Continuity of participation is also related to breaking of isolation and to teacher investment in their own professional development. As teacher educators choose to deepen their involvement in the community, they enhance their own professional abilities. Professional development planners need to recognize that professional growth is an extended process involving complex personal trajectories which may move forwards as well as backwards in order to achieve growth (Brody & Hadar, 2011).

Examining the culture of isolation in the institution may be an important first step in planning the professional development community. To the extent that professional isolation permeates the institutional framework, the community endeavor can be enlisted to address this issue either tacitly or in a direct manner. As the community process unfolds over time, the leaders can expect to be challenged by participants' withdrawal from the goals of the project. An effective antidote to this deterrence is talk about student learning, which motivates many participants to move beyond their withdrawal into awareness and change. Paying attention to these essential features may not only help planners avoid pitfalls, but could also strengthen the notion of community as a crucial vehicle for the professional development of teacher educators.

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SUPPORTING TEACHERS TO OPTIMISE THE BENEFITS OF SMALL CLASS TEACHING: THE EXPERIENCE OF TEACHER EDUCATORS

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Abstract
Small Class Teaching (SCT) is being implemented in many countries around the world with the aim of improving the quality of education. Studies suggest that a reduction in class size does not automatically bring about changes in teachers' practice, and teachers' professional development is essential to bring about teacher change and the successful implementation of SCT. In Hong Kong, after years of hot debates, SCT has been implemented in local primary schools starting from Primary 1 in the school year 2009/2010. This paper reports a study to understand how teacher educators perceive and interpret their experiences in supporting teachers' development in SCT and how these experiences have developed their practical wisdom and shaped their identities. The findings suggest that the philosophy of SCT, including the teaching values embedded, have impacts on their experiences. The implications on the development of teacher educators are discussed.

Keywords: teacher educator, professional development, small class teaching, class size reduction

Introduction

Class size reduction, commonly known as Small Class Teaching (SCT), is becoming a prominent feature in the educational development of many countries and cities around the world (Blatchford & Lai, 2010). SCT is implemented with the purpose of improving the quality of education by allowing pupils to have more individual attention from teachers, easier classroom management, better relationships between teachers and pupils and among pupils, and enhanced pupils' engagement in classroom activities (Blatchford & Lai, 2010; Finn & Achilles, 1999; Galton & Pell, 2010). For East Asian countries, SCT is not only about a change in class size, but involves the adoption of humanistic educational values to cater for diversity and the creation of space to enable a more constructivist approach of learning (e.g., Chan 2012; Galton & Pell, 2010; Ip, 2010; Wang, 2012).

While class size reduction is generally regarded as providing more favorable conditions for teaching and learning, research shows that the benefits of a small class environment will not come automatically if teachers do not make change to their teaching (Anderson, 2000; Blatchford, 2011; Blatchford et al., 2003; Evertson & Randolph, 1989; Finn & Achilles, 1999; Galton & Pell, 2010; Hattie, 2005). Effective teaching in small class settings requires concrete actions by teachers to make adjustments in their approaches to curriculum, instruction and assessment, and hence enhance the learning opportunities available for their pupils (Brophy, 2000; Education and Manpower Bureau, 2004; Graue & Rauscher, 2009).

In this regard, teachers' professional development has been identified as essential to bringing about teacher change and the successful implementation of SCT (e.g., Blatchford, 2003, 2011; Galton & Pell, 2010; Wang, 2012). As Anderson (2000, 7) contends:

In order to take advantage of these opportunities, teachers must understand the types of changes they need to make when teaching in smaller classes and be helped, via soundly designed, well-implemented professional development programs, to learn how to make these changes.

Despite the inclusion of teachers' professional development in a few class size reduction initiatives, few studies have been conducted to evaluate the effectiveness of these professional development activities (Pannozzo & Finn, 2002). For the few studies available, the findings were not conclusive – e.g., while Mosteller (1995) found that professional development in SCT was not useful, others made opposite conclusions (Stecher et al., 2001). In addition, teacher educators do not have an adequate understanding of how teachers adapt their teaching in small class environments; though several studies pointed out that teachers had different approaches to adjust their practice in small class settings (e.g. Evertson & Randolph, 1989; Lai, 2007; Harfitt, 2012).

This need to study teacher education in the context of SCT is well aligned with recent trends in class size research. As Blatchford (2011) postulates, there are three generations of class size research, with the first focusing on class size and academic outcomes, the second on class size and classroom processes, and the third on effective teaching and pedagogies in small classes. To him, there is a pressing need for the third type of research that evaluates good practice of how teachers can take advantage of reduced class sizes. He also points out that more research of teacher development in SCT is required to inform "systemic work in initial teacher training that … encourages an awareness of contextual factors and social pedagogical principles that will then become integrated into everyday teaching". Similarly, we believe that there is also a need to fill the void of research in the context of East Asia as an increasing number of teacher educators are currently engaged in supporting these professional development activities.

This paper reports the findings of an exploratory study to understand the experiences of teacher educators who are engaged in supporting in-service teachers to enhance the effectiveness of SCT. Specifically, the study aims to address the following questions:

How do teacher educators perceive and interpret their experiences in supporting teachers' professional development in SCT?

To what extent has this professional development work developed the practical wisdom and shaped the identity of these teacher educators?

What are the implications of the findings for the professional development of teacher educators in SCT?

It is hoped that the findings of this study will not only enhance our understanding of in-service teacher education in SCT, but contribute to the study of professional development of teacher educators in general.

Research on teacher educators

Teacher educators can be defined as "*teachers of teachers, engaged in the induction and professional learning of future teachers through pre-service courses and/or the further development of serving teachers through in-service courses*" (Murray, Swennen, & Shagrir 2009, p. 29). Based on a comparative study of the work of teacher educators, Murray et al. (2009, p. 41) concluded that teacher educators as a "*unique – but often overlooked or devalued - professional group*". Their uniqueness lies in playing a "*complex dual role*" of being responsible for their teacher learners' learning about teaching as well as serving as a role model of teaching (Korthagen, Loughran, & Lunenberg, 2005).

Nevertheless, compared with the abundant body of research on teachers' professional development in recent years (e.g., Borko, Jacobs, & Koeliner, 2010; Garet et al., 2001; Antoniou & Kyriakides, 2011), there has hitherto been a relative lack of research on teacher educators, whether understanding them as a professional group or their professional development needs

(Lunenberg, 2010; Smith, 2003, 2010; Swennen, Jones, & Volman, 2010). In fact, many teacher educators are just "*thrown into the practice of teacher education*" (Wilson, 2006, p. 315). A lot of issues are still in need of exploration, such as what constitutes the knowledge base of teacher educators, their induction and professional growth, how their teaching experience is related to the learning outcomes of their student teachers and further to their pupils, and what specific institutional supports should be provided for teacher educators.

In a recent literature review, Swennen et al. (2010, p.132) view "*teacher educators as a specialised professional group within education with their own specific identity and their own specific professional development needs*". They identified four sub-identities of teacher educators: as school teachers, as teachers in higher education, as teachers of teachers (or second-order teachers) and as researchers. They argued that the sub-identity of "school teacher" often construes the past of teacher educators; it gives them confidence and credibility in their work (Murray & Male, 2005). Yet teachers who move from schools to become teachers in higher education have to learn how to work with adult learners and to work with different pedagogical teaching and assessment methods. In addition, the sub-identity of "teacher of teachers" is what makes the group of teacher educators unique, and is associated with teachers as models and modelling.

Similar to pre-service teacher education, teacher educators of teachers' professional development programmes often face the challenge of helping in-service teachers to put their learning into practice. In the context of our study, we are particularly interested in the notions of congruent teaching and practical wisdom, both of which aim at closing the gap between theory and practice.

Congruent teaching and practical wisdom

The lack of linkage between theory and practice in teacher education, both pre-service and in-service, has always been an issue of concern (Cheng, Cheng, & Tang, 2010; Koc, Peker, & Osmanoglu, 2009; Korthagen et al., 2001). Applying theories taught into practice is not straight forward. As Russell (1997) pointed out, how teacher educators teach is more influential to their student teachers than what they teach. On the other hand, it is also problematic to focus too much on practice in teacher education (Lunenberg & Korthagen, 2009). Hence it is inadequate for teacher educators to merely act as role models, as they need to explicitly articulate the theoretical underpinning of a desirable practice (Loughran & Berry, 2005). In line with this thought is the articulation of the notion of "*congruent teaching*", which involves the attunement of the learning of student teachers with the teaching of teacher educators, as well as the attunement of the learning of the student teachers' pupils with the teaching of the student teachers themselves (Swennen, Lunenberg, & Korthagen, 2008). Congruent teaching also highlights the importance of "*teaching values*", which are judgments about the right ways of teaching as expressed by teacher educators (Swennen et al., 2008). By acting as role models and the expression of teaching values, teacher educators are likely to have an impact on student teachers, which may have an effect on the "*unseen children*" (Guilfoyle, Hamilton, & Pinnegar, 1997).

Another way of closing the gap between theory and practice is to think of a balanced triangular relationship among experience, theory and practical wisdom. Practical wisdom is the "*sensitivity for and awareness of the essentials of a particular practice situation that shape our perception of this situation, and help us find possible courses of action*" (Lunenberg & Korthagen, 2009, p. 227). It is developed from experience, but it also needs to be built with the aid of theory. Lunenberg and Korthagen (2009, p. 238) considered that it is important for teacher educators "*to promote student teachers' practical wisdom by enhancing their awareness for certain aspects of their experiences, and to promote student teachers' ability to use this practical wisdom during new teaching experiences*". Each of the three angles (experience, theory, and

practical wisdom) can be the entry point to go through the whole triangle, and it is important for teacher educators to support student teachers develop all three of them together (Lunenberg & Korthagen, 2009).

The study context

Similar to the trends in many places in East Asia, the enrolment in local primary schools in Hong Kong had significantly declined by nearly 30% from 479,445 in the 2000/01 school year to 347,862 in 2008/09. Following years of hotly contested debates, the Hong Kong Special Administrative Region (HKSAR) Government finally decided to gradually implement SCT in public sector primary schools starting from P.1 in the 2009/10 school year. The standard class size has been reduced to 25 pupils, compared to 30-35 pupils in 2008/09. By 2010/11, over 310, or nearly 70% of the public sector primary schools in Hong Kong have already implemented SCT.

The debates on class size before the implementation of SCT had centred on the cost-effectiveness of class size reduction, including whether teachers were prepared to make use of the opportunities. The government had initially taken a very cautious stand, arguing that most teachers were not prepared to realize the benefits of SCT and hence it was necessary to conduct a pilot study before deciding on whether SCT should become policy. In a policy paper to the Legislative Council, the then Education and Manpower Bureau (now the Education Bureau or EDB) (2004) states:

Most of the teachers observed did not seem to be sufficiently ready for effective small class teaching. They relied heavily on the textbooks and their teaching approach was basically teacher-focused and unidirectional. There is a need for professional development of teachers so that they may master the skills and pedagogies of small class teaching.

Amidst these debates, some teacher education institutions and school bodies in Hong Kong have taken the initiative to organize teachers' professional development programmes, school-based support services and collaborative networks with the aim to maximize the benefits of SCT. In particular, a research and development centre has been set up in 2006 in the Hong Kong Institute of Education, the largest teacher education institution in Hong Kong, to lead the development and applied research of SCT. Following the Government decision to implement SCT in primary schools, the EDB has set aside a total of HK$ 218 million (US$28 million) for six years to organize a range of professional development programmes on SCT. Besides the conventional half-day or one-day seminars or workshops, two major types of programmes have been organized for teachers, including 1) a programme consisting of a five-week campus-based instruction, followed by school-based support; and 2) a programme focusing on the building of learning communities in SCT through workshops, school-based support to building intra-school or inter-school learning circles, and visits to local and overseas schools practicing SCT. These programmes have followed six key principles guiding the design of teaching and learning activities in a small class environment, i.e. setting learning objectives, questioning, pupil participation, pair/group work, feedback, and assessment for learning (Galton & Pell, 2010). In the past six years, several thousands of teachers participated in a variety of professional development programmes on SCT. These programmes have been designed and delivered by over a hundred full-time and part-time teacher educators working in teacher education institutions or directly under the EDB.

Method

A qualitative research methodology was employed and the data were acquired from in-depth semi-structured interviews with teacher educators who have supported teachers to implement SCT in their classrooms.

Participants

The five teacher educators who participated in this study are full-time staff of a teacher education institution. All of them have been involved in supporting teachers' professional development in SCT between three and seven years. Among them, Neil, Tiffany and Wilson were full-time professional development consultants responsible for design and delivery of teachers' professional development programmes in SCT, while Katherine and Peter were faculty members of academic departments who are engaged in teaching SCT programmes on a part-time basis.

All five of them had been school teachers, but they possessed different prior experiences before getting involved in supporting teachers' professional development in SCT. Neil was a primary school principal who had led his teachers to implement SCT through cooperative learning in his former school. Tiffany was the head of a language department of a primary school. Both Neil and Wilson had worked as a school development officer for several years at another higher education institution. On the other hand, Peter and Catherine had nearly 20 years of experience of teacher education at tertiary level. Both of them possess a doctoral degree in education. Peter specializes in the field of curriculum and instruction while Catherine specializes in language education.

Data collection

The participants were invited to participate in an individual in-depth semi-structured interview to discuss their experiences as teacher educators in SCT. Each interview took about 45 minutes. They were asked whether they consider it necessary for teachers to engage in professional development in SCT, the types of challenges they faced as teacher educators of SCT, their evaluation of how well the course objectives were achieved, the types of most effective professional development activities, their best course experiences and any advice they would like to give to other teacher educators who will be supporting teacher development in SCT.

Data analysis

A grounded theory approach to data analysis was employed in this study. The transcription of the interview data were read and re-read by two researchers. Then segments of the interview were *coded openly* according to the meanings embedded. Then in the stage of *axial coding*, the relationships among coding categories were established, which allowed the data to be put back together in new ways (Strauss & Corbin, 1990). Comparisons were made across the five interviews to identify patterns of similarities and differences. Finally, main themes related to the experiences of teacher educators in SCT were identified.

Results

Whether teachers require professional development in SCT

All participants considered it necessary for in-service teachers to go through professional development in SCT. They pointed out that though teachers had previously learned educational theories and teaching strategies in their teacher training, they did not have the chance to practice them in their daily teaching in large classes. Hence it is important for them to have a systematic introduction of the principles of SCT and to experience what it is like in a small class environment. Through the latter, the teachers would have a chance to reflect and change their current practice, review their previous learning in teacher training, and learn something new at the same time – examples cited included theories of humanism, catering for diversity, dialogic teaching and interactive teaching.

Through professional development, the teachers can learn how to integrate theory and practice in small classes. As Tiffany elaborated:

They have learned many teaching strategies, but did not have the chance to practice them in large class environments, and also due to the limitation of time and curriculum. Then how can

they practice them in a small class environment? They may just have some concepts. To practice those concepts, they need a practical example …And they want to know whether it really works [in small classes], and whether other people have used it. As they have got used to the existing methods, we need to change their schema if we want them to try new methods, so that they know it's effective.

To Neil, systematic professional development and practice are crucial as teachers could build a common understanding and share a common language about SCT, which will further facilitate the start of professional dialogue and school-based policies to promote SCT.

Teaching values of teacher educators

It is apparent that most of the teacher educators under study attempted to be good models of the kind of teaching they were trying to promote. They displayed a sensitivity and receptivity to the diversity among the in-service teachers, which were evident right from the start of the course. Most of them had positive attitudes towards teacher diversity. As Wilson commented:

First of all, there must be diversity [among the teachers]. It's not possible that everyone would appreciate or dislike you… As I've mentioned earlier, [some teachers] had changed from initially feeling unhappy to happy [during the course]. I can witness there was an impact.

Interestingly, our interviews revealed that the participants' embracing of diversity was linked to their belief that SCT is aimed to cater for pupil diversity. As Neil explained.

[In my class] there was a teacher who did not sit in a decent way. And I just allowed her to do so, as in SCT, we allow every student to have a different personality. Some students learn by watching, some by hearing, and some by movement. Through this incident, all I would like to say is that if you place an expectation on somebody, they will change... Now when we organize activities [in class], the teacher will join us.

A participant also emphasized the importance of attending to the emotions of the teachers in their teaching, which was considered to be most effective to impart changes among teachers in utilizing the SCT environment:

To create changes in humans, it's not simply about cognition, but involves emotions, i.e. to experience the SCT environment, the interaction (Neil).

Throughout the interviews, it was apparent that there was a genuine buy-in by the participants of the humanistic values underpinning SCT. Peter had linked his practice to learning theories:

SCT has two core foundations, one is social constructivism, the other is humanism. Humanism focuses on the characteristics of students. I've read a book that we can decorate the classroom to make it more humanistic, more like a home. I've suggested [to the teachers] that students can bring the personal belongings they like to schools, so as to create feelings of being home, and to make the learning environment more humanistic.

Teacher educators constituting their experiences through two-directional feedback

When asked about their most memorable experiences, most participants cherished the positive feedback or appreciation by the in-service teachers:

The most memorable experience is that the participants were deeply engaged. They actively took part in the tasks. They appreciated the things [I] had given them, and they would ask for more. (Tiffany).

Such show of appreciations by serving teachers was not taken for granted. A participant commented: *I can see that some teachers were forced to come at the beginning, they were not happy. We all know there are always teachers like these. But then gradually towards the middle of the course, they began smiling, and talked actively* (Wilson).

Even though the initial feedback from some teachers might be quite critical, a participant indicated that he was receptive to them as they indicated teacher engagement, which had driven him to further reflect on his teaching and learning.

I think challenges are good; they make me reflect on whether my thinking is thorough, or whether I just think from the perspectives of principals rather than teachers. Only engagement can lead to deep learning. I don't mind them to be skeptical and critical, more important is their engagement (Neil).

The feedback process was not unidirectional, i.e. just from in-service teachers to teacher educators. Some participants commented that it is equally important for them to give feedback to the teachers, which would contribute to the latter's professional growth.

Practical wisdom

Throughout the interviews, the participants displayed an awareness of the knowledge of and sensitivity to needs of the in-service teachers. As Peter elaborated:

I'd not treat them as beginning from zero. I'd ask what they're doing in everyday teaching and why, what are the advantages and difficulties? Even they spend all the time teaching, whether pupils have learned? There can be [pupil] diversity and they can't check whether all the pupils have learned… Then I'll suggest whether we can think from the perspective of pupils rather than teachers, whether we can have some whole-class teaching and some group learning activities.

Some believed that it is important for teacher educators to understand the actual difficulties faced by the teachers in the school environment. They also recognized that the benefits of professional development could only be sustained by teachers working in a supportive environment in the actual school context:

The biggest challenge is about the change in ideas. If there is no further support after the change in ideas, then it will not last. They will switch back to the original mode when they go back to schools (Catherine).

The building of practical wisdom is not merely through practice – it may involve continuous self-reflection and improvement of one's teaching: As Tiffany explained:

For every topic, I'll revise it back and forth, and I need to try a few times to know which presentation is the best. Yesterday I have a workshop, after running it, I'll think about in what aspects I can do better and how to make it more effective to the teachers.

Links to prior experiences of teacher educators

Though there are similarities among the participants, our findings reveal that their conceptions and practice were closely connected with their prior work experiences in different education settings, which have likely shaped their practical wisdom and their underlying beliefs in teaching SCT programmes. The following portraits will depict the diversity or sub-identities among the five teacher educators:

Neil

As a former school head, Neil had repeatedly expressed concerns at a more holistic and macro level, which was illustrated by his emphasis on the importance of system change in implementing SCT:

There are two core values of SCT: quality education and narrowing the gap. And it's necessary to have school-based support and a self-owned model. So a system-wide and comprehensive paradigm shift is needed.

To him, the school principal played a critical role in the building up of a learning community:

We cannot control what school principals think… But whether the learning community can be eventually rooted in a school depends on the school leadership. So I agree to include a leadership component in the next stage [of the professional development programmes].

Tiffany

Tiffany is in her fifth year of delivering teacher education in SCT. As an experienced school teacher, she was well aware of the practical ways to help the teachers:

They need a concrete example, some of them might have tried cooperative learning, but there was no detailed design, hence the outcome is not that good. I need to persuade them why it is worth spending time on doing this. And the best evidence is pupils' learning effectiveness and outcomes. We need to understand [teachers'] workload and that their teaching time is not enough.

The importance of helping teachers in the actual teaching environment was repeatedly emphasized:

To prepare the lessons with the teachers together, observe the lesson in the classroom, and evaluate the lesson - these are the most effective (professional development activities).

Wilson

The comments of Wilson were often based on his previous experience in his own professional development work, which had shaped his belief that it is vital to create an impact on in-service teachers:

When I received my training in the United States, there are two things that I benefited most. The first thing is about brain-based learning, which explains how the brain cells connect, transmit information, and gradually form networks among themselves. This is the effective way of learning. So if we could not create an impact [to the teachers], the effectiveness would not be that high, as the memory of teachers would be only short-term.

He reported that one of the ways to create such an impact is through "emotional education", which includes showing the teacher learners a video clip on YouTube that can touch their feelings.

Catherine

As an experienced teacher educator in language education, Catherine was more concerned about language learning in the context of SCT. She considered that teaching of reading was the foundation of language education, which had been ignored in teacher education because of the shift of focus to knowledge of the language. She was interested in teaching the SCT programme for language teachers because the holistic nature of the programme had allowed her to change the belief of the teachers:

For many years…our language teaching focuses on the knowledge aspects (but not reading)… I want to use the platform of SCT to let the teacher learners rethink the idea of language teaching.

Peter

Peter was an experienced teacher educator and had a lot of experience in supporting school-based development in the areas of cooperative learning and SCT. He emphasized the importance of negotiating with the schools the aims of the development programmes so as to foster teachers' ownership of their professional development.

In these few years, I have helped quite a number of schools to conduct school-based professional development. They want to try cooperative learning to enhance the effectiveness of SCT. But there are different kinds of cooperative learning each with different functions…. So they'll need to go back to their schools, talk to the teachers, and to decide what they really wanted. When the decision is made in such a way, it will receive support from the teachers; so when they come to the workshop, they will be more engaged, as they are not just forced to come.

Discussion

In the past decade, with the implementation of SCT in many parts of East Asia, professional groups of full-time and part-time teacher educators in SCT have emerged. Yet, most of the attention has focused on the professional development of teachers, without an adequate understanding of the experiences and professional development of teacher educators.

In our study, we have attempted to understand how teacher educators perceive and interpret their experiences in supporting teachers' professional development in SCT. We found that, after several years of supporting teachers, these teacher educators have constituted their experiences through two-directional feedback with the in-service teachers. They have also displayed sensitivity of the knowledge of students and of oneself. Some have been engaged in continuous self-reflection and improvement of their own teaching. Through this process, they have developed more 'practical wisdom' to support teachers. Some have also been gradually shaping their identity and building a sense of theory of teacher education in SCT.

There has always been a concern of whether teacher educators preach what they teach (e.g. Swennen et al. 2008). In our study, most participants cherish the holistic and embracing philosophy of SCT, which emphasizes on student-centred learning, individualized support and catering for diversity. Their 'teaching values' have informed their practice in teaching. Displaying the characteristic of congruent teaching, some have infused the humanistic values of SCT into their teaching practice, such as maintaining a positive attitude towards the diversity of the in-service teachers in their classes. In this regard, it echoes the importance of 'teaching values' in teacher education (Swennen et al. 2008).

Similar to most teacher educators, all the participants in this study have derived their confidence and creditability from their experiences of being school teachers or principals (Swennen et al. 2010). Yet differences were discerned among them in their perceived objectives and teaching approaches, which were likely linked with their prior experiences in school or tertiary education. For instance, the experience of a participant as a former school principal has made an impact on his perceived importance of system change. The experience of a participant who studied 'brain-based learning' has influenced his emphasis on teacher emotions. In addition, participants have also interpreted the objective of SCT professional development programmes in ways that aligned with their educational values, such as the programmes serving as a platform to bridge theory and practice, fostering teacher ownership of change, or remedying the over-academization of language teacher education.

In addition to research on effective strategies to support teachers to optimize their teaching in small classes (Blatchford, 2011), we believe there is a need to study teacher education in the context of SCT and how teacher educators may better support teachers' professional development. Further studies should be conducted to study the actual teaching or school-based support activities that take place at higher education institutions or school settings. Interviews should be conducted to explore the experience of teachers who have undertaken professional development programmes in SCT. With reference to the triangular model of Lunenberg and Korthagen (2009), teacher educators could also be encouraged to articulate how their practical wisdom is related to their theoretical underpinning and experience. These findings will point to key measures that will support the professional development of novice teacher educators who are to be engaged in the design and delivery of SCT programmes. In addition, to enable the sustainable enhancement of teaching and learning in small class settings, the fostering of professional dialogue and development of communities of practice among both teachers and teacher educators are crucial.

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Changes in teacher education

RESEARCHING TEACHER EDUCATION LEARNING: NEW CONTEXTS AND DEVELOPMENTS

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Initial teacher education in France used to be provided during one year of training at a teacher training college (IUFM: Institut de Formation des Maîtres). Trainee teachers also needed to complete a three year Bachelor's degree and pass a competitive national exam. However, teacher training was thoroughly transformed in 2010 with the introduction of the prerequisite that to qualify, teachers must also complete a university organized master's programme. As a consequence, a number of new master's in education were implemented (both vocational and research based), most of which are jointly run by universities and IUFMs. However, with the launch of these programs educator roles and assignments were radically modified. The so called 'trainee teachers' became either 'students' or 'student-teachers' and course content had to have a much clearer theoretical grounding. 'Good recipes' were no longer sufficient and assessment had to align with European standards and ECTS.

Within a very short spell of time, educators had to adapt, with little or no training. The insignificance of training and development for teacher educators has been widely remarked on. For instance, among the main findings of a survey on teacher education research, the authors (Menter *et al.* 2010) mention the lack of attention in the literature that is allotted to the professional development needs of teacher educators. Wright (2010) remarks that although practicing teacher educators provide the majority of the research on teacher education, their roles and practices remain largely unexplored. Our contention here is that the renewed contracts could provide an opportunity to join the community of researchers (ATEE) in the field of teacher educator development.

A new Master research programme in educational studies was launched in September 2011, preparing students to become educational researchers in the field of language teaching. A significant proportion of the students have been teachers and/or teacher educators. Among the many problems encountered, our presentation focuses on the now necessary acquisition of research skills, specifically on an introduction to a research method aimed at limiting the tension between action-oriented practices, pertaining to the teaching sphere, and a predilection for reflection and abstraction specific to research (Schoenfeld, 2009). We developed several modules based on experiential principles (Kolb, 1984) and collaborative training, where students and researchers were involved in mini-research projects, in a community of research practice. They discussed and used research, connecting epistemologies to what researchers actually do (Page, 2001). Addressing the issue of the 'good learner of English', students in year 1 of the master's programme were engaged in a project to experiment and to share with each other, through creative problem solving and collaborative decision making, thus becoming actual producers of research. In order to provide an overview of the strategies resorted to by novice-researchers, the different steps of the project will be presented and extracts from the corpus of recordings will be explored. This material gives an insight into how emerging professional identities develop within a community of research. It is hoped that the discussion will open up interesting directions for further research.

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NEW EDUCATIONAL POLICY AT SÃO PAULO STATE, BRAZIL: A CHALLENGE TO TEACHERS, TEACHER EDUCATORS AND THEIR PROFESSIONAL DEVELOPMENT

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Abstract

Teacher educators are challenged to understand constant educational reforms that try, often unsuccessfully, to reverse the school failure experience in Brazil. This work presents part of an ongoing research project in collaboration to school and comes from the difficulty of teacher educators in guiding the students on *practicum* since the government of São Paulo proposed a new Curriculum in 2008. This curriculum presents Workbooks as a guide to be classes homogeneous among schools. The paper is aligned with studies about teacher's thinking and practice and approaches some authors' proposals that recommend the 'development of school-based curriculum', which is based on curriculum design with teachers' collaboration. It reports the activities of teacher-educator in a school field to support professional development and teacher thinking about new Curriculum. First, it was created a study group with teacher expertise, novice and pre-service in a public school-field. The group organization was a difficult process due to the teachers' resistance to theme. Activities developed (discussion of curriculum and technical rationality, Workbooks analyses and creation of workshops to support the *practicum*) show that teacher educator role is encourages reflection and supports initiatives that can restore the confidence of teachers in their practice bringing polices to practices discussion.

Keywords: educational policy, teacher practice, curriculum design, didactic materials, *practicum*

Introduction

Brazil is a country affected by socio-educational problems and it takes great effort to ensure school education for all children. Using the slogan "no child out of school", the country achieved universal school enrollment of children and young people at school age, also facing evasion in the country.

Recent educational government reforms and projects have primarily focused on universalization of school to all children, a kind of valorization of teacher profession and reorganization and management of the public school system (Weber, 2003) and also distribution or redistribution of public education funds.

At present, in spite of these initiatives, many schools operate on precarious conditions due to the lack of material and human resources, such as lack of qualified teachers with specific training to teach curriculum subjects. The big challenge is to improve the quality of school education, since many students stay in school but they do not learn.

This challenge demands a countrywide effort to have well-trained teachers doing everyday work subject to reflection, worrying if the student learned with the teacher's work and using the reflection process to plan and develop teaching strategies to make real the possibilities of a school which allows the construction and reconstruction of socially-valued knowledge.

For each problem or learning goal and depending on training needs, in theory, the teacher could chose (or propose) an instrumental solution, making relationships or using techniques that he

knows, considering the action and the context based on theoretical aspects. in order to train teachers, a perspective or conception of how teachers learn to teach is fundamental: the real contexts of action must be considered as well as the uniqueness of situations for which many answers and guidance methods can exist, but not unique and foolproof methods. The knowledge of what teaching techniques to use and how to develop them in the classroom is only one of the aspects of teacher training and it is instrumental teachers knowledge.

Teacher educators need to know school reality and professional changes in courses to train professionals to current times, characterized by contexts of change and uncertainty. According to Imbernón (1994), the proposed teacher training targeted to practice questioning leads to a new training model. There is a refusal of the concept of traditional teacher or of a teacher like a technician, in favor of a more active teacher role designing and reformulating educational intervention strategies and programs. It aims to encourage a kind of training that can prepare teachers to evaluate, individually and collectively, the innovation, getting basic skills to develop teaching strategies, curriculum planning, diagnosis and evaluation, adapting school tasks in an attempt to answer to the diversity of students and the social context.

In Brazil, the educational reforms on course require that teacher educators pay attention to changes, knowing and evaluating changes in order to prepare new teachers to the polices reforms that are presented. A recent reform in São Paulo state, Brazil, introduces changes in the school curriculum and teaching methods used in the classrooms at public schools in this state. Since the government of São Paulo proposed this new educational policy in 2008 there have been difficulties for teacher educators in guiding the students on *practicum*.

The justification is that a new curriculum with a new pedagogical proposal must be fulfilled by teachers. For this reason, classes follow the content and pedagogical methodology proposed in Workbooks, an official document for each curriculum subject that there is a kind of educational material that guides teaching practice provides school programs content and methodology of activities for use in the classroom. This study is part of a larger investigation that seeks to analyze the impact of the new São Paulo curriculum in thinking and teaching practice.

The legal determinations appear to be relevant instruments in an attempt to implement educational policies proposed by the State, once there are documents and legal advice to be appropriated by those who should develop these determinations in practice. It can be noted that legal determinations reach more directly to the teachers' role in their work at the classroom because the state government presents models, curriculum guides or propositions to be followed by the teachers.

The emergence of contradictory orientations between teacher education proposals and that of a curriculum prepared without the participation of teachers is evident. Teachers are expected to only develop what is required into practice. In this context, teachers from State public schools do not have autonomy to develop their practice and a devaluation of knowledge already constructed from experience occurs. The inflexibility of educational practices can inhibit the proposition of innovations and appropriate solutions to specific educational needs of each class, in each school and each specific context of education.

Description

The study reported here began in 2011 and is scheduled to end in July 2013. It is developed in collaboration with teachers from a public school located in Piracicaba, a city with about 350,000 inhabitants 160 km from São Paulo, the capital of the State of São Paulo, one of the richest in Brazil. This city has a regional Educational Directory in charge of 64 schools. The University of São Paulo proposed the project to schools and three schools signed an agreement to receive *practicum* of pre-service and university educative projects. In Piracicaba, the school named "Abigail de Azevedo Grillo" was chosen because it demonstrated interest in the project, planned initially with the school coordinator. The school is located in a neighborhood not far from

downtown. Classrooms support 40 students approximately, a video classroom with multimedia equipment, a small Science laboratory (organized and adapted within the space for two bathrooms), a library, a kitchen and a dining room, a sports court, a courtyard for students, an office, a staff room and, a living room of the direction and coordination of the school, also used for meetings.

To develop this project a study group was formed with expert, novice and pre-service teachers, as well as the teacher educator of the university, who is the project coordinator. The group is made up by female teachers who became fellows of the project. They teach to the so-called elementary school in Brazil (6th to 9th grades, for students 11-14 years old) and each one is licensed to teach different disciplines: Mathematics, Science, Portuguese and History. The latter two are expert effective teachers (an effective teacher is a public service employee for indeterminate time) who have taught for several years in this same school; the other two teachers have 1-3 years of teaching experience and are new (not yet effective) teachers at this school. The Elementary Education Pedagogical Coordinator of the school also participates in the project. She has two years of teaching experience and joined the school in 2011. Consequently, the identity and the links with the school are still being created by the new teachers. The three pre-service students are majoring in Biological Sciences and are undergoing Teacher training, two of them are fellows of this project. Other pre-service students are volunteers and get their *practicum* developing classes with school students.

The aim of the study in the group is to encourage reflections about the new Curriculum by discussing how the proposed activities are understood within a group of professional teachers. The meetings are held at school fortnightly, being first recorded in a field notebook and later recorded in digital form. The initial project meetings were planned to introduce reading and discussion of texts that could support a personal and critical reflection about the role of the teachers in developing their practice and the role offered to them in the new Curriculum. Then, the Workbooks were analyzed. The main goal of the analysis is the teacher appreciation of the proposed activities, which are recorded on an Analysis Card elaborated for this purpose. In addition, practical works are designed and developed together with the students, supported by *practicum*. The classes seek to combine teaching knowledge, educational needs of the students and principles of the new Curriculum (student leadership and interdisciplinary subjects), indicating that these principles can work with autonomy by teachers.

Basic theory and practice used

The new Curriculum Proposal, according to the official document, was drawn up to ensure "a common base of knowledge and skills so that our schools actually function as a network ..." (São Paulo, 2008, p. 3). The homogeneity in the treatment of the school curriculum is seen as an indication of quality level of education in the State of São Paulo, since the vision presented in the previous proposal (São Paulo, 2008), it could be "exactly" known what the student is studying in each school in the network. According to the logic of the State Education Secretary, it allows, in consequence, to standardize what is offered as content on the network and evaluate, through external evidences, the performance of schools in achieving this curriculum. As explained in video of this site (São Paulo, 2011), designed for Pedagogical Coordinators, there is a system of evaluation fully articulated to the curriculum. This proposal became known as the Curriculum of the State of São Paulo, indicating that it is the only official curriculum of the schools of the State, nowadays, instead of a proposal that would be desirable as a curriculum.

The basic text of the Curriculum Proposal (São Paulo, 2010) also provides guiding principles for a school that is able to promote the essential skills to face social, cultural and professional challenges of the contemporary world. The authors of this new curriculum claim the following core principles: "the school that learns to teach, the curriculum as an area of culture, the skills as the learning axis, the priority of competence in reading and writing, the link between the skills

to learn and background in the world of the work" (São Paulo, 2008, p. 6). According to the authors' conception, while developing their skills, the students can act in society; this idea seems to guide the curriculum – which is focused on daily life and on student life, away from curricular traditions and academic rational.

The Curriculum Proposal includes a second document with Guidelines for Management of the School Curriculum, which is specially directed to the school units and leaders and managers who must lead the changes (São Paulo, 2008).

The Workbooks are the materials for use in classroom that accompany the Curriculum. The Teacher Workbooks indicate possible answers of the students during the class (and not only the answers to the exercises). Each class is proposed to be conducted with questions and reflections, encouraging the students to speak. These Workbooks give guidance to the teacher and go further, describing how to conduct the class and explain the content. The Student Workbooks are similar, suppressing the guidelines. They are divided by discipline and bimonthly, appear in a book format. In these workbooks, the topics are organized by broad themes (for example: trash), emphasizing the everyday aspects and problems of the student's reality. With each new topic or issue, the authors present a schedule of classes for the teacher, indicating purpose, methodology, classroom time, among others. The topics are started by activities called Learning Situations, which give precedence to the action of the student, proposing to him to examine, observe, opine, and discuss the issue with colleagues. The Workbooks rarely have a basic text that presents students and teachers with the fundamental knowledge on the subject being treated. In the methodology proposed in the books, the action of the student is constantly being requested, but not the teacher's.

The project aligns with studies on the thinking and practices of teachers and training trough reflection (Zeichner, 1993; Mizukami et al., 2002), emphasizing the possibilities of building teachers' autonomy, which, according to Contreras (2002), has been limited. This limitation is evidenced by the existence of devices that regulate, even indirectly, the action of the teacher; for example, from the new curricular designs, evaluative actions are valued which seek to verify the learning of the proposed contents.

The decrease in the individual professional autonomy of the teachers is the result of an increased regulation of the teaching work which is, along with the growth of the external evaluation of the schools and the school system, a trend observed by Maroy (2011) in the educational policy of various countries. According to the author (Maroy, 2011), education systems were organized so that teachers had a broad individual and collective autonomy, taking into account the complexity of the educational tasks and the behavior to face the uncertainties of their work. The mode of regulation triggered twenty years ago in several countries, Maroy (2011) notes that teachers are subjected to various forms of framing their practices.

The teacher's job, like any professional practice, has its own characteristics, such as attitudes, knowledge, skills and values of their own, specific profession (Gimeno Sacristán, 1995), although not always fully appropriate and qualified by all. It is undeniable that one of these skills refers to the know-how in everyday classroom, organizing the process of teaching and learning. However, to understand the functions of the professional teacher, not enough to know that it is for him to teach intentionally and directed to promote the learning of their students. Understanding what makes a teacher and what he or she should do depends on the viewpoint or perspective with which we analyze his or her work.

According to Contreras (2002), the perspective of technical rationality reduces the knowledge of an expert teacher. The field of procedure would be the stronghold of the teacher, who did not possess, in principle, the intellectual skills for the development of techniques, but only for its application; teachers have a dependence on prior knowledge not prepared, as also to his purpose (Contreras, 2002, p. 96). According to Holly (2000), this metaphor of the teacher as a coach is supported by the increasing use of tests that seek to certify their competence, while

the roles and responsibilities of teachers define themselves less in terms of their ability to design the curriculum than for their skills to implement the curriculum 'standardized' curriculum.
It should be asked whether the standpoint of the proposition of the authors of books and, in short, the curriculum presented is that the teacher is a professional who plans to practice or if he is just an executor of programs made by others. No mater how good this program is, teachers have been relieved of the responsibility to elaborate them. What aspects of their activity can they plan with autonomy and empowerment to do them?
Gimeno Sacristan and Pérez Gómez (2000, p. 211) remember that is not a news want to change the practice of teachers using curriculum materials. In the 1960s and 1970s, there was a movement to reform curriculum offering quality materials to schools, which would in turn disperse new content and approaches to learning. According to the reviews that followed, it was observed that the conceptions of teachers and school conditions also led to little change in education. Further strengthening the idea that the role of consumers was reserved for students and teachers, and that change in education is more complex and "something that the government should learn when they put effort into disseminating innovative ideas in curriculum documents" (Gimeno Sacristan & Pérez Gómez, 2000, p. 211). The authors advocate the “development of school-based curriculum” which is not fixed in large curriculum projects, but more modest values closer to the school conditions and is developed in collaboration with teachers. Thus, teachers become active in curriculum design, which prevent them from using materials produced by others for their own projects, as it would be proposed with a new form of political accountability of teachers. These are ideas that support the proposition of this project.

Problem analysis, choices for research and processes involved

This project was the result of conversations with Pedagogical Coordinator who left school in 2010. So, teacher educator comeback to school for guarantee the school participation. After agreements, the project was presented to teachers at school meeting in order to invite and / or select participants. Only one teacher expressed interest. She was a novice and could not participate because left school to get another job.
We decided talk to private conversations and invite teachers to project. Two teachers accepted that they were very active project presentation: a History and Portuguese teacher. These disciplines represent two areas of the new Curriculum (Humanities and their technologies and Languages and their technologies, codes and technologies, respectively). Later, Mathematics teachers accepted, representing Math area and another Sciences and Math teacher accept, representing Science area. Educational coordinator is also member of the group.
So, the group has five female teachers. They had initial questions about project and answer to school educator if there were no problem in exposing their ideas about Curriculum proposed. It was necessary clarify that the project has no intention to criticize or praise this Curriculum, but it will analyzes and collects impressions of how Workbooks are used in the classroom.
Project progress was described in order to note and reflect about impacts of new São Paulo Curriculum at this school. The first point is that there are teacher resistances about theme of the project, noted at presentation on school meeting, showed in a tension moment when some teachers discusses new curriculum implementation. Educational coordinator confirmed this impression because out of project she makes effort to discuss the new Curriculum with no successes. The second point is that the teachers resistance was due to project idea to bring research and teacher practices and this idea were not clear or maybe it were unknown for teachers, who need analyses Workbooks in a research form and to be a “researcher teacher”. The third point is the intensification of teacher work because they sad that there is no time to develop extra projects beside classes, as exposed on school meeting.

Thus, it is easy to note that the teaching conditions at school affect teacher choices and professional development. Experience at this school showed many novice teachers are searching other professional occupation because there is instability on public service for them, so they can not participates in long projects. If this project aims understand how this policy affected school, it is possible to assert that teachers of various categories on public service are equals to teach when give classes, but different situations on public service difficult to some teachers to develop projects more than one year. If they have minor chances to participates, great efforts are necessary to be a reflective teacher. Educational coordinator indicates that novice teachers are more receptive to new Curriculum and their Workbooks and government do not offer specific course to teachers understand theoretical basis of this new proposal, except information about it in video classes. The superficial appointments about Curriculum theoretical basis and preparation to develop the innovations presented to schools indicate that teachers do not receive intellectual preparation necessary to develop this new curriculum, as the practical rationality (Contreras, 2002). It makes sense: do not understanding the principles of a project, how to understand the need to develop it? When we excluded teachers and coordinators of the theoretical foundation, how to develop a practice consistent with this reasoning?

Many details were discussed at the meetings consist of the following considerations in the trainer's reflections on them. The meetings were the occasion for the participants knew that favor educational research 'teacher voice' and to encourage reflection on own practice of teaching involved, expressed in the exchange of ideas. In the initial meetings were used for reading and discussion of a theoretical foundation texts: "Pass no rite: the fifth grade and their teachers," Dias-da-Silva (1997), "The teacher and professional development: overcoming the design jurisdiction of the executioner, "also by Dias-da-Silva (1998), a chapter of Autonomy of Teachers of Contreras (2002).

Principles of an inclusive school, practice more democratic and less authoritarian, the daily life of the school and its routinization, were themes that emerged from the reflections of the group. At each meeting, teachers were asked to answer questions relating the reflections of his work with the books. The group's idea is to think, from the subsidies of readings, reflections and analyzes of materials, not just the qualities and demerits of the proposed curriculum, but the ability of each teacher to develop himself and educational practices that can nourish the evaluation of the proposal.

With the continuity of the meetings, the teachers of the group began spontaneously to do the readings compared with the Curriculum Workbooks aspect missing in the initial meetings. After reading an excerpt from the text Dias-da-Silva (1997), a teachers notes - and questions - if the passage does not indicate that “we are treated as technicians, because we just need apply the Workbooks correctly”. Thus, it was discussed the prospect of the teacher as coach and the idea of technical rationality.

We noticed they had two sub-groups of teachers on the staff of the project: three novice and two experienced and beginner teachers. In the discussions, all are involved, but involvement is different, because experienced pedagogical texts show meet and present their opinions and knowledge, guiding the spontaneous pre-service. In particular, provide a longitudinal view of the passages of his career and other curriculum projects. The three starters, including the coordinator, turn to the aspects of teaching and learning in the classroom and the relationship with students. These relations show that the group is a link between the desired initial training at the university and the school, beyond a point of integration between the teachers of the school.

After there was evaluated Student Workbooks regarding the first two months of 5th grade, and consulted the Teacher Workbooks when it was necessary. The way of conceiving the role of the student requests can be inferred by the activities of Workbooks priories that student take the initiative to seek information in books, discuss with colleagues and write their own ideas. In this

sense, it is inferred that the student, who conceived the idea of the notebooks should be active in their learning process.
Participants wrote down on Analysis Card characteristics of Situation Learning proposed for the student on Workbooks and identify the subject and if it is unusual in the 5th grade. Observe the sequence adopted by Workbooks and recorded if the way to approach the subject is familiar to teachers, observe degree of difficulty for students, the solicitation for teacher's explanation, among other issues.
Mathematics Workbooks are those who bring an atypical organization of contends and methodology: for example, gives a numerical sequence accompanied by balls correspondents and asks the student (grade 7/8 years) to build the formula that governs the number sequenciation.
In mathematics, the two teachers who teach the group said they used a personal explanation to solve the proposed exercises using other methodology and were asked if the form proposed in the Collection is another, finding themselves so. According to the teachers, there are easier ways to solve. Some exercises they have to settle for themselves and then to the class, because most can not resolve how the requested material. Asked about how to make one of the exercises found in books that the proposal is that students "create the formula," from the data, the teachers reported that students can hardly do without a big help them. So, teachers explain how to solve, providing a model solution.
Traditionally, the treatment of mathematical content is presented with model to solve and / or with formula and then follow up their applications in various exercises, the student is called to do. The math teachers participating have difficulties in this format "inductive", using a textbook of mathematics upon which to base the content and also follow the book as an "exercise" the most. The Workbooks coexist with textbooks in the classroom, even under the Brasil National Textbook Policy (PNLD – Programa Nacional do Livro Didático).
Building a formula from the data requires logical thinking, analysis and reflection of the data proposed. For teachers, these actions have to be worked on "steps", as they comprise a cognitive challenge (and perhaps emotional) higher than the student is accustomed or is ready to develop at that time. Maybe missing the underlying content in books and lessons proposals further hinder its acceptance, content that has to be 'deduced' by teachers.
In History discipline, the sequencing of topics follows that already developed by the teacher, and the form, not content itself is something different from the commonly worked by teachers in the area, as the representative of the group. The practice of asking students and ask for examples of daily life was already being used by teacher, as in the treatment of the subject of the Count of Time. Thus, even by a teacher experienced, the term of the new curriculum Workbooks just impacted the practice of the teacher but on the other hand, was an insertion that caused discomfort to be more of a 'package' of government. Teacher sad that new curriculum is another initiative to change teaching through proposals ready and inflexible in its formulation and implementation.
In Portuguese language discipline Workbooks the teacher says he feels the need to replace texts perceived as complex or irrelevant to students when used in class. The teacher also seems comfortable with the sequencing and methodology proposed, but indicated to be feeling unappreciated with a practice made it ready. The group also serves as the support and encouragement and practicum classes have been important to rethinking and restructuring practice.
The workshops were held in four disciplines and respect that listed in books or topics that the teacher felt the need to support work with books. In the workshops, the students and teachers were asked to develop a class where the curriculum is maintained assumptions as background themes and interdisciplinarity, student participation, with consideration of their previous ideas or difficulties or everyday life. The work was done in two ways: one, to allow autonomy not

developing the contents in the way proposed and one following the shape indicated by the books to evaluate this way. Themes and form of development workshops with students were:

Activities created by the group for practicum classes (workshops)

Mathematics and the environment - a first degree equations and their applicability. As reports of the teachers, it is difficult for students to understand that the equation represents an equality. Were presented to the students major cards with numbers and "X" of the equation. In a kind of game, students were asked to indicate who was the X and how they came to him, discussing the answers given, and, later, turned the card. Then, it was demonstrated the applicability of first-degree equation in predicting flooding of a river.

Math/Science - addition and subtraction, and consumer education. As reports of the teachers, it is difficult for students to understand addition and subtraction even in fifth grade. It was planned a workshop that presented a fair, with food packaging and hygiene products, with prices, to buy (fictitious) students. Corrected sum, discussed and discounts and responsible consumption of healthy foods, which had no preference in the purchase of the students.

Science and Portuguese - Transmission of Chagas Disease. It was presented to the students a newspaper report that indicated the disease was transmitted by consumption of 'açaí', a kind of palm tree fruit. Students read and reviewed the report and then had an explanation of how the disease is transmitted

Science / History - antigen and antibody and its relation to the lack of immunity in the colonization of indigenous. As reported by teacher, it was difficult for students to understand how many Indians were decimated by disease in the era of colonization of Brazil. After setting out the theme, developed the dynamics of "lock and key", with EVA pieces mimicking the key and lock-antigen - antibody similarly the action of the human immune system. Students holding the antigens that Indians and supposedly only one of them, who had the antibody, which fit perfectly, was able to survive.

Workbooks activities developed by group for practicum classes (workshops)

Science - Physics – Waves

This experiment was conducted with cell phone use, as proposed in the books and held explanation of waves and the operation of the apparatus. This practice has met the request of teacher support that is useful in practical activities in science lessons.

Science - Astronomy - lighting the Earth

It was developed identical to the experiment proposed in books that required the student to understand how the tropics are warmer and brighter than the Earth's poles. This workshop sought to obey exactly the one proposed in the Collection in order to consider the advantages and difficulties of the teacher development and how this would be their viability in the classroom. These experiments were developed in the same science class observed a teacher in another school project participant.

Science and Environment

Activity following the booklet, which offers the student pick up a Styrofoam globe simulating the earth and put up several trees at the locations.

Success/ failure, limitations and problems encountered

Overall, the project has achieved its aims to promote reflection on the proposed Curriculum and support a "school-based curriculum." In this task, the principles of the proposed curriculum were better understood and asked pros and cons of principles of interdisciplinary and student leadership. These two Workbooks principles but the way presented in the books leave the student stay without action parameters and also some contends and themes are not clearly identified because interdisciplinary.

The organization and development of a study group for this curriculum analysis initially received mixed reactions from the school. The group became an important space for cohesion in the school, the link between experienced teachers and novices who barely knew each other and to find space for the exchange of knowledge and an opportunity to consolidate construction and professional development. This process gives support and confidence in proposing innovations in educational work, especially the pre-service. As the group develops research with the educational materials, the teachers act as research partners.
The teachers' vision of the proposed curriculum changed from initial criticism of an imposed form of Curriculum elaborated by the government presented to the teachers to a Workgroup that can open possibilities to bring reflection into practice with a deeper understanding of questions about their own role in curriculum design and building new possibilities for action.
The limitation of the project is the difficulty to expand the group to include all the teachers in school. Because the project was seen as complementary to the activities inherent to school and the little free time available for teachers, the group was set as a space for professional development. After being subject of collective indifference, this project was invited by the coordination to be presented to the whole school in order to attract the membership of more teachers. The stages of *practicum* in collaboration with teachers has had a good influence especially on pre-service and Coordination. Teachers have yet to gain more responsibility in the preparation of workshops and the school administration still needs to be more involved to be able to rethink the future curriculum based on the successes and failures of activities.
The possibility open for the construction / reconstruction of the curriculum at this school does not affect the need for schools to fulfill the Workbooks. It also does not seem to affect the government's vision of the teacher as a mere technician, undermining their confidence in their own work and discouraging teachers to propose changes. The teacher turnover in the school and, consequently, in this projects remains and hinders the real appropriation of the project by the school.

What makes her a good experience or an example of good practise in the field of teacher education and professional development of teachers?
To indicate that this is a good training experience, start by remembering that it was discredited a project at school and in a slow, continuous and constructive process grow up taking School Coordination to value it and want to infect more teachers participate.
An important aspect is that the group and meetings did not make a ranking of the participants, nor distinction of who is the university or not taboo that was slowly being broken. Only thus became space for knowledge exchanges, rare chance in the Brazilian school today. Respect for teachers' knowledge and ability to do teacher practices a research object in the line of questioning of the practice discussed here from Imbernón (1994) was important factor for teachers to develop professionally. This can be seen when they express an idea more grounded, not only appear as outrage and complaints about the reality and when they said they had never thought of the need to change or improve one or another aspect of practice and who has the initiative to develop them after some reflection or by analyzing the success of *practicum* classes.
Finally, trainers often deal in different spaces and different way to in-service and initial training and presents an opportunity to work together in the same space and the two formations, which is a challenge in that it does not is known to work with what depth the themes that emerge nor the practice problems that are presented daily in the group. Teacher educator role is orienting this process of professional development. Another aspect that makes this innovative project is to bring together educational policy and teaching in the classroom, areas often worked separately in research. The teacher can not even dispose of the political component of educational policy that focuses on their work and must take part in this, acting responsibly and reflected. The project developed is a way to bring them to the discussion at school.

Lessons learned and recommendations/ practical implications

Perhaps the greatest lesson the teacher educator is: never give up. There were a discouraged context at school. It was a hard struggle with humility and patience as a teacher educator to get participants to adhere to the project and then not go away. More important still was trust the work that was being developed, without just outlined the next steps, arranging schedules between classes and meet even job intensification of all participants.

In an educational context as in Brazil where the problems are serious, like child that do not learning, the possibility that the teacher educator to present lessons about partnership and lessons for Curriculum proponents to overcome these problems are due to a great learning experience in School. Considering a school learning, principle of the new curriculum, to a government that learns with schools, teachers and universities. Programs of political reforms submitted to teachers as a package that see teacher educator like an technical to apply materials can worsen the quality of education rather than improve it. It is recommended to invest in teachers and in the spaces in the joint training school and to school, combining pre-service, novice and experienced, so that curricula and methodologies designed together, appropriate to specific contexts and constructed at the school may be formalized.

It is the teacher educator the one who encourages reflection and supports initiatives that can restore the confidence of teachers in their practice and professional learning. So, professional development of teacher educators depends on try to understand what new policies brings to teachers and learn how to research it with them in schools.

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TEACHER EDUCATORS AND COMPLEXITY IN PROFESSIONAL DEVELOPMENT

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Abstract
This paper presents a research focused on teacher educators' professional development and in the impact of their experience in an action research project, centred on ethical issues, where they were teacher's educators and simultaneously researchers, in a context of in service teacher education. The main theoretical framework is a complexity perspective of professional development. In terms of methodology, based on an interpretative approach, we did semi-structured individual interviews to teacher educators and data were treated with content analysis. The main results points to the importance attributed to the participation in the project for their professional development as teachers and teacher educators, with an emphasis on a dialogical work at both team researchers level and at the teacher education groups level. The concomitant work in the contexts of teacher education and of schools (where they are teachers) propitiated a mutual construction, namely a growing ethical awareness, self regulation and committed action guided by ethical purposes and dispositions, in both contexts.

Keywords*:* professionalism, professionality, identity construction, professional development

Introduction

It is intended to analyse the transforming power of a research project in which the teacher educators are engaged and where ethical questions of teachers are constantly set out.
In the main project there were two lines of inquiry, the first one – where an enlarged team of teacher educators' researchers developed a research in extent about teachers' ethical and deontological thought -, and a second one, a teacher education action-research, focusing five teacher education cases. In this last level teacher education is conceived and analysed within the collective of researchers (university teachers and teachers of other school levels), and carried out in the field, in some specific teacher education situations, by the teacher educators interviewed.
These interviews constitute a third level of inquiry, focused in teacher educators' development. So, we intend to understand the perspectives of teacher educators on the following research question: How did the experience in this research project on ethical teacher education constitute itself a teacher educators' formative experience, contributing towards their professional development, as teacher educators and teachers? It is a question that deals with the interdependence of roles – each participant of this research is teacher educator and teacher - and its contribution for their professional development. This question is opened out to a broader reflection about the mobilization of a complex intelligibility in teacher educators' development.

Theoretical framework

In a complex systemic view (Le Moigne, 2005) we conceptualize professional development as a lifelong process through which people evolves as professionals, integrating not only formal

training but also experiential and workplace learning, since it is an holistic and comprehensive approach.

In this process people construct their professional identities, a psychosocial meaning construction process (Lopes, 2002), influenced by dynamics of socialization, training, social recognition, resistance, social regulation, by which they represent the profession and represent themselves as belonging to that profession. It is an evolving, plural, multiple identity, not fixed once for all, and for that it may be considered as a component of the professional development.

In this research we also work with two other important concepts that respects to components of professional development since they evolve through time – the concept of professionality and the concept of professionalism. Professionality is the structural identity, meaning the qualities, the requests to be a professional, including the knowledge and competencies (Jorro, 2011; Lopes, 2002). It has a collective – the recognized professional requests to be a professional -, but also an individual side – the subjective and particular appropriation and development of those requests in each professional.

Professionalism is the axiological identity, meaning the ideal that guides the professional performance, in accordance to values and ends, giving the commitment to duties and responsibilities (Lopes, 2002). Once more it has a collective and an individual side, the last one corresponding the way as each one appropriates himself, reconstructs and commits to the collective ethos, the implicit and explicit codes, values, norms, duties of his profession. This is an idiosyncratic singular appropriation, in which the personal and the professional are intertwined.

These constructs – identity construction, professionality and professionalism, and the professional development as a whole that includes the development of the other three - can be conceptualized as systems represented by concentric circles, with an agency core constituted of finalities and ideals. This core is surrounded by a structural nucleus of values, competences, dispositions and knowledge - that we can designate as an articulative dimension –, with a surrounding circle representing the processes, the dynamics by which the system operates – that we can designate the processual dimension - , and with an exterior circle representing the contextual dimension – the politics and interactions with broader systems (as schools, professional training systems, educative system, professional associations).

This concentric design, with more nuclear and more peripheral circles, represents the idea, at the same time, of integration and of differentiation and amplification. This is a complex conception of professional development that looks for the presence of some main complex principles in the systems that it tries to understand (Morin, 1995, 2001, 2004). Here we outline the hologramatic principle – that means that the whole is included in its parts, the information of the whole is in its parts, the organizational complexity of the whole needs the complexity organization of its parts (Morin, 1995) – the whole, here, is the professional development, their constitutive parts are professionalism, professionality and identities construction (each one could be represented, as well by concentric circles of articulative, processual and contextual dimensions), and professional development as a whole can also be included in a larger process of development where the professional and personal are included. In this professional development there is are dialogical processes (with an interplay between several logics that don't are suppressed by that dialogue) and recursive processes (reciprocal processes of mutual construction corresponding to a complex, multiple and circular causality) – processes by which professionalism, professionality and professional identities develops and influence each other. Next figure represents the integration of those components of professional development.

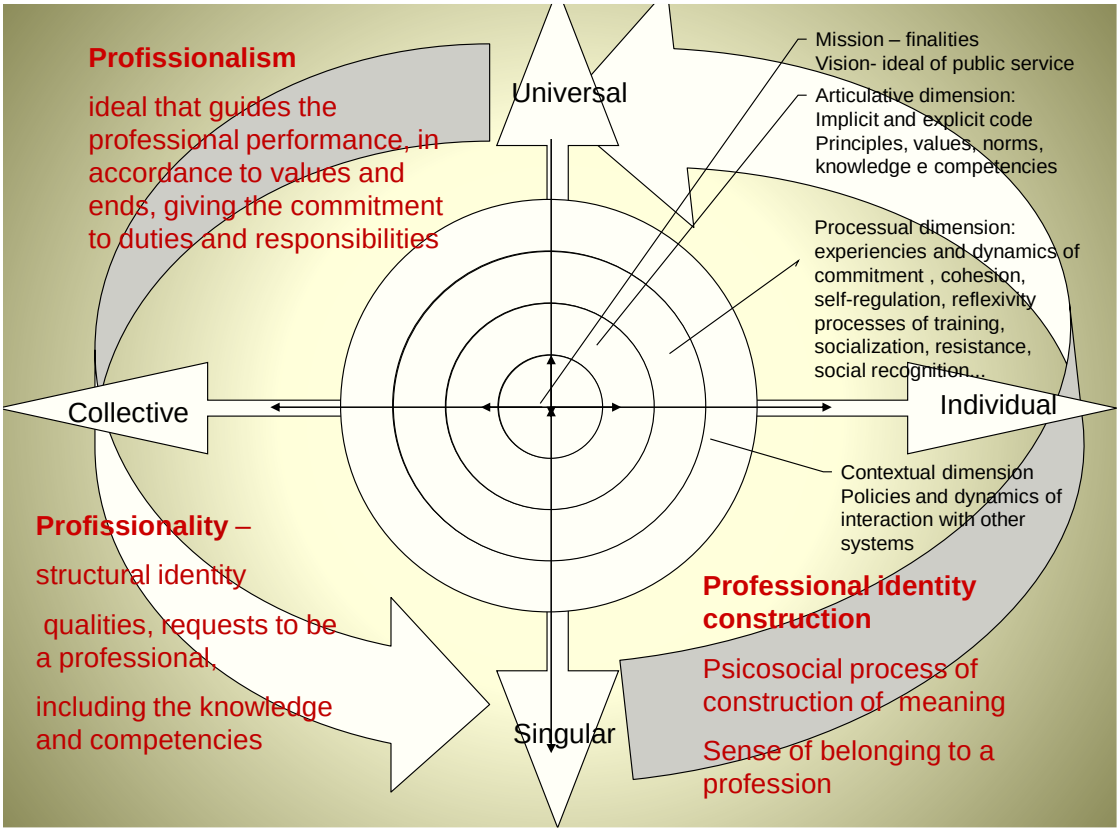

Figure 1. *Professional development as teacher and teacher education*

This is a dynamic and complex model of professional development. As it can be seen in the figure there is a fundamental tension represented by the intersection of two axes – the collective/individual, already referred above; the universal/singular axe, representing the universal idealization and the singular appropriation and manifestation by each collective and individual. It is a tension but also a dialogue and recursivity, by which each pole constructs the other one (Morin, 1995, 2001, 2004). The circular arrows represent the spiral nature of professional development.
These concepts will be mobilized and contextualized to understand teacher educators professional development.

Research project "Ethical-deontological thinking and teacher education"
This research is inserted in a broader research project entitled "Ethical-deontological thinking and teacher education", with two research phases – one for the comprehension of teachers thinking about ethical issues (a step already finished, where we used interviews and questionnaires involving more than one thousand teachers) and another one centred in ethical teacher education (with five cases, each one constituted of one group of teacher education formal project, already analysed and disseminated). This phase is now continuing with two other groups, where research is more systematic carried out by teachers in their schools. The present study refers to a third stage, centred on the teacher educators and its own professional development.

In the first stage of research about teacher ethical thinking we realized, as main results, some relations between teachers' values and their conduct and their goals for pupils and between some of the strategies they want to use with pupils and that they wish for ethical teacher education. We found not many differences between teachers opinions from different school

levels and the main similarities are a tendency for an historical-social relativism, instead of an individual subjectivism, a commitment to the ethical development of pupils , an opening to ethical teacher education, a clear positive valuation of justice as equity. We also found some oppositions in teachers thinking, namely between a rationalistic and a contextualized ethical point of view, between the idea of an innate or an acquired ethics, between equity and equality, between the good of pupils centred in them as persons or in their educative process and conditions. These oppositions are experienced by some teachers with ambiguity and ambivalence, and that brings them to experience dilemmas and to make some attempts to conciliate and surpass those tensions and dilemmas.

In the stage of teacher education, we consider two levels of action research: 1) the level of the teacher education action research, where ethical teacher education and its impact are the main objects of inquiry for the teacher 'educators, 2) the level of teachers in training, for whom the main issues are 1) ethics and deontology of their principles, thinking, practices and contexts, as well as 2) ethical education of their pupils. The tools used in teacher education level are partially the same used for teachers action research. Some of those tools are simultaneously tools intended for the pursuit of the action and of the research. So, we used portfolios, diaries, The Wall (Willemse et al., 2008), narratives of teachers dilemmas and tensions, modelling of those dilemmas, reflective theoretical texts for discussion, the construction of a chart of principles and so on.

Some of the main results of this second stage, points to the importance of some of those processes and tools and of the global project. Collaboration and reflection seems to be the central aspects for teachers' development where the dialogue with the practice and between all the participants is fundamental for a more contextualized thinking, for an explicit and implicit consciousness, present in a reflective practice, and for a more integrative and committed vision of ethics in teachers' action.

Methodology

In terms of methodology we inscribe our work in an interpretative approach. We did semi-structured individual interviews to three of the five main teacher educators and data were subjected to content analysis.

In the selection of the participants we had, as criteria, the fact that those interviewed were all teachers in the active (one of the other teacher educator is retired, and another one is not a teacher in the basic and secondary level, but only works at the university level). This criteria is based on one of the main questions that deals with questioning the interdependence of roles – of teachers and teacher educators - and its contribution for their professional development as a whole.

To guide those interviews we had as themes of inquiry: 1) a general characterisation of the interviewers professional development as teacher educators (including the interdependence with their professional development as teachers), 2) the importance of the ethical teacher education project as a formative experience and its impact in their professional development (including a questioning of the main processes in the project for their learning)

Findings - first results on teacher educators' development

Beginning the presentation and discussion of our results there are several traits of the project that are valuated by teachers educators as important for its own professional development, as table 2 shows.

Table 1. *Teacher education processes and professional development*

Teacher education dimensions	Professional development aspects associated	Unities of speech of teacher educators
Collaboration in research team	Development of community (C) Mutual motivation (A,C) Deepening and enlargement of knowledge (A, B, C)	A – "There was always a sense of the work, a cohesion, everybody working for the same, without a big conflict of interests" C – "If I were alone I wouldn't't be able to do it, first of all knowing that we are not alone is very good" B – "It was a work where I learned with everybody. Our meetings left me always happy"
Dialogue with teachers in the sessions	Awareness and Self regulation of ethical mistakes (A,C) Ethics of dialogue (A,B,C) Learning to make consensus (B)	C – "Listening them talking about their daily life I found myself questioning me, in silence, and thinking I made a mistake, in the light of what I think is the good and in the light of my duty as a teacher I didn't't act well" B - "There was so much dialogue and confrontations of ideas and that helped and I had to learn to make consensus"
Research processes of data collection and analysis	Reflexivity (A,B,C) Valuing the use of research in teacher education (A,B,C) Importance of rigor (B,C)	B - "If I didn't't have that research I wouldn't't be alert to the importance of the feedback of students to the teacher education (...) There is a concern that it is not normal, to have data to be treated in terms of research " B - "Now I cannot have anymore a limited vision of a teacher educator that plan and make presentations, there is a search for knowledge" A – " As a teacher educator I assume that function of the research"
Theory-Practice relation	Ethical reflexivity (AB,C)	B- "I'm always learning how to do the relation between theory and practice (...) I gave them the time to speak giving them the opportunity to make a trip inside themselves, what this theme means to them (...) theory was worked that way (...) before going to practice there is always a theory" A – "I work in a more conscious way"
Theory	Knowledge of ethics and moral (A,B,C) They continue to read after the project (A,C) Contextualisation is needed – non universal theories (A)	A – "for some months now I begun to read the basic authors" B – "it was an experience richer and broader that made me do more work, more discovery, more investment, I'm not able to be the same teacher educator" A – "Theories are not universal, they can result in a context and not in another"

Decisional dynamics in teacher education	Contextualization of the planned (B,C) Relational ethics (A)	C - "in the several groups – three or four – where the theme was the same, things were different (...) even the complicity was not equal and so my posture and availability was not the same"
Dissemination of research results of the research team	Reflexivity (C) Valuing dissemination for other teachers (A), for its own (C) and for the dialogue between teachers and researchers (B, C) More dissemination after project (A) Consciousness of a need of more synthesis (B)	C - "If I didn't't have to write I wouldn't't pay attention ever more " B – "as there is a separation between knowledge produced in universities and in practice neither the researchers know with exactitude what is going on in the field neither the practitioners develop their work. Conjoint publications can be a splendid way of interchange between them" A - "Now I try to write for everywhere. I learned observing the other members of the team (...) I see it as a walking journey that I begun in writing"

Among the similarities in the professional development we can identify an ethics of dialogue and relation, promoted by the collaboration and dialogue inside the team of researchers and in the teacher education groups. This promotes a web of professional communities, since each teacher educator brings the voice of their groups and of the research team to the others. This promotes motivation and the deepening of knowledge and self-regulation - "I make myself more conscious with teacher students, in the contexts of teacher education. Many times they tell me things and I identify myself with it and transform my visions"(A).

Research is valued, namely the systematic research work, the writing and the dissemination. Rigor, the ethical reflexivity and contextualisation are some of the gains that it promotes. This reflexivity was developed as well by the relation between theory and practice. A reflexivity from which emerges a more awareness and consciousness, a broader vision and a different way of working as teacher educators - "Now I cannot have anymore a limited vision of a teacher educator that plan and make presentations, there is a search for knowledge" (A). They assume an inquiring function - "As a teacher educator I assume that function of the research" (A). In this double role teacher educators are both consumers and producers of knowledge, in collaborative contexts, where everybody contributes to the development of theory and practice and in which the separation between university and practitioners is intended to be surpassed. Teacher educators are the mediators between those two fields, being members of the university team and teachers in schools and doing the recursive process between first order knowledge and second order knowledge (Murray, 2012).

In relation to professional development, we can also identify complexity in several areas, as table 2 shows.

Table 2. *Complexity principles in professional development*

	Complexity principles and dimensions	Examples of teacher educators speech
Principles values and dispositions	Flexibility and openness to change (B)	B -"I had to reflect very much and had to repeat the session till it was very clear to them. I prepared everything to be very clear for me and after I worked with them in order to be clear for them"
	Unpredictability and dialogical ethics(B)	B – "this is a complex process that is being constructed, because it don't depends only on us (...)"
	Self-regulation (B)	B – "I always make my best if I don't do it I feel bad with myself"
		B – "the first thing to do when a make a mistake is to assume it responsibility"
Problems and dilemmas	Recursivity between problems (C)	C - "in an interview we collected a story of a dilemma (...) In a session of teacher education one similar situation was reported (...) a similar one in my class..."
Knowledge	Comprehension (A) More amplitude (A)	A – "today I'm much more at ease about ethics. At first I didn't know much"
Dynamics of research	Recursivity , reflexivity and more amplitude (C, B)	B -"Is deeper, more complete and comprehensive, more reflexive and gives us elements to be more rigorous in evaluation"
Action in classes and schools	Openness Flexibility	A – "Certainly I'm not the same teacher, I learned a lot. In terms of activities, strategies with children, even when I say I don't do it it's more conscious"
	Co-regulation and co-organization	A - "Colleagues ask me what to do, ask me for texts. This is changing realities in schools. It is not a big impact. I have more impact outside than inside school"
	Multi causality	B – "Educators work with parents, communities... It is a work very enlarged in terms of publics. The complexity is in knowing to mobilize all the publics around a common goal"
	Interdependence	B - "Leadership has to do with be humility, know to listen the others, know to accept different opinions, to have respect towards those that are under our orders..."
		"similarities between leadership as educator, teacher educator and coordinator of a school"
	Hologramaticity	

Professional development of the subjects as teachers and as teacher educators is a complex one. There is a broader recursivity of learning between teaching problems experienced in both contexts and a kind of hologramaticity between functions of leadership. This is associated with an isomorphism between teacher work and teacher education work. The knowing and dilemmas in the work at schools is interconnected to the knowing and dilemmas worked in teacher education - despite the differences there is a common knowledge and a need of a metacognitive process in order to use that knowledge in both contexts. Continuous learning, openness to change, flexibility, self-regulation, and unpredictability are some of the aspects of this complex professional development. This is a professional development towards an ethics of dialogue.

Concluding remarks - ethical professional development in a teacher education research project

Coming back to the initial concern with the questioning of professional development we now summarize the main aspects of this experience, as it was understood by teacher educators, at this exploratory study.

In what concerns ethical values, principles and positions – one of the inner circles of our model - there are evidences of a framework, a core vision and a core mission that gives orientation to each of these teacher educators. Surprisingly they enunciate different ethical perspectives and accentuate different values. This probably means that they are consistent and coherent with themselves but different with the others. In a more implicit way we perceive communalities, as the importance of responsibility and care in both teacher and teacher education contexts. But justice and an ethics of duty is only enunciated by one of the subjects, care by two of them as well as autonomy and rigor. A relational and intuitive ethics seems more present in one teacher educator and a more rationalistic and deontological perspective is more present in the other two.

Those differences are coherent with the research project vision, where there was not a unique consensual orientation, but an open one, open to the diversity of teachers' positions, open to multiple theoretical frameworks, open to the dialogue.

This is an ethics of dialogue, an ethics of respect for the differences, not in a total relativism, but in a way where research enlarge our understanding, where debate deepens our reflections, where theory fundaments our intuitions, where the heart opens to a more caring and contextualised intervention.

Returning to the model presented before, it is a complex process of amplification and of integration where dialogical, recursive and hologramatic principles are central to the auto organisation and regulation, but also where the unpredictability, flexibility and openness are central principles to understand professional development.

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TWO DECADES OF CHANGES IN TEACHER TRAINING IN CENTRAL AND EASTERN EUROPE: THE OLD HERITAGE AND NEW CHALLENGES

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Abstract
Twenty years have passed since the fall of the Communist regimes in Central and Eastern Europe. There have been many changes in all spheres of social life, including education and teacher training. As well as many other fields of education, teacher education policy also underwent a series of transformations. In order to understand the nature of these transformations, the reflection of the Soviet period is necessary to start with. Teaching profession during the Communist times was not considered to be of a very high social status. However, in spite of moderate salaries and relatively low status of the profession, a number of advantages made the teaching career a rather attractive option for a certain part of young people. The fall of the Communist regimes marked a new era in the domain of teacher training. The policy of the newly formed Central and Eastern European governments towards teacher training reflected a number of new directions: deideologization, demonopolization, decentralization, demythologization, diversification, marketization, internationalization, etc. In post-Communist society the job of a teacher didn't become more prestigious or better paid. In fact, it has become much more complicated due to changes in school curriculum, behavior of students and development of information technology. However, at the same time the job of a teacher became more rewarding. Teacher education in the region is currently standing at the crossroads. Due to the demographic crisis and growing emigration the number of school age children is falling down. Policymakers need to get clear answers to a series of questions concerning essential teacher training issues. How many teachers do we need? Where should we train them: in schools of education within classical universities, or in specialized institutions of teacher training? Shall we raise the standards for candidates or lower them down? There are different options available for policymakers, and practitioners of teacher education are eager to know which options will be chosen in order to foresee the scope and nature of teacher training in the future.

Keywords*:* teacher education, post-communist countries.

Introduction

The events of 1989-1991, when the Communist systems in Central and Eastern Europe collapsed and the iron curtain between the East and the West fell down, eventually become the object of studies for historians. Twenty years seem to be a sufficient period for rational evaluation of hopes and expectations related to this historical event. There have been many changes in all spheres of social life, including education and teacher training. As well as many other fields of education, teacher education policy also underwent a series of transformations. The problem is that throughout these years there have been different concepts and approaches to teacher training and the role of the teaching profession. The aim of this study is to review the transformations and reflect on the current state of the post-Communist systems of teacher

training. The object of the study is changes in teacher education in Central and Eastern Europe, and the methods of the study are analysis of documents, scientific publications and reflections on the teaching practice.

The Soviet period of teacher education

For a better understanding of the current situation in Central and Eastern European education, the historical review should start from the description of the Soviet approach towards teacher training. Teaching profession during the Communist times was not considered to be of a very high social status. Teachers were underpaid and often complained about difficult conditions of work. At least in Lithuania they loved to refer with nostalgia to the pre-Soviet times when, according to their understanding, teachers were respected and considered a part of the local elite both in the urban regions and in the countryside. While referring to the pre-Soviet past they usually didn't take into account that at these old times the educational sector was small and there were few professionals working in this field. The Soviet period marked the beginning of mass education, and the introduction of compulsory basic, and, later, secondary education led to the radical growth of the teaching corps. More and more teachers were trained in specialized teacher training institutions – pedagogical schools and institutes – which were considered to be less prestigious educational establishments than classical universities. The academic staff of these institutions also felt somehow inferior to their academic colleagues from classical universities. However, secondary school graduates often preferred to opt for a teaching profession and chose pedagogical institutes as their *Alma Mater*. Many young people, predominantly women, who were raised in a working class or farmers' families, chose a teaching profession as an opportunity to climb up the social ladder and become "white collar" workers. In this respect the policy of mass secondary education contributed to the enlargement of the Soviet lower middle class. The change of the social status was somehow assured by the existing system of appointments to the working places after graduation, which meant that after graduates acquired the teaching profession, they were inevitably appointed as teachers to primary and secondary educational institutions. All this, in spite of moderate salaries and relatively low status of the profession, made the teaching career a rather attractive option for a certain part of young people. However, education in the Soviet system, besides other roles, also played an important ideological role. In official Communist party documents teachers were described as "warriors fighting for the ultimate victory of Communism" (Želvys, 2003, p. 31). The ideological indoctrination of the would-be teachers was considered to be an important aspect of teacher training and was closely monitored by the Communist party. This resulted in a relatively large proportion of the ideologically-oriented study courses and strictly centralized control of the teacher training curriculum. In private conversations the would-be teachers complained about this heavy ideological burden but usually accepted this as an inevitable consequence of their professional choice. Teachers of pedagogy, especially those specializing in a theory of the Communist upbringing, often managed to make a rather quick academic career for ideological reasons; on the other hand, representatives of other academic domains treated pedagogy as a rather "suspicious" science where ideology prevailed over scientific reasons and arguments.

Post-communist transformations in teacher education

The fall of the Communist regimes marked a new era in the domain of teacher training. The policy of the newly formed Central and Eastern European governments towards teacher training reflected a number of new directions. Some policy decisions were taken rather quickly and were more visible, while some others were implemented more slowly and not always recognized and appreciated by a wider society. Usually the first and most visible political steps in most of the

post-Communist countries were related to getting rid of the ideological burden in educational science.

Deideologization

After the fall of the Communist regime the teacher training programs soon rejected its former ideological contents. New courses, hardly imaginable during the Soviet era, replaced old study disciplines like the Theory of the Communist Upbringing. The would-be educators in teacher training institutions eventually started to study new subjects of Comparative Education, Philosophy of Education, Education Management, Education Policy, etc. Changes in teacher training curriculum imposed new requirements for teacher trainers. Many former specialists of the communist upbringing had to change the contents of their courses and quickly acquire new skills and knowledge or were forced to leave the teacher training institutions.

Demonopolization.

The state monopoly also came to an end with the collapse of the previous system. The non-state higher educational institutions were established in most of the countries of Central and Eastern Europe, offering a wide range of study programs, including the initial teacher training studies. The ministries of education retained some regulating functions for non-state educational institutions; however, relatively wide autonomy marked the end of state domination.

Decentralization.

The centralized regulation of teacher training curriculum came to an end and thus gave the right to higher educational institutions to develop teacher training programs of their own. A rather broad framework of qualification requirements still remained as a set of landmarks for teacher training, which, nonetheless, left enough space for teacher training institutions to update and tailor the teacher training programs offered to students. Decentralization of teacher training curriculum had a twofold effect: on one side, the loss of centralized state control provided an opportunity to offer alternative models of teacher training; on the other, conservative institutions of teacher training could use their newly gained autonomy for securing traditional curriculum and teacher training practices.

However, the new era also brought new disappointments. Contrary to the expectations of the educational community and to the rhetoric of the politicians about the importance of education in the modern age, the social status of teachers didn't improve. Great hopes of returning the pre-Soviet situation of high status and prestige of the teaching profession didn't come true. The acknowledgement of the fact of the disillusionment with a post-Soviet reality marked a new trend.

Demythologisation

Teachers soon came to the understanding that the "good old times" will never return back. Quite the opposite, new fields of activities in a post-Communist world soon opened up, for example, establishing private business or starting a political career, which attracted a certain part of potential as well as in-service teachers. Expansion of higher education sector also provided additional opportunities for prospective students to opt for more popular study programs like economics, management or law. Education policy of the new government in many countries was aimed mainly at reforming the sector of secondary education, namely, updating curricula and teaching materials, to a certain extent – in-service training, while initial teacher training as an integral part of tertiary education was not considered to be a matter of the utmost importance. In Lithuania, for example, where the first non-Communist government started to operate in the spring of 1990, the first working group for reforming initial teacher training was appointed by the Ministry of Education almost a decade later – in the fall of 1999 (Lietuvos Respublikos

Švietimo ir mokslo ministerija, 2004). Similar tendencies were observed in other post-Communist countries. For example, Walterova (2010) notes, that in the Czech Republic the school environment has changed more quickly than teacher education was able to respond. Since 1989 numerous policy proclamations, documents and prospects focused on education transformation. However, questions concerning teacher education were almost entirely avoided. Psifidou (2010) points out that in Bulgaria reforms in higher education did not follow the same speed as reforms taking place in compulsory and upper secondary education. In this respect those working in the field of education had to realize that even within the educational sector initial teacher training is evidently not among the priorities.
Establishment of non-university higher educational institutions, the start of the Bologna process and the introduction of Bachelor and Masters levels of studies introduced still another new aspect of teacher education policy.

Diversification
The process of diversification in higher education inevitably raised the question of different approaches towards acquiring the qualification of teacher. At least in Lithuania there were several attempts to reorganize the system of teacher training by linking the teaching professions with certain levels of studies, for example, the working group for reforming initial teacher training suggested that pre-school and primary teachers training should be limited to non-university education, subject teachers should acquire the university Bachelor degree, and the upper-secondary or gymnasium teachers – Masters degree (Lietuvos Respublikos Švietimo ir mokslo ministerija, 2004). There were also attempts to make acquisition of a Masters degree a necessary precondition for applying for the positions of school principal or deputy. At least several post-communist countries, for example, Hungary, eventually decided that a Masters degree is required in order to get teachers qualification (Holik, 2010).

Cost-effectiveness
Cost-effectiveness of teacher education was evidently not a central issue during the Soviet times. The demand for a teaching force was the main criteria while making decisions concerning teacher training institutions, and not the expenses related to training. Post-communist reality forced the policy makers to start counting the costs of training teachers. All policy decisions concerning teacher education, besides logical arguments, now also have its financial aspect. Lower levels of studies and shorter study time (for example, non-university – three years, university Bachelor – four years, Master – two years of studies in Lithuania) require less funding for teacher training programs. National policy makers are fully aware that limiting preschool and primary teacher training to non-university studies would decrease the costs of teacher training, while an obligatory Masters degree for upper secondary teachers would increase the costs. Financial questions are not solved easily due to the conflicting interests of different groups of stakeholders – in this case, the Ministry of Education and Science, universities and colleges, teacher unions and other professional organizations, etc. No wonder that after long and sometimes heated discussions these plans were not carried out and up till now all kinds of higher education institutions in our country train all types of teachers.
Another new shift in teacher education policy which was hardly imaginable during the Soviet times, but appeared to be very typical to the post-Communist society was commercialization of teacher training.

Marketization
Introducing market forces in higher education was considered as one of the undisputable features of Westernization and gained momentum practically in all countries of Central and Eastern Europe. Free market and open society were two important symbols which in post-

Communist world are still accepted unconditionally and, quite often, uncritically, because the questioning of the market orientation of higher education, according to Kwiek (2001), would mean the questioning of the very essence of post-1989 social aspirations. The fee-paying higher education student was a new phenomenon unheard of during the Soviet times. Introduction of tuition fees was one of the first attributes of market approach in post-Communist higher education. The percentage of fee-paying students during the first post-Communist decade steadily increased. Lithuanian statistical data could serve in this respect as a typical example. In the study year 2009/10 more than half of the university students, namely, 52,8% Bachelor students and 59,4% Masters students paid tuition fees for their studies (Lietuvos Respublikos Statistikos departamentas, 2011).

Teacher training institutions did not gain much benefit from this shift towards the marketization of higher education. The newly emerging higher education market offered to prospective students more attractive options at similar costs. We must admit that during the last two decades institutions of higher education managed to recruit fee-paying students to the teacher training programs; however, with the decrease of general number of young people coming to tertiary education and opening possibilities of more prestigious studies both within the country and abroad, the task of attracting fee-paying students to teacher training programs becomes increasingly difficult. While technical universities may compensate the loss of fee-paying students by expanding its cooperation with business and industry and thus earning additional income, pedagogical universities have rather limited possibilities of generating other income than student fees.

Internationalization

The Soviet society was a relatively closed society, isolated in a rather effective way from the rest of the world. The “iron curtain” was an exact description of the communication barriers imposed on the people by the Soviet regime. Both students and teachers of teacher training institutions had a rather limited knowledge about teacher training abroad. There were possibilities, though also limited, to visit other countries of the Communist world. However, teacher training systems in all these countries were very similar. International dimension in teacher training revealed itself only during courses on History of Education or Comparative Education; and quite often the knowledge was restricted to general critique of Western systems of education.

The fall of the iron curtain meant a radical shift towards internationalization of education. Internationalization, as well as marketization, plays an important role in education policy of post-communist countries because of its symbolic meaning of reunion with the rest of the world. Universities and colleges are encouraged to develop cooperation with their partners abroad, and the international dimension became an important criterion for evaluation and rating of educational institutions. Internationalization of teacher training manifests itself in very different forms:

- in curriculum by introducing international dimension in most of the teacher training courses;
- in structure by introducing teacher training schemes and models practiced in other countries;
- in degree system by introducing Bachelor and Master degrees;
- in credit accumulation system by introducing ECTS;
- in student exchange programs;
- in teacher exchange programs;
- in joint research projects, international networks, international conferences, etc.

The process of internationalization, besides its undisputable advantages, also poses new problems and challenges. One of the most contradictory outcomes of internationalization in an

academic sphere is the increasing number of students choosing foreign universities instead of the national ones. Many of these students, especially with Masters and Doctoral degrees, prefer to stay in the country of their graduation. Many Central and Eastern European countries experience a "brain drain" of this kind. The "brain drain" of university teachers, though not so radically, also takes place. Internationalization stimulates international research and international publications, which are usually published in English, thus making national scientific language and, respectively, national scientific journals redundant. However, when compared with Soviet times of isolation and strict ideological control, the world without "iron curtains" looks much more attractive and promising.

Lessons to be learned

In public debates we can often hear opinions that teacher education hasn't changed much since the Soviet times. After listening to the arguments we can understand and accept many of the critical remarks voiced by the discontented part of the contemporary society. In particular, we have to admit that the old heritage of teacher training structures and methods still makes a substantial impact on current teacher training in Central and Eastern Europe. In most countries of the region the reforms of initial teacher training started later and were slower than in other segments of education. We should also agree that the core subjects taught to students during their teacher education studies remain more or less the same. We have to admit that theory still prevails over practice and students need more practical training, especially in university teacher training programs. The atmosphere in schools and conditions of work, according to the opinion of most of the teachers, didn't improve or even became worse.

However, by pointing out the policy trends mentioned above we tried to demonstrate that, in spite of evident resistance and inertia, there were changes in the domain of teacher education and that these changes were rather significant. Perhaps most of the changes are not so easy to detect by people not directly involved in teacher education. Alumni, who happen to visit their *Alma Mater*, keep saying: "Look, the buildings are the same and most of the professors are the same!" However, these superficial observations do not diminish the overall importance of changes for further development of educational sector. New curriculum, significant political-administrative, legal and structural reforms in education during the twenty years of post-Communist development require to train new kind of teachers with different competences than those that we used to train during the Soviet times. The competence-based approach to study programs, introduced as an integral part of the Bologna process, forces teacher educators to rethink the aims and objectives of initial teacher training and reformulate the learning outcomes to be achieved. One of the priority issues for teacher educators is to promote these reforms and to make the wider society familiar with the changing nature of teacher training.

New challenges

Teacher training policy during the twenty years of post-Communist developments demonstrated a series of new trends, unheard of or hardly imaginable during the Soviet times. Some of these trends were more fruitful and rewarding, others – more challenging and worrying. The job of the teacher didn't become more prestigious or better paid. In fact, it has become much more complicated due to changes in school curriculum, behavior of students and development of information technologies. However, at the same time the job of a teacher became more rewarding. By this we mean teachers' liberation from ideological burden, possibilities of traveling and sharing international experience, wider possibilities of applying their teaching skills due to development of life long learning and adult education. Within the context of the economical crisis and growing unemployment the teaching profession offers relative stability and predictability of professional career. Teachers keep complaining, but they

were also complaining during the Soviet times. When they reach the retirement age, they usually do not want to leave the school and the job they were complaining about.

However, the current situation gives sound reasons to worry about the future of the teaching profession. We must admit that teacher education in the region is currently standing at the crossroads. Due to the continuing demographic crisis and growing emigration from Central and Eastern Europe to the more prosperous members of the European Union, the number of school age children in the region is falling down. Teacher educators need to get clear answers to a series of questions concerning essential teacher training issues. The nature of the answers will to a large extent predetermine the future of the teacher training activities. How many teachers do we need? Do we need to cut the numbers radically in response to the current negative demographic changes, or should we consider a more long-term perspective? Where should we train the students: in schools of education within classical universities, or in specialized institutions of teacher training? In other words, should we focus on further professionalization of teachers by developing specific competences or should we provide the would-be teachers with more universal generic skills and knowledge? Shall we raise the standards for candidates or lower them down, having in mind the relatively low attractiveness of the teaching profession? There are different options available for policymakers, and practitioners of teacher education are eager to know which options will be chosen in order to foresee the scope and nature of teacher training in the future.

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FROM SELECTION TO EDUCATION: LEGISLATIVE ASPECTS, CRITICAL ANALYSIS, PEDAGOGICAL PERSPECTIVES OF ADMISSION TEST FOR PRIMARY TEACHER DEGREE

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Abstract
The aim of this paper is to reflect on issues and problems related to the selection and then to the curriculum of future teachers from the perspective of their university education. So, the following reflections are to address – although, in summary – legislative aspects and pedagogical perspectives.
First, the current European context and educational policies were examined, starting from the consideration that education and training, ever more lifelong and lifewide, are key strategies for each advanced and civilized country, both in a national and in an international perspective, even to achieve more actual and effective democracy and inclusion.
Then, the emphasis is on Teachers education and training between legislative issues and needs of educational management, with some general thoughts and an ongoing experience of research. There is an agreement that is necessary at the level of educational management of degree programs considering data collection and empirical evidence from the admission test (currently about University of Macerata).

Keywords: teacher education, training management, university laws, regulation on teaching, admission test.

Introduction

Nowadays worldwide challenges, which are required to face up to fast moving and unresting economies and societies, globalized crisis, multiculturalism and demographic changes, etc., converge in recognizing education and training, ever more lifelong and lifewide, as key strategies for each advanced and civilized country, both in a national and in an international perspective, even to achieve more actual and effective democracy and inclusion.
Therefore, European Council conclusions on a strategic framework for European cooperation in education and training emphasize that: “education and training have a crucial role to play in meeting the many socio-economic, demographic, environmental and technological challenges facing Europe and its citizens today and in the years ahead; and efficient investment in human capital through education and training systems is an essential component of Europe's strategy to deliver the high levels of sustainable, knowledge-based growth and jobs that lie at the heart of the Lisbon strategy, at the same time as promoting personal fulfilment, social cohesion and active citizenship” (Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training, "ET 2020").
Furthermore, UNESCO focuses on the importance of the role of the teaching profession today, acknowledging worldwide countries have the task to reach at least universal primary education by 2015. Also taking into account the achievement of last mentioned objective, it is needed a massive and widespread recruitment of new professional teachers, who have been always more and better trained and who are careful to increasingly improve the quality of teaching and

learning. Involved and aware of these topics, UNESCO has elaborated its Strategy on Teachers (2012-2015).
So, it's now the time each country (and transnationally, together) focuses on teachers education and training.
Far from the Delors Commission Report in 1996, teachers are recognized to "have a crucial role to play in both protecting and developing cultures while at the same time systematically educating for social cohesion and intercultural understanding. Teachers have a central role in creating a culture of peace through education. As teachers, we must ourselves co-operate, share our teaching materials, research and work together if we are to be more successful than we have been to date in facing this challenge" (Delors, 2000).
Despite the acquired widespread acknowledgement of the strategic importance of the role of teachers in whole Europe, unfortunately, public opinion, as well as spread by mass media, often seems to consider teaching profession as declined over time and not so attractive.
So, in the following pages, we will stress pedagogical and interdisciplinary debate moving by considering the current European and Italian context and we will focus on the most relevant innovations introduced in Italy by the recent reform of kindergarten and primary teacher initial education and training.
Based on our acknowledging of fruitful role of educational research to improve teachers education, in order to suggest and implement paths and perspectives for development, furthermore, we will present some first considerations and further perspectives concerning the currently available data about the admission test to new five-year single cycle degree course in kindergarten and primary education, held at all Italian universities in 2011/12 and in 2012/13 academic year, with special regard on the degree course at University of Macerata.

Current European context and educational policies

Eventually, all European countries widely agree that education and training are crucial for economical, social, cultural development within European Union, therefore since 2000's, by adoption of the Lisbon strategy (and the Bologna Process in 1999), then the "Education and Training 2010" (ET 2010) work programme, followed by Europe 2020 strategy for growth and jobs and the last strategic framework for the Open Method of Coordination in "Education and Training 2020" (ET 2020), cooperation and partnership have been ever more strengthened towards the achievement of common aims and goals.
As the President of the European Commission himself, Barroso, says: "Concretely, the Union has set five ambitious objectives – on employment, innovation, education, social inclusion and climate/energy – to be reached by 2020. Each Member State has adopted its own national targets in each of these areas. Concrete actions at EU and national levels underpin the strategy".
"Education and Training 2020" strategy, moreover, emphasizes that "the primary goal of European cooperation should be to support the further development of education and training systems in the Member States which are aimed at ensuring: a) the personal, social and professional fulfilment of all citizens; b) sustainable economic prosperity and employability, whilst promoting democratic values, social cohesion, active citizenship, and intercultural dialogue". These aims have to be considered in a wider and wider international perspective as well as lifelong and lifewide, for an actual global development.
The long-term strategic objectives of EU education and training policies are:
1. Making lifelong learning and mobility a reality;
2. Improving the quality and efficiency of education and training;
3. Promoting equity, social cohesion and active citizenship;
4. Enhancing creativity and innovation, including entrepreneurship, at all levels of education and training.

To make available a systematic monitoring about “work in progress” towards the achievement of such objectives, European indicators and benchmarks had been elaborated to collect data and to have reference levels.
The benchmarks for 2020 are:

- at least 95% of children between the age of four and the age for starting compulsory primary education should participate in early childhood education;
- the share of 15-years olds with insufficient abilities in reading, mathematics and science should be less than 15%;
- the share of early leavers from education and training should be less than 10%;
- the share of 30-34 year olds with tertiary educational attainment should be at least 40%;
- an average of at least 15 % of adults (age group 25-64) should participate in lifelong Learning.
- In this strategic framework in which spread and quality education and training are crucial even for sustainable and inclusive growth, all stakeholders are involved to cooperate to attain those stated goals.

“The development of quality assurance systems is an important lever for achieving the strategic objective of improved educational quality and efficiency, consequently, the quality of education is increasingly being evaluated across Europe” (Eurydice, 2012).
To achieve high quality education and training at all levels we need, first of all, high quality teacher education, for widespread knowledge based context and to realize an actual “Europe of knowledge”. The professional education, training and further development of teachers are key factors in ensuring successful outcomes for students, as widely confirmed by several performed surveys. Besides, professional teachers are needed to enable and support students in developing and improving their capacities, potentials and creativity for both private and social growth and wellbeing as active, cooperating and effective democratic citizens and workers.
Thus, the quality of teacher initial and lifelong education and training has been a matter for debate both nationally and at the European level. In this context, it is important exploring the question of selection of future teachers from the perspective of their university education, in particular this is necessary at the level of educational management of degree programs.
Despite even considerable different education and training systems and models in European countries, we can suggest some common curricular components, such as:

Teacher education between constitutional and legislative issues and needs of educational management: some thoughts and an experience

Education is a central issue due to many reasons: it plays a crucial role in whole person full development process, which is the core of Italian Constitution; at the same time, it is a necessary precondition for keeping of the democratic system; and, as we have just pointed out above, education is recognized as collecting field for “the many socio-economic, demographic, environmental and technological challenges facing Europe and its citizens today and in the years ahead” (Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training, "ET 2020").
From here, at the same time, the teacher education and training have an absolute constitutional significance. School is a place where future citizens are educated and trained and it is essential that they are aware of, and therefore free.
For this reason, the teaching of constitutional law is essential in teacher education and training curricula.
Constitution, indeed, as Peter Haberle noted, “isn’t just a legal text (...), but also the expression of a cultural developmental stage, a means of the people's cultural self-representation, a

reflection of a cultural heritage and the foundation of their hope. The Constitution is a memory for conveyed information, experiences and cultural wisdom" (2006, p. 5). The Constitution expresses the history of a community, of a Country, of a Nation. In addition to being Grundnorm, the Constitution states the historical and cultural identity in which the state community recognizes itself.

As Valerio Onida said, "the contents of the Constitution are primarily history, the history of our country, of Europe and of the world, of a path full of contradictions and struggle, but also of strenght-ideas and processes to affirm and translate into reality, in a world often very far from them, the core values that underpin the living together: equality of human beings, the inviolable rights of the person, 'rightful authority' of the government based on the consensus" (2008, p.2). The task of the school is to make all this known.

It's no coincidence that the well-known agenda presented on 11 December 1947 in the Constituent Assembly by Honourables Moro, Ferrarese, Franceschini and Sartor proposed a constitutional charter that should find "without delay appropriate place in the context of school teaching at all levels, in order to make the young generation aware of the achieved moral and social conquests that are by now sacred heritage of the Italian people".

The Italian Constitutional Court, with sentence no. 200 of 2009, stated that the general rules on education are designed to ensure the cultural identity of the country. Cultural identity is a broad concept, which is distinguished by culture. The latter can be identified by some certain objective aspects (language, religion, common history, etc.), that characterize one community. Instead, cultural identity is the perception of culture, its subjective projection, which expresses the feelings of those aspects. It's a relational and dynamic concept, which determines the sense of belonging to a community and influences the way of thinking, feeling and acting by its members. There is therefore a need for an educational system capable of guiding the processes training and cultural improvement of the students also, if not primarily, to the constitutional values.

First of all, school has to teach students the constitutional values through constitutional principles.

Task, or rather, duty of school, through a descriptive and critical reconstruction, is to make values of respect for the person as such, otherness, dialogue, autonomy, shared principles and sense of responsibility for the res publica, the sacrifice and work internalized, which are, as the outcomes of troubled paths, constitutive of our cultural identity and that trace with strength "minimum contents of the democratic ethos". For this purpose it becomes essential school to restore and enhance – then tell – the human evidences which have allowed to experience by living such values.

As pointed out by Antonio Ruggeri, the entrance of the Constitution, with its history and its values, within the education path is a right, as well as a duty, both due to the need "to be enabled to look at reality around us *from the point of view of the Constitution*" (2008, p. 392).

The orientation of instruction-education to the whole table of values constitutionally positivized – as Ruggeri said – is therefore necessary because it teaches a method, a way of relating to people and therefore to things. It is a method, relying on "pluralism, in its work 'system' with the remaining values: freedom, equality, justice, democracy, and so forth," (2008, p. 391) takes an in-depth pedagogical function.

Such values are even more important because the school is the first community in which one experiences the relationship with cultural diversity. It's the school that is involved in the challenge of constitutionalism, to identify principles and criteria, but also to practice living together among various cultures. Only if constitutional values enter school, and to do so they have to be placed first in teacher education and training, school can become a "gym of democracy".

In Italy, a recent reform of teacher initial education and training was introduced by the Decree of the Ministry of Education, University and Research September 10, 2010, n. 249.

One of the goals the reform intended to pursue was to achieve an actual change through limited legislative actions, not to cause distortions to the university system, which was already subject to regulatory action to complete reorganization as established by the law n. 240/2010 that was recently realizing its first implementation.
Furthermore, one of the premises to teacher initial education and training reform was linked to the agreement it was necessary marked strengthening of disciplinary skills.
The second premise is that teacher education and training should promote pedagogical reflections and develop teaching, organizational and relational skills that should become characteristic aspects of the educational and professional profile of teacher.
The regulation reform clearly stated that the university system is the natural institution for teacher education and training, which has been organized into two stages, a degree (single cycle degree/combined Bachelor and Master, or second cycle degree/two years master) and an internship, which vary depending on the grade school to which they relate.
For the kindergarten and primary teacher initial education and training a single cycle of 5 years was enacted, including training to be started from the second year, with programmed access following the pronouncements settled by the Ministry (Chart 1).

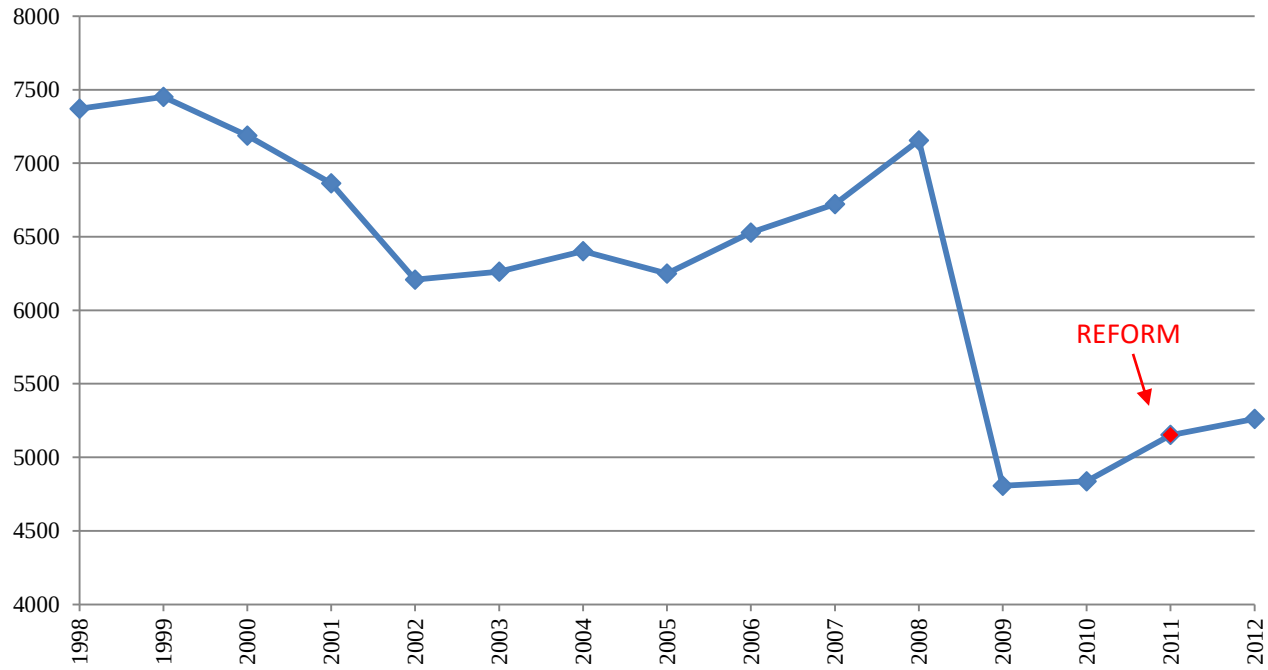

Chart 1. *National framework of available number of enrolments for "Primary Teacher Degree" (source: Ministerial Decrees)*

The new five-year single cycle degree consists in a curriculum which would reconcile a balanced disciplinary and pedagogical-teaching courses, reinforcing also the literary-language, math and science teachings, at least according to the legislature's intentions.
Such "Primary Teacher Program" qualifies for the kindergarten and primary school teaching in Italy. By decision of the Ministry of the Education, University and Research, Italian universities have offered a total of 10412 available number of enrolments, 5151 for 2011/2012 a.y. and 5261 for 2012/2013 a.y. In Marches, the graduate cited courses were turned on at the University of Macerata and the University "Carlo Bo" of Urbino, with 240 available number of enrolments in total for each academic year (130 UNIMC, 110 UNIURB).

To be admitted to it, candidates have to overcome an admission test. We have to point out that date, method, content, score, program of admission test are determined by Decree of the Ministry of Education, University and Research. In the admission tests for the new degree there were 80 questions, for the score: 1 point for correct answer and 0 for wrong or none answer. The questions were divided into three cultural areas: a) language/linguistics and logical reasoning, 40 questions; b) literature, history, geography and social culture, 20 questions; c) sciences and mathematics, 20 questions. Also, it was expected a minimum total score that must be overcome to access the "admitted students' list" equal to 60/80 in 2011/2012 and to 55/80 in 2012/2013. For both years, there were integrative points for "Language Certification" in English, in particular 3 pts. for B1, 5 pts. for B2, 7 pts. for C1, 10 pts. for C2. The time of test was 2 h. and 30 m. in both years.
It seems appropriate to point out that, in the new structure of the admission test by the Ministry of Education, University and Research, items related to the pedagogical disciplines, teaching and educational sciences have been completely cut off. However, for the moment, since we're still in the early stages, we refrain from making any comments, although we can not hide a certain perplexity.
The implementation, correction and evaluation of the test were completed by a specialized company (Selexi s.r.l.) for several universities*, including Macerata. It is important to focus on that the test performances – in those universities – were (generally) very good in both years, at Macerata right answers were around 90% for 2011/2012 and 85% for 2012/2013, with positive results in every cultural areas and only a small number of candidates "out of the list" (table 1).

Table 1

UNIMC	**2011/2012**	**2012/2013**
Available enrolments number	130	130
Number of candidates	285	262
Eligible candidates**	276	248

** minimum score equal to 60/80 in 2011/2012 a.y. and to 55/80 in 2012/2013 a.y.

We'll show below some first set of average data – early analyses – about candidates for UNIMC admission test for 2011/2012 and 2012/2013 academic years. Data cover all participants to the admission tests and refer to the information/results actually and currently available or communicable.
With regard to candidates of UNIMC (547 in two years), focus of this paper, summary data will be presented related to gender, age, high school grades. About the candidates' age, the "candidates' population" cover a period of time more than thirty years and data show the following particular situation: 45% were born from 1990, 35% in 1981-1989 decade and 20% before 1980. About final score of high school, the average is around 80/100 with a limited number of excellence (100/100 less of 10%). For gender, it has been confirmed the "traditional situation": male candidates, indeed, were very, very few (less than 10%), so primary teachers are and will continue to be female and teaching seems to endure as a female profession and some considerations would and should be done by pedagogists, researchers, politicians and all stakeholders.
About UNIMC data, the average score was around 72 in 2011/2012 and 68 in 2012/2013, than the maximum score equal to 80 – all right answers (1 pt. for each right answer). Regarding three specific areas: in 2011/2012, 37/40 for "language/linguistics and logical reasoning", 18/20 for "literature, history, geography and social culture", 17/20 for "science and mathematics"; in

* The Ministerial Decree established that each university must set up – independently – eighty questions for the admissions test. We thank the Selexi company for their kind cooperation.

2012/2013, 36/40 (-1 pt. respect the past year) for “language/linguistics and logical reasoning”, 16/20 (-2 pts. respect the past year) for “literature, history, geography and social culture”, 16/20 (-1 pt. respect the past year) for “science and mathematics”. UNIMC candidates with a “Language Certification” in English were around 10%.

Some reflections and further perspectives

Despite the generally very positive results achieved by the candidates in the admission test, we can observe, in the 2012/2013 a.y. a slight decrease in performance, which should be subject to further investigation.

In the course of our research all the paths and outcomes of students in the degree program will be taken through analysis, in an effort to pointed out possible relationships between positive admission test results and future educational outcomes. We will also analyze in detail the basic knowledge acquired by students of Primary Teachers degree course, in order to plan a progress testing according to the Dublin descriptors, so to identify and share a possible national, and then even European, core curriculum for teachers initial education and training.

However, the new curriculum is not exempt from some, initial, reflections, such as it seems to go towards a reduction of pedagogical matters and a, surely positive, increasing of training, ICT and foreign languages. Furthermore, we point out that in the above mentioned D.M. 249/2010, in graduated profile there is a specific reference to knowledge referred to Elements of Constitutional Law, while, instead, within educational activities Table it was no more mentioned. Further reflections and data collection and analyses seem to be appropriate and required.

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FROM TEACHING TO LEARNING. UNIVERSITY TEACHER IN THE SOCIO-CULTURAL PERSPECTIVE

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Abstract
In the article the author will present the results of the questionnaires and interviews done with use of objective hermeneutics, at the beginning of 2012, among several hundred respondents. The author builds her approach on the basis of the analysis of the problems Polish student teachers have as well as the difficulties the academics meet in their professional development. The results of the evaluation of student practicum done by their mentors have led to verification of some requirements set for students, and hence to modification of some university syllabuses. In the article, the author focuses on the way the academics learn by dialogues with students, in which sharing of experience and reflection plays the key role.

Keywords: university teacher, qualitative research, reflecting education

Introduction

According to both specialist literature and conclusions derived at the TEPE 2011 Vienna conference, which dealt with the trends in teacher education in Europe, tradition in academic education if far from the actual school conditions (Schratz & Kraler, 2011). The most feasible ways of dealing with this issue concern: increasing the interest in school practice; creating a forum for exchanging experiences and thus enabling a dialogue among the decision makers concerning the effectiveness of schooling processes in schools and universities; designing and conducting research pertaining to student and teacher experiences and thus relating to authentic school life; introducing changes in university syllabi to make them more adequate for school settings.

Modification of the student learning model as well as changes in the work of academic instructors may be based on the ideas of those directly interested in changing the educational principles in universities. Problems of academic instructors mainly stem from the inadequacy of familiar forms of academic work in relation to a different type of students (different because they "exist" in a different cultural, economic and political conditions). And solving these problems is possible through action research done with the collaboration of students and teachers. Engaging in the changes in university education will bring additional benefits such as establishing autonomy, self-determination, and reflective learning. These abilities seem indispensable from the perspective of the current labor market. And as seen by university instructors, these skills help in raising awareness of the need to adapt to the changes and motivate the teachers to make an effort to grow as individuals and improve their teaching practice.

Population and research method

The author is a supervisor of a teaching practicum at two universities, monitoring its effectiveness by means of annual evaluation. She also conducts classes at extramural studies for teachers. In the article the author will present the results of questionnaires and interviews that

involved several hundred respondents. The research was conducted at the beginning of 2012. As the research is still in progress, the summary presented in the article will include a partial analysis of the data. However, it is fair to recapitulate the analysis of the students' and teachers' written evaluation as well as of group discussions which involved the objective hermeneutics method (Urbaniak-Zając, et al. 2010)

Through the evaluation all the participants of this research and social (educational) interaction can acquire new knowledge, learn new behaviour, and verify its usefulness in new situations. They discover the contextual nature of cognition and its numerous conditionings as they consider various points of views and avoid unnecessary generalizations of conclusions and one-sided descriptions of educational reality.

The results of the practicum evaluation have helped me (a teacher educator) reflect on the reasons behind some actions. They also encouraged me and other academic instructors to engage in reflection. The evaluation results were presented and discussed at a special meeting for the instructors. The results made us reconsider the relevance of the undertaken professional activities and verify some of the requirements of the teaching practicum.

This has led to verification of some requirements set for students and teachers, being their tutors, and to change the conditions of peer learning, hence to modification of some university subjects. Finally, some academic teachers began to reflect on vocational/ pedagogical education of teachers and students, and all this resulted in innovations introduced into university syllabi.

Research findings

One must be aware of the fact that it is impossible to separate pedagogy from economics and politics as they are embedded in an inseparable system, which has a significant influence on the quality of educational practice and being an academic instructor. All concepts, programs, and learning strategies also depend on the socio-cultural university setting, which has a positive impact on the need for fulfilling the concept of lifelong learning and exploring the world situated in a specific context.

The adoption of a socio-cultural perspective requires from a university teacher to seek opportunities for continuous improvement in the real academic world (Hudson, Zgaga, & Åstrand, 2010).

Therefore, it is necessary to focus on learning based on teacher-student dialogue in the process of dialectical adaptation of experiences where exchanging thoughts is necessary.

The most measurable positive results were obtained through engaging the students immediately following the first mid-term practicum in developing a training program that would help them better cope with the direct contact with children during further teaching practice. Their experiences have allowed them to better identify their own expectations regarding teaching and have contributed to the increase of their self-reflection and involvement at every stage of the training process. Moreover, participation in action research has encouraged students to reflectively plan their own work and to discuss it in a critical, honest and open way.

As a result of discussions held in groups of ten, a decision was made that the changes in the teaching program should primarily focus on introducing new courses:

1. courses related to a gradual start of school education by six-year-old children, the need for diagnosing a child's readiness for school, comprehensive preparation of pre-school children to learn reading and writing at an early age and systematic monitoring of their development: preparation for teaching reading and writing, assessing a six-year-old's readiness for school, early therapeutic intervention.
2. courses that focus on the most important needs of a pre-school and early education children: childhood games and activities, stimulating strategies in pre-school and early education, creative activities in early childhood education.

3. subjects that complement knowledge of future teachers: relationships with parents, a disabled child in a peer group, first aid.

Another innovative course which should be included in the curriculum and is worth highlighting is "The teacher in the labor market." During this course students would learn about the legal options for establishing associations that would be responsible for running schools in villages (schools which are going to be closed down by local governments), establishing kindergartens, day care facilities, which undoubtedly reflects the real needs of the education market. It is important in that most students come from small towns and villages where there are no kindergartens or nurseries (Zbróg, 2012).

University instructors have also discovered other needs of students which they are obliged to fulfill. The problem that hinders students from engaging in reflection is the lack of satisfaction from the collaboration with some teachers and practicum supervisors in school or kindergarten. This pertains not only to theoretical knowledge of the teachers but also their work responsibility. Academic instructors had to realize that in spite of their position and role they all bear responsibility for their work. However, it is the university instructors who are responsible for the content and quality of education as a whole and hold the greatest responsibility as they are the ones training future teachers. What kinds of obstacles must academic teachers overcome on a daily basis in order not to lose their identity, ideas and values? Are they adequately responding to the changes in their surrounding? Are they continuously learning in order to improve communication with their students?

We must honestly admit that in the current socio-cultural and economic conditions recommendations concerning education of university staff are but an idea. Preparation of university researchers/teachers to function as teachers depends primarily on their own activity, initiative and will, which usually emerge once they encounter problems at work.

Since the opportunities for institutional training are rather scarce, university instructors first exhibit an intuitive approach to their work and later learn from other instructors. Quite often, they also learn from their students, especially with regard to the newest trends in information technology or the ability to quickly gain access to information.

In the case of academic instructors one of the greatest dilemmas they face is which goal to pursue: develop as researchers or become good teachers. Many responsibilities concerning research, teaching and administration (at least in Poland) fall on instructors and in order to maintain their position at university they must abandon the role of a teacher who is concerned with teaching quality and instead become teachers-researchers. If one desires to be promoted in an academic setting he must be involved in research activity. A person who has chosen teaching and at the same time marginalized research will not advance in the academic structures and titles and after several years will lose the post.

Shortening the career path to eight-year cycles (8 years for a doctoral degree and 8 years for a postdoctoral degree) has forced Polish instructors to give priority to research work. As a result, fulfilling the role of a teacher has become a burden. This role is now limited to minimizing efforts (time, energy, attention) that are required for its completion. The problem is enhanced by low salaries at universities (A primary school teacher in Poland has higher earnings than an academic instructor holding a Ph.D.). In order to support his family, he must find additional employment elsewhere, usually at a private university. Teaching is then seen as a means of improving one's financial situation. As a result, the pedeutological recommendations concerning lifelong learning and training of academic staff are unrealistic, not because of the lack of willingness but the lack of time. Practical experiences show that in such circumstances self-training remains the only option. It may be enhanced by knowledge gained through action research in collaboration with students. This training, then, is gained in a natural way during the lessons. However, one of the most fundamental pillars of self-education of teachers is intrinsic motivation and the willingness

to make changes. Only then do we experience the need for knowledge concerning how to educate ourselves and in what areas.

The importance of teacher self-awareness and self-reflection has been emphasized for quite a long time, both in regard to the process of one's own training as well as one's own teaching practice. Hence, there are two new knowledge types: the so called "knowledge in action" and the typical of a professional's work (including teachers) "knowing-in-practice"). This type of knowledge is gained thorough reflecting in practice and serves the purpose of discovering ways of behavior in circumstances which reach beyond the familiar and routine situations. According to publications, these are the most effective methods of teacher development. For the purpose of professional development academic instructors must engage in reflection, both individually and in professional groups, which may become peer support groups in difficult situations (Butt, et al., 2012).

One of the characteristics of a teacher's activity is to be able to function in unique, changing and ambivalent situations. In such situations teachers cannot rely on previous experiences but have to make a creative effort, which is based on building new knowledge and establishing new approaches. As a form of engaging in reflection on one's own professional activities one may suggest that teachers:

Develop self-awareness and the skills to analyze their strengths through thinking about which of their personal features have the greatest influence on their professional life and determine their professional strengths. Teachers should think about the following:

- What kind of a person am I?
- What am I best at?
- I would learn more if…
- I would be more creative if….
- Teacher evaluations done by students may be helpful here as they are anonymous and provide assessment of the lessons. Teacher evaluations would be a good starting point for this kind of reflection on one's teaching practice.
- Identify, define and creatively solve work-related problems.
- What difficulties have I encountered in my lessons recently?
- What problem was difficult to solve and I am not sure if I solved it the right way?
- What situations at work are difficult for me and I do not know how to behave?
- What do my students expect from me? What do other teachers expect from me? (When was the last time that I assessed my own lessons? When did I do a needs analysis for my students?)

Analyze specific cases, non-standard situations, for example, during discussions in a peer support group (in self-development group, in teacher support group). Analyzing such uncommon situations is an opportunity to admit to one's mistakes – the teacher becomes more creative when she is not afraid of making mistakes, taking risks and trying different solutions. The fear of making mistakes is related to the fear of being ridiculed, losing one's authority and position and disclosing one's own incompetence. As a result, individuals retreat to secure stages of development. And teachers choose to operate in the familiar, safe or traditional professional settings. Therefore, it is beneficial if teachers in the support group share their failures. This would be an excellent starting point for seeking the causes of the failures and the possible solutions through brainstorming ideas as to how to best deal with a given situation. This would also provide inspiration to search for information in different sources regarding the cause of the failure. Solutions created by peer support groups may be implemented in the teaching practice. Collective reflection on the causes and analyzing the problem from various points of view may help one to avoid making similar teaching-related mistakes and failures.

We should not forget that this type of collaboration in the peer teacher group is an ideal burnout prevention strategy. It is also a means of building communicative and teaching competencies of

teachers. In addition, it helps in forging positive interpersonal relationships among the teaching staff. As it turns out, all teachers have struggles and all teachers are afraid to admit it. According to a research study by Sęk (2001), teacher burnout may be counteracted by social support gained in the same environment in which the burnout occurs: 37% teachers in elementary schools identify the principal as the source of such support and 54% mention their colleagues. Only this type of support is truly effective in counteracting burnout. The support offered outside of professional circles (family, friends, etc.) is ineffective. Interacting with fellow teachers who work in the same setting is therefore a valuable cure for many teacher struggles.

Teachers who have a strong tendency to be in control may also use self-observation, for example, using a video camera. While watching the self-videotaped lesson they may conduct a detailed self-analysis of their own practice and identify areas that need improvement. They also reflect on their own professional activity and seek solutions to the problems that may emerge. With regard to the usefulness of this method it seems that joining a peer support group may be a better option as teachers - viewing the problem from a different perspective – can offer more objective comments on the actual failures than the teacher herself. Seeking directions for development and (self-) education should be closely linked to establishing relationships with other teachers who through sharing experiences, evidence and thoughts can participate in reconstructing the view of the world and of themselves. However, self-observation may be useful in situations when there are no peer support groups operating at a university.

Conclusion

The focus on professional development of academic instructors through collaboration with students, self-reflection and analysis of difficult situations within a peer support group as presented in the article is an attempt to address the lack of the model for professional development of academic instructors. It is a suggestion to use a process-based perspective in preparing for the teacher's role. It is a means of "improving the ways of development" through continuous professional development of academic instructors, which stems from their intrinsic motivation and the sense of responsibility for educating others. This approach is grounded in theoretical foundations of "becoming" a teacher, which is based not only on education through gaining knowledge but also, or perhaps primarily, through educating oneself, discovering one's identity and perspectives of perceiving and interpreting the world.

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EDUCATIONAL TRANSFORMATION AND TEACHER TRAINING

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Abstract
This paper analyses how to develop innovative educational projects through teacher training. The starting point is *learning communities*, which is a project to change educational practice. It has a long history in Spain. This project is generated according to the assessment process in order to change practices required by Miguel Hernández School, located in Castro Urdiales, Cantabria. The University of Cantabria oversees the teacher training and organises training meetings with the teachers and volunteers involved in the transformation, such as learning communities, interactive groups, literary gatherings, etc. in order to improve innovative practices. The main success of this process is that the teachers, as they see the positive results of the implementation of these measures, have increasingly asked for more training in this area, because they have come to realize that they are contributing to offering better education for their students through their own professional training and intervention. In order to change educational practices at school, teacher training must be a main priority in any innovative projects.

Keywords: changing educational practices, teacher training, learning communities, interactive groups, literary gatherings

Introduction

The University of Cantabria oversees the teacher training required by Miguel Hernández School (Castro Urdiales), which is interested in becoming a learning community.

Learning Communities is a project of social and cultural transformation of the educational centre and its environment, with the aim of giving everybody access to the information society (VV. AA., 2010). In Spain around 80 schools have become learning communities, since 1995 (Elboj, Puigdellívol, Soler, & Valls, 2002).

Referring to the multidisciplinary character of this theory, it´s essential for us to mention pedagogical, sociological, psychological and philosophical approaches: Dialogical learning (Flecha, 1997; Aubert, Flecha, García, Flecha, & Racionero, 2008) has been built on Habermas (1987) *Theory of communicative action,* Freire (1970) *Pedagogy of Oppressed* and Vygotsky (1979). *The development of higher psychological processes,* among others, showing strong ideas that substantiate the didactic action: dialogic learning.

Learning communities has two main objectives: On one hand, the first objective is to change educational practice and on the other hand, to generate knowledge in action. The learning communities theory is to connect educational knowledge and educational practice and demonstrate that it´s possible to link them. It´s a criticism of the educational policies in this country that haven´t considered scientific research. The intellectuals haven´t been able to change the school into what they want (a democratic, involving, solid environment). The innovative proposals have been made with “common sense” and “good intentions” but without any relation to a solid academic theory of a multidisciplinary character.

According to Guarro (2005), learning community's characteristics are the following:
Participation: referring to whole agents that take part in educational practice, in order to optimize and develop new organization structural practices.
Central place to the learning: the principal aim is to develop personal skills. It is required to restructure school 'organization, and develop collaborative programs.
Positive expectations: expectations for students with disabilities and helping them to improve their academic outcomes.
Permanent improvement: considering evaluation as a way to look for improvement needs.
According to this, learning communities involve lots of personal and material transformation (spaces, timetable, organizational changes…). In schools, there are developed performances to improve students´ instrumental learning and prevent their social exclusion. In the centre that we are currently advising, we have put two projects into practice: Interactive Groups and Literary Gatherings.

Context
Miguel Hernández Centre is in Castro Urdiales, a small city with a typical fishing port in the Cantabric Sea. There, people live from the fishing, the industrial activity and the services.
The school is located in a fairly homogeneous area whose socio-cultural and economic level is medium-low. A large percentage of families are linked to the primary sector, which leads to job precariousness and insecurity, with a good number of families in a situation of unemployment or intermittent employment. Population has not grown significantly in this area in recent years, since it is not a place of urban expansion, as the city centre is in the old part of the town. In the surrounding areas of the city centre housing is less expensive, accessible for families with a lower level of income. This data is linked to the increase of immigrant students in the city centre. Castro Urdiales is a municipality with scarcity of socio-educational and cultural resources which leads to a lack of activities is these areas outside of school hours (an example is the absence of a theatre or a children's playroom). Families with higher levels of educational interest occupy their children´s leisure time with supplementary private activities such as music classes or English classes, sporting activities or others organized by the parent´s association of the Centre. Families with fewer economic resources (Álavarez & Larrinaga, 2012) are affected the most by this situation.
The first meetings held between University and school focussed on a "need assessment". The basic idea was the possibility of change which a female teacher had demanded. Thus, at this stage, the teachers of the primary school became researchers, joined forces with the university professors and analysed the possibilities and established the difficulties of the starting point, based on the following observations:
- Existence of school groups with abundant learning difficulties and educational needs.
- Absence of a means of overcoming these difficulties and an absence of family resources too.
- Lack of a sense of the school system by on the part of students and their families
From this initial diagnosis, a "roadmap" was designed that would allow us gradually to the changes. In this sense, there were two areas of action: firstly, the main priority was to involve the Centre in the process of change. The support and leadership of the management of the Centre, the information on the process of change in the Centre and the selection of teachers and groups that participate in it have been priority elements from the beginning. Secondly, incorporate the school community into the Centre. The main objective is to explain to families who are distanced from the educational approaches of the Centre, the importance of their children´s education and their co-responsibility in the educational task. That initial message has been designed to reach the families because it´s what we considered important, implicit in carrying several ideas. Firstly, the coordinated work of the family and teachers to educate the children. Secondly, families´ awareness of the importance of schoolwork and the knowledge that

one can gain in school. Thirdly, the idea of global learning in the sense that learning is not confined to the textbook or teacher. But that it´s possible to learn from other sources such as one´s family or one´s own peers. Finally, give the families an image of their children with possibilities, without previous determinations, in short, an image of a rich childhood, with great intellectual, social and emotional potential. We believe that this approach will also change ideas that the Centre has about its children and its possibilities. In addition, no less important, it tells us that learning, although it has an individual basis, also has social characteristics that should not be forgotten.

With these thoughts and previous performances, we decided that the most convenient course of action for the Centre, given that the course was halfway through when the University was requested to intervene, was to try to implement some innovative teaching strategies that would contribute to this stated purpose. Examining the possibilities and limits offered by the Centre we decided to start a little innovation to the education developed in the fifth year of primary school.

The final decision, which was reported to teachers, students and families of the Centre, was to make interactive groups (Vargas & Flecha, 2000) in two classrooms of fifth year of primary education. They were developed in the second and third quarter of the year 2010-2011 with the satisfaction of everyone involved. In the present school year, 2011-2012, the number of classrooms engaged in the experience has increased to six, which has led to a growth in the involvement of teachers (six teachers tutors), and volunteers (twenty-four people), because we are talking about 24 interactive groups.

Theory and practice

There is an important development of interactive groups in our country. They represent significant changes in the ways of organizing the classroom and how to understand how students learn. In relation to the organisation of the classroom, discussing a proposal of "environmental modification", i.e. not only changes in the physical structure of the classroom, but also modify the emotional and intellectual perception that the subject makes and has of space. Time is another parameter of analysis and change in groups. It's a break from the typical structure dedicated to discipline, with a rigid schedule, to move to a temporary, perhaps more unstable, organization which at various times students solve the educational proposals that teachers make. The last of the elements of analysis, are volunteers: the incorporation of an external person to the educational dynamics of the classroom. This is, perhaps, the most novel contribution of interactive groups: it sends an important message to the educational community, "the school teaches as a whole" and, at the same time, incorporates the families into the school task.

Interactive groups is an innovative and flexible way of managing the lecture room in order to develop educational work with the intention of intensifying the learning process in one or more instrumental areas. The length of the lecture is based upon the number of groups set up in the lecture room (between four and six students) and one volunteer from the community is present in every group to collaborate with them.

The final aim of this educational work is to try to enhance the learning of one or several instrumental areas. The number of groups in which splits the classroom is variable (four or five of students) and in each group goes to collaborate a volunteer from the community. The teacher of the lecture room designs the activities to be carried out (revision activities) by the groups and with the help of volunteers must resolve them according to the principles of the dialogic learning (Flecha & Puigvert, 2002) that succinctly tells us that we learn by interacting with other people. This approach of "social pedagogy" has personal and organizational implications. In the personal sphere we have said that this is to reconstruct the way that the Centre educates and, therefore, we are not going to stagnate with this out of date method. At the organizational level, the first

modification is to change the spatial character of the classroom and Centre. The second modification is the presence of several adults in the classroom sharing teaching and learning processes. Finally, a model in which groups of students can be doing different things at the same time that ensures greater control over how and under what conditions the learning occurs. Although the process of learning, both for students and teachers/volunteers is long, this method is intended to favour interaction, solidarity and cooperation between equals, based on the exchange of knowledge between group members through a mixture of verbal interactions. To achieve this it´s very important that the groups have mixed levels of knowledge, gender, culture, etc. So that the resulting learning can be richer.

With regard to the literary gatherings, this is a long cultural and educational process that is being developed in different types of entity whether it´s schools for adults, associations of parents, groups of women or cultural and educational entities. The process followed in literary gatherings in schools is based on carrying out an oral commentary of a complete literary work or just a chapter in the classroom, with the teacher acting as a mediator. These activities allow them to improve their literary sense: they share their impressions, discussed ideas or relevant passages. It thereby improves their reading abilities, their verbal expression and their motivation to read, as well as many other skills.

Followed process

We have not found any precedents related to these proposals in Cantabria, but in other nearby regions, such as the Basque country (Gobierno Vasco, 2002), learning communities have an important development. We can say that from our University-School collaboration we are pioneering a process of educational transformation is slowly but surely taking place in this region.

From the point of view of education actions undertaken in parallel to the development of the project, there have been several performances. First, we organized a dossier with the basic materials for the teaching staff of the Centre to start a formation process with carefully selected readings. Simultaneously the team of professors from the University started the necessary contacts so that the theoretical training process could be linked with the practice. Then, we organized visits to communities of learning in Bilbao where we have the invaluable collaboration of M. Luisa Jaussi. At the moment we are working to start to do learning communities training through the network of centers of teachers in the Cantabrian community.

With regard to the followed processes, we have made small steps that ensure that we have control over the development of the experience. In this way, various moments have been contemplated: experience planning that is divulged in the Center, development and evaluation. With regard to the planning of innovation, the activities developed focused on the choice of curricular areas; (in our case we selected Spanish Language and Mathematics), interactive groups, the choice of volunteers and the establishment of a timetable that would allow us to organize the process.

Disclosure of the initiative to be implemented in the educational community of the Centre is another essential aspect because it allows us to observe potential resistance at the Center. On the other hand, meetings were held with the families for the presentation of the project and the people and institutions involved in it, with the volunteers of the groups for the explanation of the project, its functions and a few aspects that were necessary for the clarification of the basic aspects and reported to the Cantabria Ministry of education and the educational inspection of the proposal of innovation.

As to the development of the experience, this is performed once a week. The teachers involved prepare materials and activities for the two areas identified before (Language and Mathematics). The same day the material and objectives of the meeting are explained to the volunteers. Evaluation meetings of the sessions are held on the days that the University teaching

staff are present (as observers of the interactive groups), to analyze the observed aspects, positive and negative elements are organized, but above all, we want to make small steps for the construction of pedagogical thought and arguments of what is being carried out.
The periodic evaluation of the project allows us to carry out an analysis of materials, their suitability, levels of difficulty, their contribution to the development of interactive groups, the work of volunteers, both from the view of outside observers from their own perception of the work or the analysis of those general aspects that are susceptible to improvement or attention, as it is information for families or teachers of the Centre.
So far, since the first contact in November 2010, we have made many important steps that show significant changes at different levels: the process of change has altered not only personal and organizational aspects relating to the center and to the classroom, but also families. In addition, the regional education administration also has been implicated in the development of the experience.

Professional development
Achieving this broad educational transformation in a Center is impossible without proper teacher training. As highlighted in pedagogical literature, teachers are presented as the element and key factor of educational transformation. From this point of view, it has already been demonstrated that external training given to teachers doesn´t lead to the implementation of new knowledge in the classroom. Therefore we cannot speak about a cause-effect process. Instead, those innovations in which the action/training are linked and operate in parallel have more possibilities of success and sustainability. On the other hand, teachers should be the only ones responsible for change. In our case, we speak of a "shared responsibility" in the process of innovation with families and volunteer participants. Last year there were interactive groups and literary gatherings in two classrooms, which counted on the help of eight volunteers from the Community (retired teachers, mothers of pupils of the school, teachers of the Centre, students of teacher training, etc.).
At the same time, the teaching staff of the University is also a partner of the project, offering plenty of material to encourage self-education of teachers prior to its release in motion and we carry out formative meetings with teachers and volunteers involved in the transformation. During the development of the transformation we did abundant sessions of follow-up action, to ensure that the process followed corresponded with the principles of dialogic learning that guide the action of the communities of learning. In these meetings the involved teachers, volunteers and professors all participate and raise issues that each of us notes with respect to (Álavarez & Osoro, 2011).
In any case, we believe that the process carried out has been complex. As indicated by Castaneda and Adell (2011), processes of change do not only require a technical mastery of what one wants to change, but also require a clear personal commitment for it to be effective. We are therefore moving also in an emotional scope. It also raises questions about teaching practices, teaching ideas or materials among other things.
We must not forget that in the process followed, not all the conditions have been favorable to the development of innovation. The presence of different "cultures" in the educational center, forms of communication of knowledge and innovation as accurate as possible in the process I wanted to carry out have been, over time, vital elements for the development of the proposed change and allowing the incorporation of more interactive groups, more teachers and more volunteers into the project.
The interactive groups project has generated a clear example of teacher training among the people involved, within a model that moves away from the simple transfer of knowledge (typical example of the training model) to link to a project center where implications affect not only

knowledge but that also offers other variables of affective and emotional character. SCOTT (2010) tells us that to facilitate the professional development of teachers, the training should:

• Focus on solving problems;
• Provide opportunities to work with colleagues and experts;
• Facilitate teachers´ exposure to innovations in knowledge, teaching practices, and support technologies;
• Train teachers to try new strategies and skills;
• To provide purpose-oriented reflection and discussion;

We can agree that, from these considerations, the project of interactive groups clearly meets these premises. The general basis of teamwork and the exchange of ideas has clearly helped not only the progress of the project but also the professional development of teachers itself.

Lessons learned

Although there has been no systematic evaluation process to date, we can extrapolate some partial conclusions arising from the development of the project. It has shown a clear improvement in relations between teachers and pupils. There has also been an improvement in relations between the students themselves. Other ways of doing things and other models of relationship in the classroom were suggested. By the teaching staff, the consideration that the responsibility of learning does not fall solely on them and this is split between themselves, the students and volunteers. This idea that everyone can teach is a vital element in the process. There has been also a greater solidarity in the classroom and more interest in learning from students which was hardly there before. The proposed methodology allows collaboration between volunteers and children, but also among equals, and in this sense, the students have discovered that they like to help their classmates in the group because they feel useful. Students who previously were not as involved in the learning process now feel involved thanks to the students who help them, feeling somewhat more participative in the learning process: the students are capable of constructing knowledge and feel competent doing school work.

With regards to the Centre, new organizational forms that involve changes in the participation of families, the multi-purpose use of spaces and the reorganization of time have been incorporated. We think that these aspects are organizational changes that affect not only materials or structural elements, but also the construction of different perceptions of the Center and what it does by different agents. We defend this symbolic character in terms of the representations that we produce.

Finally, we must point out an important aspect in this process: the incorporation of families either as volunteers or as beneficiaries of the experience. Pedagogical literature presents us with (at least theoretically), the need to incorporate families in the educational process carried out in the centers, while the success of these approaches and, above all, practices to implement them are not always the best, we have demonstrated over time that the project will develop, that the family-school collaboration is possible from the incorporation of the former to the processes of teaching and learning.

We believe that in the near future the development of interactive groups and literary gatherings will demand new training perspectives from the teachers of the center. This year there are six classes in the center that will develop these two educational performances, and teachers are in permanent training in this respect. This developed educational transformation demands a high training commitment on the part of teachers. Without it the transformation would be impossible. As noted by Fullan (2002) education of the teaching staff has the honour of being, at the same time the worst problem and the best solution for education. But having said that, the training of teachers and, in this particular case, the training in the field of learning communities, also requires an institutional commitment to its development. This is the aspect

of "intangible" and accompanying educational policies to the development of innovation centers projects.

The main success of the said process is that in view of the good results of the implementation of these measures teachers demand more and more training in this regard, because they have discovered that they are helping to provide a better education for their students from their own training and professional intervention (Álvarez, Larrinaga, & Osoro, 2012).

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FINAL ASSESSMENT IN EUROPEAN TEACHER EDUCATION AND ITS ORIENTATION TOWARDS THE ACADEMY AND THE TEACHING PROFESSION

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Abstract
This paper deals with final assessment in teacher education and relates to the issue of the relationship between theory and practice in academic professional programs. European research in international journals about final assessment has been reviewed regarding its orientation towards the academic and the teaching profession. Earlier studies indicate a scarcity in this area and some studies reveals a dominance of the academic orientation. The research question is: What kind of knowledge is the final assessment in teacher education in Europe about and how is it done, in relationship to the academic and the teaching professional orientation? Fifty-nine articles were found in 37 journals from 17 countries. Twenty (34%) articles were mainly focused on research skills and categorized as academic-oriented. Two models were found, the thesis- and the action research- model. Thirty-nine (66%) articles were mainly focused on teaching skills and categorized as teaching profession-oriented, and here three models were found, the portfolio-, certification- and product- model. The findings indicate a dominance of the teaching profession orientation and that final assessment can be a boundary object integrating different orientations and models. The findings are uncertain because of the limited number of articles, vocabulary problems etc.

Keywords: final assessment, teacher education, academic, teaching profession, theory and practice

Introduction

The relationship between theory and practice in higher education, and especially in education for professionals such as teachers and nurses, is a controversial issue. Often theory, based on research, have been given high priority, but there are also proponents for practice based on professional knowledge (Beck & Young, 2005; Brouwer & Korthagen, 2005; Cochran-Smith 2005; Gordon & O´Brien, 2007; Heggen, 2008; Mattson et al. 2011). One of the first scholars to identify the problem of theory and practice in teacher education was Dewey (2004), and the problem has persisted in teacher education worldwide (Lanier & Little, 1986). One model that has been dominating for many years is the technical-rationality model (Schön, 1983, p. 21). In this model, application of theories based on research helps teachers solve teaching problems. This way of thinking has been disputed and studies have shown that this is difficult to accomplish in reality. One sentiment is that teaching is closely connected with the activity sometimes called “knowledge-in-practice” (Cochran-Smith & Lytle, 1999). Some contend that teaching is more of a craft knowledge (Grimmett & MacKinnon, 1992; Hultman, 2008; Wedin, 2007), which differs from more technical-rational knowledge that can also be called “knowledge-for-practice” (Cochran-Smith & Lytle, 1999). This seems to be a useful way to analyze the theory and practice relationships in teacher education, and also to examine how these two kinds of knowledge can come closer and perhaps be integrated or function as a kind of boundary crossing (Heggen, 2008). Can any parts in education in some ways be useful tools for joining these different aims

in a professional academic education as a boundary object (Bowker & Star, 1999; Tuomi-Gröhn & Engeström, 2003)?

In this paper final assessment in teacher education is chosen to study the theory-practice relationship problem. The reason for this is that final assessment is an important part of education that assesses the core parts of the education. It can be assumed that in a professional university education both theoretical and practical aspects are included in the final assessment. Final assessment as a written thesis and its seminar-procedure has a long tradition in academic studies. It started in medieval Italy and is still considered as a very important cornerstone in academic education (Clark, 2006). In higher education this thesis-tradition occurs sometimes at the bachelor´s level and more often at the master´s level in several European countries. It is being introduced more often in teacher education as this education today often is integrated in the university organization (Gunneng & Ahlstrand, 2002). The thesis is recognized as a very important and basic element, a hallmark, in academic studies. Its purpose is to develop student independence, scientific thinking and experience of research methods (Lendahls Rosendahl, 1998).

Several studies argue that the final thesis in higher education is an under-researched area (Acker et al. 1994; Coorough & Nelson, 1997; McAlpine & Weiss, 2000; Meeus et al. 2004). Meeus et al. also points out that very little research has been done about final thesis at the bachelor´s level in higher education and especially in teacher education.

One basis of this study is that final assessment can be understood in relationship to theory and practice from different orientations in education. In many countries, it is possible to identify two broad orientations in the history of teacher education. The first more theoretical orientation has focused on academic training and connection to research, and can be called the academic tradition (Andersson, 1995; Doyle, 1990; Feimar-Nemser, 1990; Hartman, 2005; Kansanen, 1991; Zeichner, 1983, 1993). The second and more practical orientation originates from the universities role of educating priests and civil servants, and the seminar-institutions for teacher education established in the early 17th century; it is often called the seminar tradition (Andersson, 1995; Hartman, 2005; Kansanen & Uljens, 1990; Kvalbein, 1999; Mattingly, 1987; Ryan, 1975; Zeichner, 1983 & 1993). This orientation focuses on the preparation of students for the practical work of teachers. Some studies have indicated that this orientation is still visible in the present teacher education system, but that it is dominated by the academic tradition (Calander, 2004; Erixon Arreman, 2005; Hegender, 2010; Råde, 2005, 2010). Currently in Europe teacher education integrates these two orientations, often being integrated into the university but finding its origins as a seminar tradition. Although this is a simplification of a quite complex situation, it is inevitably that teacher education has at least two important roles: preparing students for the profession and preparing them for the academic world.

This paper aims to the study European research about the final assessment in teacher education and its orientation towards the academy and the teaching profession. The research questions are: What kind of knowledge is the final assessment in teacher education in Europe about and how is it related to the academic orientation and the teaching professional orientation? How is this final assessment done and how is it related to the academic orientation and the teaching professional orientation?

Two orientations in teacher education

This paper is partly based on the research done by Andersson (1995), which has used the paradigm conception and studied four paradigms in teacher education. This construction was based on other research done in this area (Doyle, 1990; Zeichner, 1993). Anderson´s study indicated that two paradigms are most visible in teacher education, the academic paradigm and the traditional craft paradigm. These two will be used in this paper but the traditional craft paradigm will be called the teaching professional because it seems more adequate to use and is

also used in other recent research about teacher education (Hegender, 2010). Professionalism is here understood as a more practical and experience based form of professionalism (Goodson & Hargraves, 1996). There are some different conceptions used in other research about this categorization in teacher education including orientations (Joyce, 1975; Feiman-Nemser, 1990), paradigms (Andersson, 1995; Doyle, 1990), and traditions (Hartman, 2005; Råde, 2010; Zeichner, 1993). Orientation is chosen for this study because it seems more open and not as finite and contradictory as many of the others, e.g. paradigm and tradition.

The division between academic orientation and teaching professional orientation can also be supported by the categorization in knowledge-for-practice (research-based) and knowledge- in-practice (experience-based) that has been used in other studies (Cochran-Smith & Lytle, 1999; Hegender, 2010). This thinking has some similarities and can also be supported by the theory of reflection-on-action and reflection-in-action (Schön, 1983).

The academic orientation and the teacher professional orientation in teacher education can be understood based on descriptions by Andersson (1995) and Hartman (2005) and also the understanding of knowledge-for-practice and knowledge-in practice (Cochran-Smith & Lytle, 1999; Hegender, 2010);

The academic orientation is characterized by;

- the academic subject in focus;
- research is important;
- research-base is a promoted way of learning;
- preparation for the academic world and the work as researcher;
- content that is not directly applied to the work of teachers; and
- the ideal of the teacher as a free academic person.

This orientation is seen as knowledge-for-practice, but as the independent researcher is the focus, a more relevant expression may be knowledge-for-knowledge.

The teaching professional orientation is characterized by;

- the work as teacher is the focus;
- teachers´ practical experience and praxis-near questions are important;
- master-apprenticeship is a promoted way of learning;
- preparation for the work as teachers;
- content that is directly applied to the work of teachers; and
- the ideal of the teacher as a loyal civil servant.

This orientation is focused on knowledge-in-practice. The focus is on the future work as a teacher and mainly on what is learnt by experience in practical school situations.

In this study final assessment is understood as an assessing of some kind in teacher education mainly for evaluating core content of the program. It can take different forms and mostly occurs at the end of the educational program. The variation of models uses the findings in Meeus et al. (2004) that identifies four different thesis models in teacher education; the literature study-model, the portfolio- model, action research- model, and didactic box- model. The certification model comes from Gunneng and Ahlstrand (2002) which describes the common certification in European teacher education.

Methodology

This study was conducted as a systematic review of international research concerning final assessment in teacher education in European countries. It follows the guidelines for literature reviews set out by the American Psychological Association (APA, 2010) and published suggestions from journal reviewers (Bern, 1995). This means that it is a critical evaluation of already published material written with the ambition of achieving accuracy and clarity. International research was defined as articles in English published in international scientific

journals and with open access on line. The articles were found using the database Academic Search Elite and ERIC, using the keywords “teacher education” in combination with keywords “thesis,” “bachelor thesis,” “dissertation,” “degree project,” “portfolio,” “accreditation,” “licensing,” and “certificate.” The time limitation was scientific output from the past 20 years. A criterion for selection was whether the research to some extent was about final assessment in teacher education. Mainly articles about pre-service primary school teacher education were selected but some from secondary schools teacher education and in-service teacher education were included. Only studies concerning European circumstances were selected but two countries at the border of Europe, Turkey and Israel were also included because they were considered to have clear connections to Europe and some relevant studies were found from these countries. The number of articles obtained was 59 from 36 journals from 17 countries, the oldest from 2000 and the most recent from 2011 (mean: 2008). Of these, 24 journals (67%) were listed in SCOImago Journal & Country Rank (SJR 2011). First, the articles were analyzed regarding what kind of knowledge was assessed in the final assessment and its orientation towards the academic orientation or teaching professional orientation. Second, the articles were analyzed regarding how this assessment was done and its orientation towards the two orientations. In this second analysis also the country affinity was noted and a thematic content analyze was done.

What kind of knowledge is the final assessment about and how is it related to the academic orientation and the teaching professional orientation?

The finding of the review shows that;

- 20 articles (34%) of the 59 belong to the academic orientation because they to some extent mainly view the final assessment as an assessment of research skills; and
- 39 articles (66%) of the 59 belong to the teaching professional orientation because they to some extent mainly view the final assessment as an assessment of teaching skills.

How is the final assessment done and how is it related to the academic orientation and the teaching professional orientation?

Two models, the thesis- model, and the action research- model are identified in the articles; both belong to the academic orientation.

The thesis model is thus considered because it often is connected with a traditional scientific structure, with the thesis-writer as an independent researcher studying something quite unconditionally.

The thesis-model is found in 10 articles from four different countries,

- Belgium (Meeus et al., 2004, 2008)
- Finland (Byman et al., 2009; Kansanen, 2004; Maaranen & Krokfors, 2007, 2008; Maaranen, 2010; Westbury et al., 2005)
- France (Abboud-Blanchard & Lagrange, 2006)
- Turkey (Ersoy & Cengelci, 2008)

It is sometimes argued that the thesis as an important part of an education that in its whole is research based (Kansanen, 2004). There are rather positive attitudes among students toward doing a research study in the shape of a thesis (Byman et al., 2009). Several studies focused on the student perceptions of the research experience in connection with the thesis. A clear finding is that many students believe that research training gives them a more reflective thinking process. They also believe that it is more relevant if the thesis has, a clear purpose of solving problems that they might encounter in the learning-teaching process, and for professional development (Ersoy & Cengelci, 2008; Maraanen, 2010; Maraanen & Krokfors, 2007). Some study also showed that it is useful for students to closely connect their theses with an ongoing research project and that studies pupils out in the schools (Westbury et al., 2005). The thesis is

sometimes called a professional dissertation and seems to be a bit closer to the teaching professional orientation because it is done at a two-year training institute and is about the students teaching practices during the last year (Abboud-Blanchard & Lagrange, 2006). When the thesis is done at master´s level, it has a quite clear connection with teaching practice (Maraanen & Krokfors, 2007, 2008). Some article revealed major problems (Meeus et al., 2004, 2008) with the thesis and other studies shows minor concerns from students about the model (Maraanen & Krokfors, 2008).

Action research is well established in many countries especially in connection with school-development but is also a bit controversial in the academic world. Often it is accepted as scientific and is described as a scientific method in recognized handbooks (Reason & Bradbury, 2006; Zeichner & Noffke, 2001). This indicates that the action research- model for final assessment mainly belongs to the academic orientation. But there is also a connection the teaching professional orientation because it has a close connection to the practitioners´ work and the improvement of practice.

The action research- model is found in 12 articles from 11 different countries:

- Denmark (Michaelsen & Nielsen, 2008)
- Finland (Maraanen, 2009)
- Germany (Altrichter & Posch, 2010)
- Greece (Tsafos, 2009)
- Israel (Orland-Barak, 2009; Orland-Barak & Becher, 2011)
- Netherlands (Ax et al., 2008)
- Norway (Postholm, 2009)
- Russia (Michalova et al., 2002)
- Spain (Pérez et al., 2010)
- Turkey (Mugaloglu and Doganca, 2009)
- UK (Ponte et al., 2004)

Some articles were explicit about action research during education (Ax et al., 2008; Mugaloglu & Doganca, 2009; Orland-Barak & Becher, 2011; Tsafos, 2009; Ponte et al., 2004). A few articles were clearly about action research as a master´s thesis project (Maraanen, 2009; Perez et al., 2010). One article is about lesson studies as action research (Pérez et al., 2009). Some articles showed that students involved in action research projects learn to identify and solve classroom problems with the help of knowledge gained at the university, which was a clear integration of theory and practice in the education (Maraanen, 2009; Mugaloglu & Doganca, 2009). Some articles discussed that this type of research is not common in social science in their nation, but that it is being re-evaluated, has been successful in some teacher education program and is slowly spreading (Altrichter & Posch, 2010; Michalova et al., 2002). Other studies argued about different kinds of action research in teacher education (Orland-Barak, 2009).

Three models, the portfolio- model, the certification- model and the product- model, are identified in the articles and are considered to belong to the teacher professional orientation.

In many portfolios in teacher education there are some parts that assess the person's practical knowledge and skills and the individual portfolio-writer is often in focus which makes this model belonging more to the Teacher Professional orientation.

The portfolio- model can be found in 28 studies from 12 different countries in Europe:

- Austria (Buckert & Schwienhorst, 2008)
- Belgium (Meeus et al., 2004, 2008, 2009; Strijbos et al., 2007)
- Finland (Groom & Maunonen-Eskilinen, 2006)
- Germany (Imhof & Picard, 2009)
- Israel (Orland- Barak, 2005; Tillema & Smith, 2007)

- Malta (Chetcuti et al., 2006)
- Netherlands (Admiral et al., 2011; Mansvelder-Long, 2007; Smith & Tillema, 2003, 2007)
- Norway (Dysthe & Engelsen, 2004, 2009; Dysthe et al. 2007; Hauge, 2006)
- Spain (Rifá-Valls, 2011)
- Sweden (Granberg, 2010)
- Turkey (Birgin, 2011; Didem & Golge, 2011; Odabasi Cimer, 2011; Oner & Adadan, 2011; Ozgur & K., 2011)
- UK (Groom & Maunonen-E., 2006; Klenowski et al., 2006; Spendlove & Hopper, 2006; Tummons, 2010)

A dominant theme in the articles is the reflection or the possibility of reflection for teacher students with the portfolio- model (Burkert & Schwienhorst, 2008; Cimer. 2011; Dysthe & Engelsen, 2004; Groom & Maunonen-Eskelinen, 2006; Klenowski et al., 2006; Manvelder-Longayroux et al., 2007; Oner & Adadan, 2011; Orland-Barak, 2005; Spendlove, 2006; Strijbos et al., 2007). Reflection is also problematized and one article showed that it is not easy for students to achieve critical reflection (Orland-Barak, 2005). Some studies highlighted the importance of feedback in the portfolio-process (Cimer, 2011; Dysthe & Engelsen, 2004; Mansvelder-Longayroux et al., 2007; Smith & Tillema, 2003, 7). Another dominant theme was the validity and reliability of portfolios. With more open and personalized criteria and acceptance of the complexity of the assessment (Smith & Tillema, 2007; Tummons, 2010), or when dealing with learning competencies (Meeus et al., 2009), the validity as a summative assessment can be high. Some study saw the possibility integrating to some extent formative and summative assessment into the portfolio (Chetcuti et al., 2006). Other studies saw a problem with using the same type of portfolio for both assessment and professional development (Smith & Tillema, 2003). Some studies saw the portfolio as an effective aid in authentic assessment (Groom & Maunonen-Eskelinen, 2006) and others saw the model as suitable for self-assessment (Burkert & Schwienhorst, 2008; Dysthe Engelsen, 2004; Groom & Maunonen-Eskelinen, 2006). Other themes in the articles were that the portfolio can bridge the gap between theory and practice (Didem & Golge, 2011; Hauge, 2006; Klenowski et al., 2006) and that the model can be a critical tool for students (Groom & Maunonen-Eskelinen, 2006; Klenowski et al., 2006; Rifá-Valls, 2011). Some interesting articles compared the portfolio- model with other models showing that the portfolio is a satisfactory alternative to the highly criticized traditional literature thesis (Meeus et al., 2004) and that students acquired greater metacognitive knowledge with the portfolio-model (Meeus et al., 2008). A study that combined the portfolio with weekly tests found that the process gave the students a useful learning experience especially as self-reflection (Cimer, 2011). A variant of the portfolio that seems to be growing is the e-portfolio (Admiraal et al., 2011; Didem & Golge, 2011; Dysthe & Engelsen, 2004; Granberg, 2009; Hauge, 2006; Spendlove & Hopper, 2006; Oner & Adadan, 2011; Ozgur & Kaya, 2011), but some problems were identified because of the implementing- problem caused by strong classifications in different departments involved in teacher education (Granberg, 2009). Other variants in the articles were visual narratives (Rifá-Valls, 2010) and video portfolios (Admiraal et al., 2011). The video portfolio showed good results for performance-based assessment with evidence of actual classroom work, which can be a problem with written portfolios.

The certification- model is recognized by some kind of certification, licensing, accreditation, or registration as final assessment in teacher education. This is more of an indirect model that has impact on the final assessment.

The certification-model is found in 11 articles in five countries,

- Germany (Blömke, 2006)
- Netherlands (Admiraaal et al., 2011; Brouwer, 2007)
- Portugal (Alarcao, 2002; Campos, 2004)

- Turkey (Grossman et al., 2010; Yuksel & Adiguzel, 2011)
- UK (Foster, 2000; Ingvarson, 2009; Smith & Mclay, 2007; Young et al., 2007)

No articles directly focused on certification as final assessment in teacher education, but all had some indirect consequence for the final assessment. Three strands can be identified: one in which the certification is directly connected with pre-service education, one in which certification is awarded during practical work as a teacher, and is connected with in-service teacher training, and one about accreditation of the education. In the first strand some articles were about alternative and more employment-based programs and teacher certification. In some nations, including England and the Netherlands, the governments have promoted programs that are more practice-based and in some cases also are alternatives to higher education (Foster, 2000; Smith & Mclay, 2007). But this program is small in England and affects only about 5% of trained teachers. One problem has been that many schools are not interested in taking full responsibility for training their own teachers (Foster, 2007). In the Netherlands the experience of similar programs is that work overrode learning for the teacher-students and they received little mentoring (Brouwer, 2007). But this shows that the certification- model does make it possible for alternative and more practice-oriented programs that in some ways are challenging and provoking the more academically oriented teacher education programs. Also, in England and Wales the certification uses “Standards for Qualified Teacher Status” (QTS) (Foster 2000), which has a clear teaching performance focus, which makes the certification a more teaching professional oriented model. In the other strand, certification is often not compulsory but instead is a way to recognize and reward teachers who have attained high standards of practice; one example is the Scottish Chartered Teacher Scheme (Ingvarson 2009). This system is regarded as successful because it has an independent professional body, the General Teaching Council for Scotland (GTCS), which have the statutory function of providing certification that the government holds in many other countries (Ingvarson, 2009). But even if this seems to provide professionals power in the process, in reality it is the accomplishment of a specified number of courses at the master´s level that is most important in achieving certification (Ingvarson 2009). This indicates both that it is difficult and complex to evaluate practical skills and that academic knowledge and courses have some impact and usefulness. In the third strand, the introduction of accreditation of teacher education in some European countries can be understood as a policy for finding a balance between the autonomy of higher education and assuring the public about the quality of the education (Campos, 2004). The use of both professional and academic criteria in the accreditation process (Campos, 2004) and the fact that teachers, teacher associations, and teacher unions are involved in the process (Alarcão, 2002) makes this version quite clear teacher professional oriented. This is also indicated by the fact that university professors are resisting the accreditation process (Alarcão, 2002). This dislike is not the same in all countries and other articles showed positive views toward the accreditation of teacher education; academic reservations are more about the problems of enforcing standards (Grossman et al., 2010; Yuksel & Adiguzel, 2011). And of course the standards are also an important issue that several articles is dealt with (Campos, 2004; Ingvarsson, 2009). Finally, all kinds of certification-models are not directly involved in final assessment in education, but it can be assumed that they to some extent should have an impact because certification is a formal regulation.

The idea of the product- model is that assessment is a useful product for the practical work of a teacher in school, which relates it to the teacher professional orientation.

The product- model is found in 11 articles and in six countries:

- Belgium (Meeus et al., 2004; Stijbos et al., 2007)
- Finland (Groom & Maunonen-Eskelinen, 2006)
- Israel (Frank & Barzilai, 2004; Orland Barak, 2005)
- Netherlands (Admiraal et al., 2011; Mansvelder-Logayroux, 2007)

- Turkey (Birgin, 2011; Oner & Adadan, 2011; Ozgur & Kaya, 2006)
- UK (Groom & Maunonen-Eskelinen 2006; Tummons, 2010)

This model is a bit diffuse and is mostly found in integrated with other models such the portfolio-model, or thesis- model. The model is then also rather peripherally treated in the articles, making finding any research directly focused on this model almost impossible. The only discussion about product-model, in this case called a "didactic box", was found in a study that compared four models (Meeus et al., 2004). This version of the product model was compared with the literature study- model, the portfolio- model and the action research- model. The product model was criticized for being in-sufficient as final thesis because of its lack of background information about the value for the material to teaching practice and because practical testing of the material is not compulsory. The most common product- model was found when lesson plans are included in a portfolio (Admiraal et al., 2011; Birgin, 2011; Groom & Maunonen-Eskelinen, 2006; Mansvelder-Longayroux, 2007; Oner & Adadan 2011; Orland-Barak, 2005; Strijbos et al. 2007; Tummons, 2010). One interesting study integrated a group report, individual report, multimedia presentation, and physical model in the assessment of a teacher education course (Frank & Barzilai, 2004). Just the existence of two products together is interesting and it is also likely that the products made some contribution to the articles main finding that the students´ and educators´ had positive view of the summative effect of the assessment of the course.

Conclusion and discussion

This review of scientific articles shows that there exist at least five different models of final assessments: 1) thesis- model, 2) action research- model, 3) portfolio- model, 4) certification-model, and 5) product- model. These models take on one of two different orientations.

Since it is based on 59 articles from 36 journals, ranging from 2000 up to 2011, this paper can only give a limited picture of the research on final assessment in teacher education in Europe. Even though it can be considered only as a snapshot it does indicate how this topic is studied and highlighted by researchers.

One first observation is that research in the area is bit scarce, which also has been shown by other studies (Acker et al., 1994; Coorough & Nelson, 1997; McAlpine & Weiss, 2000; Meeus et al., 2004). But there are actually some studies in the area, and there seems to be a small increase in the area in recent years, since the mean publication year in this study is 2008. One reason for the small amount found could be that some research is published in national journals, in books, reports etc. Also, the diverse use of vocabulary and translation problem can influence finding all relevant articles. For example the term "thesis" has a lot of synonyms as "dissertation," "degree project," "assignment," etc., that are used in different countries with somewhat different meanings and also are sometimes translated in different ways.

Another possible source of error in the findings is that the definition of final assessment is a bit diffuse. Even if it is explained that it must assess the core part of the education and often takes place in the last part of a program it is often hard to tease this out of the articles. It may in some cases be assessment that does not clearly deal with core content. It is also sometimes hard to determine the orientation of the final assessment because it is not fully described. It can also be considered whether some studies, e.g. accreditation studies, in the certification- model really can be interpreted as a kind of final assessment. It is also important to point out that there might be even more models that are not identified in this study.

As a whole there is a an indication of a dominance of the teaching professional orientation in the final assessment in teacher education in Europe, since 39 articles (66%) is mainly focused toward this orientation, while 20 articles (34%) were focused toward the academic orientation. In spite of the possibilities of errors mentioned, this is a quite clear indication that more research is published in international journals about the final assessment in teacher education that is

connected to the teaching professional orientation. In this orientation, the portfolio- model is the most common and occurs in 28 articles, and it is also the most distributed model in 12 countries. In the academic orientation the Action research- model is quite common and occurs in 12 studies, distributed in 10 countries. This is somewhat opposite the indication in other studies (Calander, 2004; Erixon Arreman, 2005; Hegender, 2010; Råde, 2005, 2010). These interesting findings need some comments and discussion.

Perhaps it is not so surprising that the portfolio- model is so common in teacher education in Europe. It is also a very common assessment model in general. A search on the term "portfolio" in the ERIC database results in 1,307 hits, and Academic Search Elite returns 3,383 hits (February 22, 2012). In other parts of the world such as Australia, the United States and New Zealand, the portfolio- model has been common in teacher education for at least two decades ago (Jones, 2010; Pelliccione & Raison, 2009; Wray, 2006). It is not so surprising that this also has effected teacher education in Europe. One observation about the portfolio-model is that there are a lot of different kinds of portfolios and that it can be used in different ways, to the degree that it is sometimes described as a "chameleon" (Dysthe & Engelsen, 2009). Two ways to describe the different types are the "process portfolio" and the "product portfolio" (Orland-Barak, 2005). The model is perhaps not always a very clear final assessment having clear teaching professional orientation.

The action research- model is also quite common, but is this an academic oriented model? Even if it is established to some extent as a research method, it is also a bit controversial and has some practice- and school- connections that makes it closer to the teaching professional orientation. If this model was included in that orientation the findings of this study might be even more apparent and convincing. Perhaps it is more appropriate to use this diffuse model as an indication of the overlapping of the two orientations. There is the possibility to integrate academic training and practical teacher training in the final assessment through action research. This can also be said about some kind of thesis- models that have both a research and teaching focus, as the research-based thesis- model in Finland (Byman et al., 2009; Kansanen, 2004; Maaranen & Krokfors, 2007, 2008; Maraanen, 2010; Westbury et al., 2005).

This overlapping or integration phenomenon might be one of the most interesting findings in this paper that also can have some implications for the development of the final assessment. It is also possible to find some other overlaps. The portfolio- model is sometimes integrated with the certification- model because the portfolio in some cases is a kind of certification- portfolio with a focus on certification standards (Tummons, 2010). The rare product- model also shows some integration with other model such as the portfolio (Admiraal et al., 2011; Birgin, 2011; Frank & Barzilai, 2004; Groom & Maunonen-Eskelinen, 2006; Mansvelder-Longayroux, 2007; Oner & Adadan, 2011; Orland-Barak, 2005; Strijbos et al., 2007; Tummons, 2010). The product model can also be an example of the problem if one does not integrate some academic orientation into one´s model. An example of this might be the "didactic box," which seems to be a product for teaching that requires no obligatory empirical testing or written theoretical report (Meeus et al., 2004).

In summary the study finds that theory and practice to some extent can be integrated into the final assessment in a professional program in higher education. The paper also indicates that it seems to be more common to have a practical orientation in the final assessment. It is even more evident that research in the area has increased during recent years. This is in some ways not so surprising and in other is a bit more surprising.

It is quite obvious that a professional education now has both theoretical and practical parts and one ambition is to integrate them. Nevertheless there is an old and persistent problem in teacher education with the relationship between theory and practice (Beck & Young, 2005; Brouwer & Korthagen, 2005; Cochran-Smith, 2005; Gordon & O´Brien, 2007; Heggen, 2008; Mattson et al., 2011). The finding in this paper indicates that practical orientation is important

in teacher education. Even when the final assessment is a traditional and theoretical written thesis, the students believes it is more relevant when it has a clear connection to teacher´s work (Ersoy & Cengelci, 2008; Maraanen, 2010; Maraanen & Krokfors, 2007). Also, the quite common action research- model with its close connection to the practical teaching and systematic scientific approach, is a clear attempt to integrate theory and practice. The even more common portfolio and its integration with other models can have some difficulties but there are also clear indications of its possibilities to unite theory and practice (Didem & Golge, 2011; Hauge, 2006; Klenowski et al., 2006). In conclusion there are clear indications in this paper that both the thesis- model, the action research- model and the portfolio- model can be very useful ways of integrating theory and practice in teacher education and can be seen as boundary objects, which are tools that can join different approaches (Tuomi-Gröhn & Engeström, 2003). The findings may also be understood as an indication in favor of a renewed practical turn in teacher education (Mattsson et al., 2011).

This paper also clearly indicates that there is a lack of research about the final assessment in teacher education, especially concerning the thesis- model, the certification- model, and the product- model. All three might have importance in education and in the relationship between theory and practice. The thesis- model is traditional in the academic world, but how does it fit into a professional education? The certification- model and the product-model are more professionally oriented, so how do they fit into the academic world? Perhaps it would be even more interesting to study how a combination of different models can be useful as boundary objects for integrating theory and practice in a professional academic education.

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AN ANALYSIS OF HOW THE TEACHING PRACTICUM IS ASSESSED IN AUSTRALIA AND RESULTING POTENTIALS FOR IT INNOVATION

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Abstract
Our project has analysed how institutions for teacher education in Australia, which are typically Faculties of Education in universities, go about organising and assessing the school practicum, and how they use ICTs for that purpose. We report on the outcomes of this study, and on our ongoing work on identifying innovative ICT-supported assessment practices through workshops with practitioners, including supervising schoolteachers. Our conceptual basis is to be found in the literature on authentic assessment and evidence-centered assessment design. Methodologically, in addition to survey and document analysis methods, we build on Design Pattern research. We found that while authentic assessment is occurring in many practice contexts, it rarely finds its way into summative tertiary level judgment in explicit and documented ways. We also found that the most common approach to addressing the lack of connection involved the tertiary institutions taking greater control and ownership of the assessment process. The second stage of the project involved running workshops with groups of practitioners (teachers). The workshops were split into two phases. The first phase aimed to elicit assessment cases from practitioners, with a case being defined as a challenging assessment situation. The second phase involved working with practitioners to develop the elicited cases into design patterns. We developed in particular patterns that identify the potential of ICT for assessing the school practicum

Introduction and context
The professional practicum in authentic practice settings and its assessment is critical to the education of students in many professions, including teaching; it enables students to move from their intellectual understanding to enacting this within practice. While the pedagogical goal is sound, and while teaching practicums are seen as essential by practitioners and teachers educators alike, organizing and assessing practicums is a huge challenge for teacher educators. Of primary significance is the sheer scope of the exercise. By our estimates, in Australia alone (a small country with about 23 million people), approximately 30,000 pre-service teacher education students are enrolled in the 37 universities and 5 private teacher education institutions. Most pre-service teachers are required to undertake at least three practicums in the course of their studies. The University of Sydney alone arranges 2,300 placements for pre-service teachers every year with an average 25% of teaching time across courses allocated to their in-school professional experience. The costs of the practicum will be substantial in any country, but systematic approaches to ensuring quality learning experiences and on-going development of programs are frequently constrained and inadequate. Whilst compliance to professional standards is required, the diverse and variable nature of practice settings, as well as the subjective nature of professional judgment involved, means that consistent and equitable assessment presents both challenge and frequently stress for many practitioners and educators.

This paper presents findings from a project "Authentic assessment of students in practice settings: A participatory design approach", funded by the Australian Learning and teaching Commission. It has analysed how institutions for teacher education in Australia, which are typically Faculties of Education in universities, approach the organisation and assessment of school-based Professional Experience or practicum, and in addition how ICTs are being incorporated into assessment practices. We will report on the early outcomes of this study, and on the ongoing work in identifying and developing innovative ICT-supported assessment practices informed by workshops with practitioners, including supervising schoolteachers.

Theory and methodology

In addition to the general pedagogical thinking by which student work placements and portfolios can be grounded (e.g., Kennedy, 1999), our theoretical framework is informed by three lines of research, the first two concerning educational assessment, the third focussed on design methods for instruction.

***Authentic assessment*.** Authentic assessment of professional practice within education settings is primarily *contextualized* assessment because the objective is to assess ways in which students move from intellectual understanding to enactment in practice - and back. Authentic assessment is also aligned with responsive practice: responsive to the needs of clients and school students as well as to the priorities and values of the assessors themselves. In addition, it is responsive to the demands, constraints, and affordances, which characterise the context of the professional experience. Authentic assessment means assessment of complex performances, challenging many assumptions of educational measurement theory (Delandshere & Petrovsky, 1998). It also needs to take account of complex dynamics between the pre-service student, the supervising practitioner and the university educator including their values and priorities. For teaching, Darling-Hammond and Snyder (2000) identify four aspects of authentic assessment: (1) Actual knowledge, skills and desirable dispositions as they are used in teaching and learning contexts are sampled, rather than more remote proxies (such as tests); (2) multiple kinds of knowledge and skill as they are used in practice get integrated in the assessment; (3) multiple sources of evidence are collected over time and diverse contexts; (4) evidence is evaluated by individuals (it is assumed objectively) with relevant expertise against criteria that matter for performance in the field.

There is a growing interest in exploring ways to capture such performance evidence in digital format (in particular video) and to make it available for reflection, discussion and assessment through e-portfolio systems (see Hallam *et al*., 2008, for an overview of e-portfolio practices in Australia's Higher Education sector). Video is playing an increasing role in documenting elements of learning and competence involved in the move from intellectual understanding to professional enactment in practice settings (Bannink, 2009). There is also substantial research on how information provided in video format, for instance can inform assessment of classroom teaching capacity (Frederisken et al., 1998). As Bannink (2009) notes, one challenge with current practice of using video documentation for assessing teaching is that the video evidence is captured infrequently (often only once) and hence typically does not allow demonstration of development and growth. Bannick suggests a method to have students build video portfolios that can evidence growth and that additionally would include reflective narratives along with the video materials.

Evidence-centered assessment. The move to competence-based education of teachers, as it has been taking place in many countries including Australia, along with the increasing significance of professional standards linked to accreditation requirements carries the risk of a reductionist view of the professions. Assessing professional competence can all too easily be reduced to

"ticking the boxes", not doing justice to the complex nature of teaching (Delandshere & Petrovsky, 1998). Because being a successful teacher requires the integration of multiple kinds of knowledge and skills, assessment ideally needs to be holistic and performance-based (Bannink, 2009). Case presentations and (e-)portfolios are amongst the methods most frequently suggested to perform holistic assessment (Darling-Hammond & Snyder, 2000).
From an assessment perspective, cases and portfolios give indication of the outcomes of pre-service teachers' work - and hopefully also some information on the processes that led to those outcomes - and it is the purpose of assessment activities to relate the evidence integral to work products to hypotheses concerning preservice teachers' proficiencies. This assessment can hence be seen, like any other educational assessment, as the process of getting from questions about students' knowledge and learning to activities in learning environments, and of how then observations on students' learning can be propagated upwards through the evidence model to support judgment concerning of a student's capacity. This view of assessment, which forms the basis for our conceptualisation of professional experience assessment, has been developed in projects such as Evidence-Centred-Design (ECD, Mislevy 2006) and on Principled Designs for Inquiry (PADI, Riscontente et al., 2007). ECD has been further developed into a model for producing assessment tasks in a systematic manner, making explicit all the steps from domain analysis to the specification of values in the student model. ECD draws attention to the fact that assessment comprises not only the appraisal of artefacts (e.g. case descriptions, portfolio work) as provided by the students, but it includes the definition of the evidence that needs to be provided and in what form it should be provided, including what process descriptions and reflection activities will be required. In order to capture such complex assessment designs, *design patterns* have to be proven to a valuable representational format.

Design patterns. Design patterns have received a lot of interest in instructional design circles (Goodyear & Retalis, 2010) as a means to extract and represent practitioners' solutions to problems arising in their area of practice. As first suggested in architecture (Alexander, 1979), a *pattern* describes an effective solution to a recurrent problem embedded in a specific context. In education, where the solution takes the form of an instructional (or pedagogical) design, we speak of design patterns. A design pattern is a specifically structured document, usually kept in digital format.
We use the concept of pedagogical design patterns for representing practitioners' solutions to problems arising when assessing students' (in this case pre-service teachers') professional experience comprehensively. More specifically, we use design patterns for three kinds of (recurrent) problems: (1) The problem of capturing experiences students make in the context of their field work or practicum; (2) The problem of eliciting critical reflections from students on their experience; (3) The problem of assessing students' practicum performance. Just focussing on the last point: In the context of assessment design, design patterns can be used to lay out the chain of reasoning from evidence to inference of students' professional capacities; they function as 'assessment stories', linking together the three main elements of the assessment argument (Mislevy *et al*., 2003, p. 23): (a) The competencies (perhaps further broken down in knowledge, skills, and abilities - KSAs) that are the focus of the assessment; (b) The kind of observations that would provide evidence about those competencies; (c) Characteristic features of assessment strategies and types of situations that could help evoke that evidence.
Design Pattern work can guide analysis of existing assessment practices in clarifying the specific elements and assumptions embedded in practice. Additionally this approach provides a framework to assist in the development of new approaches to assessment, including video, that aim to address recurrent problems practitioners identify within their practice as assessors of pre-service teachers. As such design patterns as a resource can potentially assist teachers and

teacher educators both in the work of guiding professional learning and in reaching an equitable and valid judgement in specific assessment contexts.

Stage 1. Findings

The first stage of the project involved a review of professional experience or practicum assessment in Australia. A focussed document analysis was conducted across thirty tertiary institutions, and then twelve of those institutions were selected for detailed document analysis, and eight were singled out for interviews.

The questions guiding this review of professional experience assessment were influenced by Activity Theory (Engestrom, 1999 & Bloomfield, 2009), in placing assessment practices within a broader socio-educational context of activity and learning. In focussing on the broader context of practice and assessment this included the need to take account of 'institutional rules' arising from the contexts of both schools and universities, as well as the roles, responsibilities and hierarchies within complex educational communities. Thus interest was focussed on the actors who organise assessment events and make the assessment judgment. Additionally, the sources of evidence seen as significant, the structures and processes guiding the judgment process with respect to particular sources of evidence, and how consistency, equity and reliability are supported and maintained within the assessment process were considered. The priority given to considerations of context, evidence and decision making processes reflected the study's theoretical orientation towards authentic, evidence centred assessment. An overarching theme of equity was in line with one of the key aims of the research, which was to provide tools to support consistent and equitable assessment across diverse contexts.

The criteria by which institutions were selected for detailed document analysis (12) and interviews (8) were drawn principally from the research around authentic assessment (Darling-Hammond & Snyder, 2000) and evidence-centred assessment practices (ECD, Mislevy, 2006) considered earlier. Within the analytic framework employed the key criteria for selection were the particular methods used to collect and analyse evidence of teaching practice, the nature of the evidence collected, the strategies employed to link theory and practice, the strategies employed to promote collaborative assessment, and the strategies employed to promote reflective practice.

Following the detailed document analysis and subsequent interviews our review revealed a lack of connection between some aspects of current professional experience assessment practices. The most prominent theme identified was a gap between summative assessment processes and specific sources of evidence of key elements of classroom-based practice. This particular issue has been identified in previous research. In 2009 the Australian Teaching and Learning Council (ALTC) published a report, entitled 'Practicum Partnerships', exploring models of professional experience organisation in Australian teacher education. After an investigation involving eight higher education institutions in the Australian state of Victoria, the report noted that while the assessment of preservice teachers "may be supplemented by site visits, discussions, interviews and other feedback, the capabilities of existing graduate teachers are judged predominantly from details of program content and associated assessment tasks. Overall, judgements about the design of academic subjects, success in the teaching practicum and completion of the approved teacher education program combine to provide a proxy assessment of the acquisition of the knowledge, attitudes and practices valued by the profession" (Ure et al., 2009, p58). The report also notes that while more authentic assessments of teacher knowledge are being developed, including case studies, exhibitions, portfolios and problem-based inquiries, observation and competency-based approaches are still widely used (Ure et al., 2009, p.59).

Smith (2007) also problematizes the relationship between formative and summative assessment, describing formative assessment as a mechanism to provide preservice teachers with feedback to assist in their professional development, while summative assessment is predominantly concerned with judgment (Smith, 2007). Smith (2007, cited in Ure et al., 2009) goes on to argue for a greater balance between formative and summative assessment processes in order to avoid an over-reliance on abstract competency based judgments and to promote the social integrative aspects of the placement experience. The challenge to find such balance is significant in the present Australian context as neoliberal driven measures of accreditation, professional standards and audit continue to be institutionally mandated.

Building upon the research conducted by Smith (2007) and Ure et al. (2009), our study broadened the focus to include tertiary institutions from across Australia, and found evidence for disjunction between formative and summative assessment processes, as well as attempts by a number of tertiary institutions to address this gap. Our research found that formative assessment is generally reflective, collaborative, involves multiple stakeholders, is contextualised and is embedded in authentic practice contexts. In contrast, summative assessment is largely standards (competency)-based, involving grading against predefined, generic and decontextualized criteria. In many cases a single assessor completes summative assessment, and space for descriptive comments on the summative assessment documentation is minimal. In addition to contrasting the nature of the two assessment processes, this review also revealed that in many of the teacher education programs considered there were no explicit, evidence based links between formative and summative assessment, which means there is often little proof that the final assessment judgment has been approached in valid or possibly equitable ways. This is not to say that there are no links between formative and summative assessment, as it is likely that supervising teachers draw upon formative assessment experiences to inform their final judgment. However there is little structural or documentary evidence as to how this may occur in different contexts.

In the cases where formative and summative assessment processes have been linked in meaningful and explicit ways it was usually the tertiary institution that developed the necessary procedures. Our review identified two principle approaches that had been adopted in an attempt to close the gap between formative and summative assessment. The first approach involved giving the supervising teacher greater scope for personal involvement/empowerment during the assessment process, while in the second approach the tertiary institution took greater ownership and control of the assessment process. Within these two broad approaches various tertiary institutions employed a number of different strategies. Below is a summary of specific strategies that have been employed to link formative and summative assessment:

- ***Structurally embedded collaboration:*** The use of scaffolded documentation that mandates collaborative and participatory assessment processes. 'Round Table Meetings' are organised between the preservice teacher, supervising teacher and university staff, and scaffolded documentation is to be completed during that meeting and submitted as a component of the final summative assessment. The documentation associated with this assessment process is relatively open, giving all actors 'voice' during the process and focussing on developing the preservice teacher in contextually specific 'Areas for Growth'.

- ***Detailed and highly structured scaffolding material****:* Common to many institutions, structuring formative and summative assessment around professional standards promotes consistency and ensures that supervising teachers are 'speaking the same assessment language' as the

university. However, it leaves open the possibility that important individual/contextual processes are ignored or underreported in summative assessment.

- ***Integrated units of study (theory-practice)****:* professional experience programs are structured around university subjects/units and much of the assessment activity relates directly to the subject outcomes. In the early practicum blocks in particular, assessment is micro-managed, being structured around individual tasks that preservice teachers must complete and submit to their university coursework staff. This approach promotes strong links between university theory and professional experience, though the imposed role of university theory on assessment may limit opportunities for professional growth within individual/contextual circumstances.

- ***Chains of evidence***: Based on the theoretical framework of evidence-centred assessment design and 'assessment as an argument', the purpose is to create a portfolio of evidence that relates directly to a set of professional competencies that preservice teachers are required to demonstrate. Because evidence collection is determined by predefined rubrics there is a risk that teaching practice and experience becomes less about sociocultural immersion within a particular community of practice and more about attempting to produce particular kinds of prescribed evidence for the purpose of summative assessment.

- ***Transition from unstructured to structured assessment***: An attempt to provide both an authentic learning context for preservice teachers as well as meeting organisational requirements for standards-based competency. A number of professional experience programs begin with loosely structured, open assessment processes that provide good scope for supervising teacher input and guidance but then transition to rigidly structured, standards-based frameworks (often little more than ticks in boxes).
  Despite the attempts by several institutions to foster greater links between formative and summative assessment (as well as theory and practice), many of the programs reviewed were characterised by a dichotomy between aspirations for collaborative relationships and engagement between preservice teacher, supervising teacher and university mentor as indicated in their documents and evidence of the actual the assessment process, often technicist in approach. The following two points elucidate this further:

- ***Collaborative assessment vs mitigated assessment****:* The stated role of the university staff in many programs (according to the documentation) is to liaise between relevant assessment actors, collaboratively guide the supervising teacher and preservice teacher in both formative and summative assessment, as well as providing support for both. This role is often described in general terms and in many cases there is no structural basis for ensuring this type of collaborative assessment process actually occurs. The structural role of university staff in many programs is not as a collaborator in assessment but rather as the mitigator or moderator within the assessment process. Thus the only mandated and formally defined role for university staff becomes limited to the mediation processes associated with preservice teachers who are at risk of failing the program.

- ***Formally collaborative vs structurally collaborative****:* Similar to the above point, this refers to programs that speak the right language on paper and provide scope for collaborative, participatory assessment, but evidence no structural features within the program to ensure that this is what actually occurs (usually because assessment takes the form of a number of standards based reports completed by the Cooperating Teacher). The structurally embedded collaboration considered above is one approach developed to address this particular issue.

Stage 2. Findings

The findings from stage one were used to inform the second investigatory phase of the research – the participant workshops. This section will outline the methodology associated with stage two, as well as considering one of the more significant findings, the use of video in professional experience assessment, in relation to the big picture issues identified in stage one, namely the gap between formative and summative assessment.

The aim of the second stage of the project was to facilitate workshops with groups of practitioners. One workshop was run in New South Wales and the other in Victoria, each contained approximately fifteen participants, and participants were a mix of teachers and university staff. The workshops were split into two phases; the first phase aimed to elicit assessment cases from practitioners, with a case being an analytical description of a challenging assessment situation within professional experience. Participants were given scaffolding documentation to assist with case development, and were asked to describe their account under the eight subheadings 'Case Name', 'Author and Role', 'Context of Case', 'Critical Issues', 'Key Assessment Steps', 'Professional Teaching Standards', 'University or Individual Guided Process' and 'Reflection'. The second phase of the workshop involved working with practitioners to develop the cases that had been elicited into design patterns, which occurred with the assistance of the research team.

One of the significant findings from the workshops was the development of cases and design patterns around the use of digital video recording in professional experience assessment. Within the cases collected our study noted several dimensions to the use of video, including video as an aid to collaborative reflection and formative assessment offsite, video as a tool for summative assessment offsite, and video as tool to facilitate professional communication onsite. Each dimension will now be considered in greater detail.

- **Video as a tool to facilitate professional communication onsite**: a significant proportion of the cases elicited in workshops stemmed from issues around professional communication, and in particular a communications breakdown between the preservice teacher and their supervising teacher which adversely affected the assessment process. Part of the issue was the preservice teachers' perception that feedback from the supervising teacher was overly subjective and personally critical. The use of a video artefact in such cases provides a third point of reference for the professional conversation, and any feedback given around the video is grounded in tangible evidence. This may serve to reduce tensions associated with an overly personal dynamic.

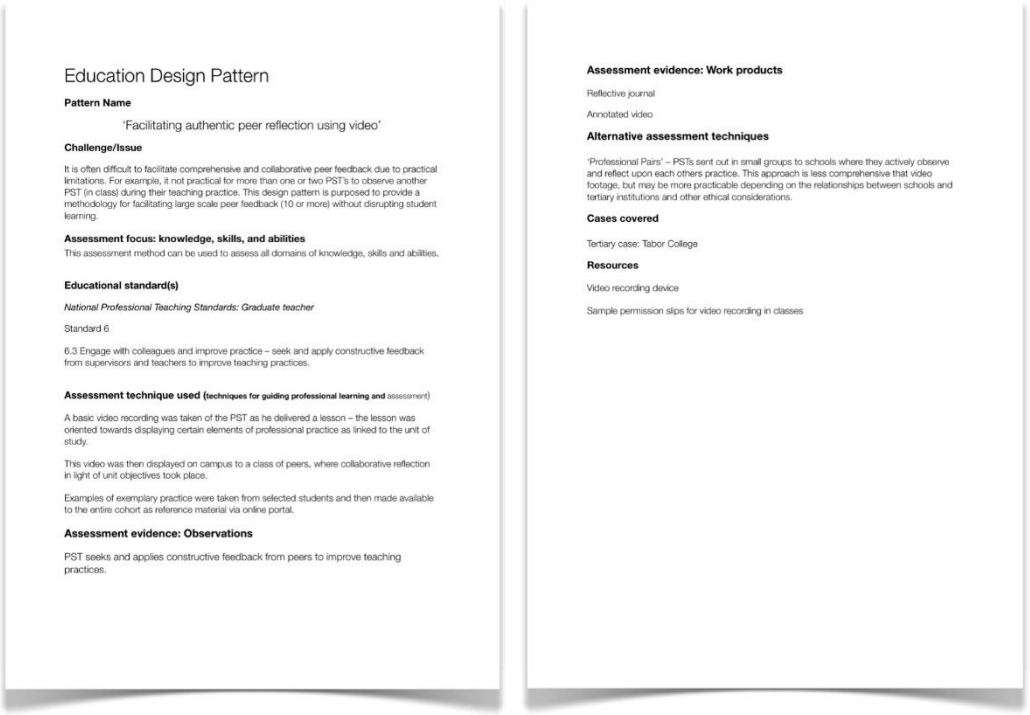
- **Video as an aide to collaborative reflection and formative assessment offsite**: A basic video recording was taken of the preservice teacher as they delivered a lesson. The lesson itself was oriented towards displaying certain elements of professional practice as linked to a university unit of study. The video recording was then employed in a university learning contexts for the purpose of reflection, being displayed on campus to a group of peers who engaged in collaborative discussion and reflection around the teaching artefact in light of specific unit objectives. Examples of exemplary practice were taken from selected students and then made available to the entire cohort.

- **Video as a tool for summative assessment offsite**: several tertiary institutions within Australia use digital video as a teaching artefact to be drawn upon during summative assessment, usually forming part of a larger body of evidence presented to a panel of assessors as an indicator of teaching capacity.

One of the advantages that the different dimensions of digital video use offers is that a single tool or teaching artefact can inform both formative and summative assessment, as well as simultaneously facilitating other kinds of professional development. The flexibility of this method can be seen as a positive response to a number of the issues identified in stage one, including the gap between formative and summative assessment and the lack of evidence based summative assessment. It also addresses some of the key principles of authentic assessment and evidence based assessment outlined earlier, representing a platform through which multiple kinds of evidence can be assessed by multiple stakeholders in a contextualised manner. Working from Alexanders' (1979) definition of design patterns as effective solutions to recurrent problems embedded in a specific contexts, the current study conceptualises design patterns as a series of explicit processes by which the dimensions of digital video usage considered above can be easily implemented in multiple concrete assessment contexts. Digital video was considered particularly appropriate for development with design patterns, as it addresses the three recurrent problems, considered earlier, that educational design patterns are purposed for: capturing the experiences that preservice teachers encounter during professional experience, eliciting critical reflections from preservice teachers based on their professional experience, and as a tool for directly assessing preservice teacher performance. Within this study design patterns have been structured around a number of key criteria:

- Pattern Name
- Challenge/Issue
- Assessment Focus
- Education Standard(s)
- Assessment Technique Used
- Assessment Evidence: Observations
- Assessment Evidence: Work Products
- Alternative Assessment Techniques
- Cases Covered
- Resources
- Assessment Rubric (if applicable)

Within the pattern structure there is a strong emphasis on reaching a contextualised, evidence informed judgment. An important idea underpinning the development of the pattern template was that design patterns served a dual purpose, being both a means of documenting authentic assessment in existing practice, as well as a method for generating new approaches to, or perspectives on, authentic assessment in specific contexts. Below is an example of a design pattern developed around using video as an aid for collaborative reflection and as a tool for formative assessment



Education Design Pattern

Pattern Name

'Facilitating authentic peer reflection using video'

Challenge/Issue

It is often difficult to facilitate comprehensive and collaborative peer feedback due to practical limitations. For example, it not practical for more than one or two PST's to observe another PST (in class) during their teaching practice. This design pattern is purposed to provide a methodology for facilitating large scale peer feedback (10 or more) without disrupting student learning.

Assessment focus: knowledge, skills, and abilities

This assessment method can be used to assess all domains of knowledge, skills and abilities.

Educational standard(s)

National Professional Teaching Standards: Graduate teacher

Standard 6

6.3 Engage with colleagues and improve practice – seek and apply constructive feedback from supervisors and teachers to improve teaching practices.

Assessment technique used (techniques for guiding professional learning and assessment)

A basic video recording was taken of the PST as he delivered a lesson – the lesson was oriented towards displaying certain elements of professional practice as linked to the unit of study.

This video was then displayed on campus to a class of peers, where collaborative reflection in light of unit objectives took place.

Examples of exemplary practice were taken from selected students and then made available to the entire cohort as reference material via online portal.

Assessment evidence: Observations

PST seeks and applies constructive feedback from peers to improve teaching practices.

Assessment evidence: Work products

Reflective journal

Annotated video

Alternative assessment techniques

'Professional Pairs' – PSTs sent out in small groups to schools where they actively observe and reflect upon each others practice. This approach is less comprehensive that video footage, but may be more practicable depending on the relationships between schools and tertiary institutions and other ethical considerations.

Cases covered

Tertiary case: Tabor College

Resources

Video recording device

Sample permission slips for video recording in classes

Figure 1. *Design pattern in document format*

As evidenced above, design patterns went through several iterations in terms of structure and format. Initially the raw pattern format started from focal knowledge and moved to observations, work products, context and assessment technique. In the current study this format was modified in light of Alexander's (1979) problem/solution structuring, as well the data coming from the assessment cases being collected, which were framed around assessment challenges or critical incidents. As such the latest iteration of pattern format is based on Alexander's (1979) problem/solution framework, which in the context of professional experience assessment translates into 'assessment challenge' (problem) and 'assessment strategy' (solution), with observations, work products, and characteristic/variable features stemming from there. One of the advantages of the column format (figure 2) is that the document can be read both vertically and horizontally, and can be viewed holistically, which in turn highlights the relationships between the various components/considerations of the assessment situation.

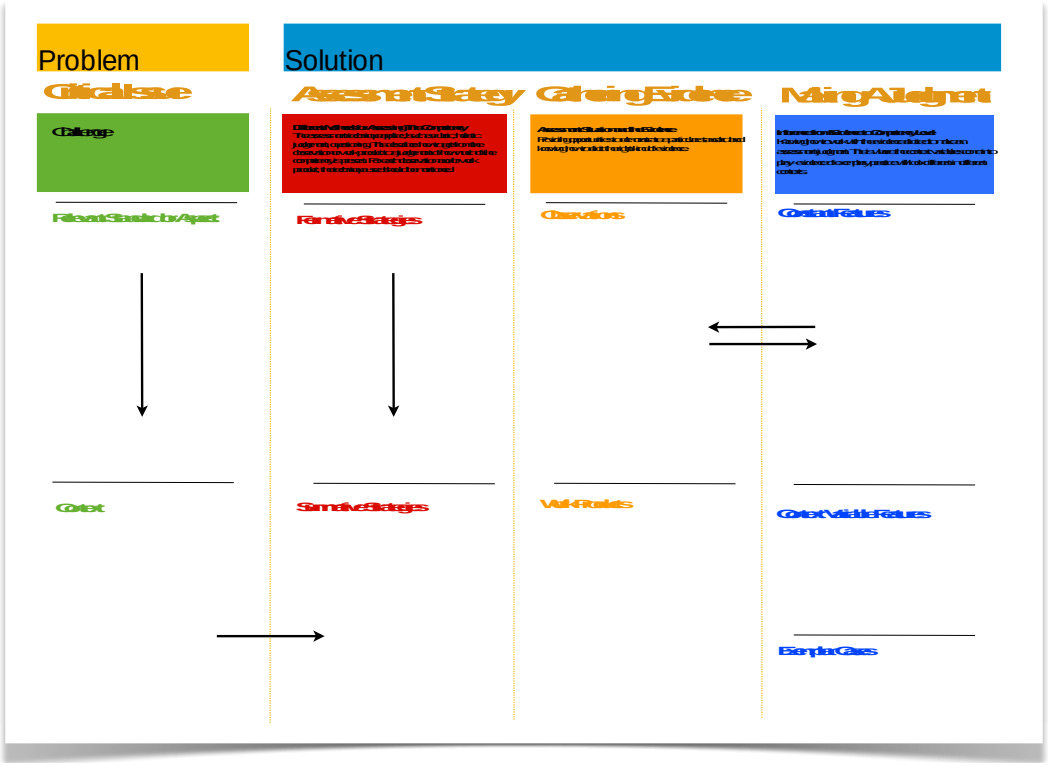


Figure 2. *A compact display of a design pattern*

The development of design patterns employing digital video in professional experience assessment is consistent with the overall aims of the study. Firstly, they represent tools for promoting authentic assessment as defined by Darling-Hammond and Snyder (2000) in that they sample actual knowledge and skills, they capture multiple kinds of knowledge, and they represent multiple kinds of evidence. Secondly, design patterns concerned with utilising digital video in assessment also meet the criteria for evidence centered assessment as defined by Bannink (2009) in that they are holistic (capturing multiple forms of knowledge and evidence) and performance based (the evidence being samples of performative practice).
Although the current study aims to produce a wide-ranging and holistic analysis of technology use within professional experience assessment, this paper has focused specifically on the findings around the employment of digital video technology, and how video has been used to address significant and broad based challenges to assessment.

Conclusion

This project seeks to address the proposition that many of the assessment practices employed in the area of Professional Experience within teacher education programs lack coherent links between formative stages and the commonly prescriptive standards-orientated summative stage. Design pattern methodology is investigated as a means to analyse more explicitly assessment processes and to provide a framework to guide development of assessment strategies that are more strongly authentic and valid.
The development of design patterns employing digital video in professional experience assessment is consistent with the overall aims of the study. Firstly, they represent tools for promoting authentic assessment as defined by Darling-Hammond and Snyder (2000) in that they sample actual knowledge and skills, they capture multiple kinds of knowledge, and they represent multiple kinds of evidence. Secondly, design patterns concerned with utilising digital video in assessment also meet the criteria for evidence centred assessment as defined by

Bannink (2009) in that they are holistic (capturing multiple forms of knowledge and evidence) and performance based (the evidence being samples of performative practice).

Although the current study aims to produce a wide-ranging and holistic analysis of technology use within professional experience assessment, this paper has focused specifically on the findings around the employment of digital video technology, and how video can be used to address significant and broad based challenges to assessment. Design pattern frameworks are presented as a productive way to communicate the key elements of such work.

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REDESIGN OF THE TEACHER EDUCATION SYSTEM: A TURKISH CASE

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Abstract
Education is universally accepted as an essential element in the process of national development and prosperity. There is no doubt that teachers play a significant role to the success of any educational reform and agents for a positive societal change. Quality teachers can lead the education to the highest quality.
Teacher education system of Turkey has gone through a rapid change and development since the foundation of modern Turkey, and the most recent comprehensive change took place in 1998.
Do all changes create the expected results? Definitely not! In Turkey, despite a plethora of policy and green paper recommendation and highly optimistic expectations at national level, there has arguably been little real or solid change in pre-service teacher education system over the last two or three decades as a result of the philosophy of change for the sake of change itself.
In November 2011, a national Teacher Education Strategy Workshop has been organized by the Ministry of Education. Ministry of Education personnel from all levels, academicians, policy makers, politicians, NGOs, unions and teacher organizations participated and discussed on the strategies to propose to the Ministry of Education about the new teacher education system.
The strategy proposal included four headings:
a. Restructuring the pre-service teacher education
b. Sources of teachers, the process of selecting and appointing teachers
c. Orientation, candidacy and the in-service training of teachers, and
d. Career steps for teachers
This paper presents the new proposal of teacher education strategy in Turkey and provides recommendations.

Keywords: teacher education, change, strategy

Introduction

Teacher education, all over the world, is being challenged in the last two decades in every respect by fundamental changes in the concepts about the nature of knowledge, the phenomenal speed at which knowledge is created and used, changes in the economy, changes in the theories of learning and as a result in the theories of teaching, rapid developments in information technology.
Although teachers are always being regarded as the key change agent in an educational reform and reform of teacher education by policymakers, teachers and teacher education has never received the desired attention and importance. As result, Teacher education programs remain the stepchildren of most universities, underfunded and under-resourced by many and treated badly in most universities in Turkey.
In this chaotic atmosphere, teachers are always being accused accountable for the failure of schooling and teacher education held accountable for the quality of teachers.

Turkey has focused on the quantity side of education for decades and neglected the quality side. Since many problems related to the quantity part of education, such as number of schools, classrooms, education for all, etc. have been accomplished, now it is time to focus on the quality side of education.

Proposal for the New National Teacher Education Strategy

In November 2011, a national Teacher Education Strategy Workshop has been organized by the Ministry of Education. Ministry of Education personnel from all levels including the minister of Education himself, academicians, policy makers, politicians, NGOs, unions and teacher organizations participated and discussed on the strategies to propose to the Ministry of Education about the new teacher education system.

The strategy proposal included four headings:

A. Restructuring the pre-service teacher education

a. Student selection process

i. Present student selection process is not meeting the needs of the Faculties of Education.

ii. 50% of the Anatolian Teacher High School graduates do not choose Faculties of Education as their career choices.

iii. Some students have either psychological or health problems to practice teaching and it is difficult to eliminate these students in the present system.

iv. So called Talent exams for Physical Education, Music and Fine Arts are conducted by each university and therefore validity and reliability of these exams are under serious questioning.

v. Teacher preparation is uneven and often insufficiently aligned with the needs of contemporary classrooms and diverse learners.

Recommendations

A new student selection system should be designed to attract skilled, motivated and enthusiastic students into Teacher Education programs. Extra effort should be spent to attract and include those graduating from Anatolian Teacher High Schools in teacher Education programs.

A national standard should be introduced for Talent Exams for Physical Education, Music and Fine Arts teacher Education programs

Teacher preparation is uneven and often insufficiently aligned with the needs of contemporary classrooms and diverse learners.

All efforts should be spent to prepare teachers ready to meet the needs of contemporary classrooms and diverse learners.

b. Teacher efficiencies

i. Examination used for recruiting teachers, Public Personnel Selection Examination, KPSS is not compatible with requested teacher efficiencies

Recommendation

In its current form, Public Personnel Selection Examination (KPSS) is far from to assess efficiencies. The exam should definitely have 3 parts including general pedagogy, subject matter and content teaching.

c. Teaching programs

i. Undergraduate Programs mainly focus on subject matter aspects of the field and lacks how to teach these subjects. This becomes a very serious problem especially in Physical Education, Music and Fine Arts programs.

Recommendations

Teaching has become more complex and challenging in recent years. New standards for students require that teacher have deep and flexible knowledge of their subject matter and wide

repertoire of how to teach the content to enable all of their students to learn to high levels. At the same time, today's teachers face a range of classroom and social conditions. Multilingual classrooms, increased number of special education students, growing numbers of students in poverty and from single-parent families.
In its current form, undergraduate programs are far too away to accomplish this task. A teacher education curriculum framework needs to be in consonance with the curriculum framework for school education, and a teacher needs to be prepared in relation to the needs and demands arising in the school context.
Given these new challenges, it is imperative that undergraduate programs equip pre-service teachers with the necessary skills to be able to serve the needs of ever increasing population of students.

d. Academic competences

i. Faculty members pre-dominantly have pure subject matter backgrounds.
ii. Qualities of faculty members are highly questionable.
iii. Most of the lecturers do not have an initial teacher training backgrounds.

Recommendations

In order undergraduate programs to prepare teachers to the aforementioned challenges, qualified faculty must be placed in all programs. Lack of qualified faculty members who have studied the content teaching seems to be the most important task in front of the Faculties of Education in Turkey. Those who have studied or studying content teaching must be placed in all programs. Deans and Head of Departments should be appointed among those who have such backgrounds.

e. The Number of Faculties and Their Quotas

i. In recent years, both the number of Faculties of Education and the students enrolling these faculties have increased dramatically.

Recommendations

Strict rules should be applied to open new Faculties of Education. Under staffed programs should be closed or joined with each other. The number of students enrolling to programs should definitely be reduced and the number of enrollment should be aligned with the future recruiting plans of the Ministry of Education.

f. Faculty-school cooperation & field experiences

i. Field experience lacks both quality and quantity
ii. Observing Faculty lacks quality
iii. Content of the field experiences are not preparing candidates to the profession.
iv. Mentor teachers lacks quality

Recommendations

It is obvious that the current form of faculty-school cooperation does not lead to the desired goals. The practice should start as early as possible and support student teachers' growth towards expertise. In the beginning it should guide student teachers to observe school life and the pupils from an educational perspective, and then it focuses on specific subject areas and pupils' learning processes. Finally it supports student teachers as they take holistic responsibility in their teaching and schools. Both the quantity and the quality of early field experiences should be increased.

Field experiences for initial and advanced programs should be very well-planned, early initiated, on-going, integrated into the program sequence, of high quality, and continuously evaluated. Professional education programs should prescribe field experiences, including student teaching

and/or internships, to provide candidates with opportunities to relate principles and theories to actual practice. The field experiences should be varied and include study and practice in schools with diverse populations in terms of age, gender, culture, language, race/ethnicity, socio-economic status, special abilities/disabilities, etc.

Both Faculty supervisors and cooperating teachers play a significant role in the development of the student teachers' skills, knowledge, and attitudes. Therefore, special care should be spent in selecting cooperating teachers.

The cooperating teacher should be selected because s/he is a qualified professional educator who brings a wealth of educational experience to the classroom each day. It is through the preparation, guidance and knowledge of the cooperating teacher that each student teacher will experience an important instructional role in the classroom.

Another important figure in practicum experience is the university supervisor. The supervisor can play a critical role in the success of the experience. Supervisors often can play the role of translators of the values and beliefs of the teacher education program. However, it is ironic that the selection of student teaching supervisors is often done on the basis of availability rather than on the basis of experience and credentials in many cases.

Schools where students are placed for both early field experiences and practice teaching should also be specifically designed for such activities. Schools operating as Universities' teacher training schools can play a crucial role in preparing future teachers. The teachers in such schools should have a different status than teachers in other schools. The teachers should have a dual role: on one hand teach their pupils and on the other, they will supervise and mentor student teachers. Many teachers should be encouraged to be active in research and development work and be members of teams that produce learning materials for schools. These teachers should also be encouraged to attend master's and Doctorate programs at Faculties of Education to update their both content and pedagogy knowledge.

B. Selection process and resources for teacher appointment and placement

i. Public Personnel Selection Examination (KPSS) is not sufficient to recruit quality teachers.
ii. Sources of recruiting teachers should be minimized. Only graduates of Faculties of Education should be recruited as teachers.
iii. Programs, other than Faculties of Education, giving Teaching certificates should be closed.

Recommendations

In its current form, Public Personnel Selection Examination (KPSS) includes sections on general culture, general mathematical and Turkish Language skills sections and general pedagogical section. All teacher candidates have the same exam. The examination does not assess candidates' neither subject matter knowledge nor their content teaching skills. The examination should definitely be designed to asses these two areas.

Except from graduates of Faculties of Education, mainly graduates of Faculties of Letter and Science and graduates of some other Faculties can take the KPSS exam after completing Teaching certificate programs (30 credits) given by the faculty members of Educational Sciences Department. It is obvious that this program creates inequality since many graduates of Faculties of Education cannot be appointed as teachers. The qualities of these certificate programs are also highly questionable! Therefore, these certificate programs should be closed immediately and only graduates of Faculties of Education should be recruited as teachers.

It is increasingly clear that schools must become dramatically more successful with a wide range of learners if many more citizens are to acquire the sophisticated skills they need to participate in a knowledge-based society. Most educational reformers now agree that increasing teachers' expertise and effectiveness is critical to the success of ongoing efforts to reform any educational system. The kind of pedagogy needed to help students to think critically, create, and solve complex problems as well as to master subject matter content and more importantly how to

teach it is much more demanding than that needed to impart routine skills. And teachers are being asked to achieve these goals for all children, not just the 10 or 20% who have traditionally been selected into schools with reputation. Only very knowledgeable and skillful teachers who are able to respond appropriately to the needs of students can enable diverse learners to succeed at these much more challenging learning goals.

As a consequence of these trends, teacher recruitment becomes an increasingly important issue for school systems. If students are to be well-served, Ministry of Education must be able to recruit teachers who will be effective in the classroom and who will stay in teaching over the course of a career.

C. The period of being a prospective teacher, orientation and continuous professional development

i. Professional development programs are not systematic and well organized.
ii. Professional development programs are not designed according to the needs of the teachers.
iii. Most activities are hit and run types.
iv. Orientation programs are not designed to lead novice teachers.

Recommendations

No matter how good pre-service training for teachers is, it cannot be expected to prepare teachers for all the challenges they will face throughout their careers. Education systems therefore should seek to provide teachers with opportunities for in-service professional development in order to maintain a high standard of teaching and to retain a high quality teacher workforce.

Turkey has a long history of organizing in-service training facilities intending to stimulate the professional development of teachers. The in-service training of teachers has been carried out by Ministry of National Education (MoNE) since 1960. The General Directorate for Teacher Training and Development of MoNE is responsible for in-service Training of newly-qualified teachers.

The General Directorate for Teacher Training and Development is responsible for planning and implementing in-service training programs for all teachers at different levels teaching different subjects and for different lengths of time throughout the country. Until 1993, in-service training activities used to be conducted only at the national level. But these courses were very inadequate in terms of quality and quantity. Therefore, local Educational Directorates were given the authority to organize local training programs for local needs in corporation with the General Directorate for Teacher Training and Development of MoNE.

The number of the actual teachers (circa 700,000) and more than one thousand new comers each year really makes it difficult to organize effective INSET programs. Literature review and personal experience with both local and nation-wide teachers make clear that the main concern for in-service training activities in Turkey is the lack of professional staff for planning and carrying out activities for teachers' professional development.

Although the General Directorate for Teacher Training and Development has reasonable facilities for accommodation and training, it is rather difficult to admit that the Directorate has enough qualified and professional staff for desired INSET programs.

The general concept of in-service training at both the national and local level still appears to involve determining an expert or experts for the activities and making them give the training. Professional development should start to be considered a long-term process which includes regular opportunities and experiences carefully and systematically planned to promote growth and development in teaching profession.

D. Career steps in teaching profession

i. Personnel law number 657 is not sufficient for teachers.

ii. Teacher effectiveness is not based on concrete standards
iii. Current system can`t distinguish between effective and ineffective teacher.
iv. Career steps system is incapable of ensuring personal and professional development of teachers.
v. Personal and professional development of the teachers is left to personal choice. It is not compulsory, predictable and periodical.
vi. Assessment used for career steps is the same for all teachers and does not include sections for different content teaching.

Recommendations

The idea of career steps in teaching profession is relatively new in Turkey. According to the career steps in teaching profession law issued in 2005 there are three categories; candidate teacher, expert teacher and head teacher.

The main criticism made on the examination of career steps in teaching profession is that it does not assess subject matter knowledge and content teaching as it is the case in KPSS exam.

The examination should be designed to assess examinees' general culture knowledge, subject matter and content teaching knowledge.

Teachers holding B.A.'s and Ph.D.'s should be assigned as master and Head teachers respectively

Personal and professional development of the teachers should be compulsory, predictable and periodical.

Conclusions

Improvement in teacher education is an ongoing process. The important reforms planned to be implemented should be directed to have significantly improve the quality of teacher education programs and make the experiences of teacher candidates more meaningful and responsive to their needs as beginning teachers.

We, as Turkey, are not alone in this journey of great challenges. Therefore, reports on teacher education reforms from around the world will provide us insights, perspectives, approaches and outcomes which are necessary for building up a rich knowledge base on new teacher education.

Turkey should decide on the model of teacher education and prepare teachers according to the desired model aiming at serving tomorrow's students and schools as it is the case in many successful countries like Finland.

Enhancing the professionalism of teacher should be one of the main concerns of the education reform together with improving the" current profile of teaching staff at Faculties of Education", "reforming the curricula and teaching methods", "improving the assessment mechanisms to better supplement teaching and learning", "providing more diverse opportunities for lifelong learning", "formulating an effective resource strategy and reforming the admission system" and "designing a system graduating and recruiting quality candidates into teaching".

Teacher quality is a composition of several factors brought together and functioning effectively in a harmony: teacher's status, payment and conditions of work, teacher's academic and professional education. The teacher education system through its initial and continuing professional development programs is expected to ensure adequate supply of professionally competent teachers to work in schools. Initial teacher education, especially, has a major part to play in the making of a teacher. It marks the initiation of the novice entrant to the calling and as such has tremendous potential to prepare the would-be teacher with proper motivation, knowledge, skills and attitudes. Therefore, it is not wrong to say that the bottom line of teacher education is the quality of teacher performance in terms of its impact on the learner and indirectly on larger social transformation as stated in many cultures.

If a real change is planned to be created all these factors should be taken into consideration and implemented with care and caution professionally.

In ATEE 2012 annual conference, results of the strategy proposal and proposed recommendations will be shared with the participants and shared with the readers.

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A COMPARATIVE STUDY ON POLICIES FOR PROMOTING TEACHER PROFESSIONAL DEVELOPMENT IN AUSTRALIA AND CHINA BASED ON TWO INITIATIVES

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Abstract
For the past few years, there has been a growing attention to the issue of teacher professional development among governments in many countries. Many policy initiatives on promoting teacher professional development have been designed and implemented to improve the quality and status of school teachers. Governments in Australia and China both established a crucial initiative on teacher professional development in succession at the turn of the century—"Australian Government Quality Teacher Programme" and "Primary and Secondary School Teacher Continuing Education Project". This study, taking a comparative perspective, discusses and analyzes the policies for promoting teacher professional development in Australia and China based on the two initiatives. The context of the two initiatives is described, and the objectives, funding investments, elements and implementation, evaluations and achievements of these initiatives are illustrated and compared. The similarities and differences between the two initiatives on their establishment, implementation and evaluation are then demonstrated after the above analysis.

Keywords: teacher professional development, continuing education, professional quality, status

Introduction

Policy initiatives for promoting teacher professional development have been taken by many governments to improve teacher professional quality ever since the 1960s, especially since the 1980s. (Department of Teacher Education in Ministry of Education of China, 2003, p. 12) Teacher professional development has become the tendency in the field of teacher education in many countries. It also has become the research focus which has been discussed by many western scholars. There is a growing consensus among educational reformers that professional development for teachers and school leaders lays at the center of education reform and teaching improvement (Elmore & Burney, 1997, p. 1).

There are various reasons why teacher professional development policies are promoted and emphasized so strongly by so many governments. Teachers can not prepare well to meet the needs of social development only by pre-service education, as the circumstance of economic and education changes quickly nowadays. In-service education and professional development activities need to be initiated and the notion of life-long learning needs to be understood and fulfilled by school teachers. (Centre for Educational Research and Innovation of OECD, 1998, p. 17) Professional development practices can help teachers to acquire knowledge and skills to meet the needs of classroom teaching. Teachers can prepare well to make correct teaching decisions after they've gained professional skills and knowledge. (Vrasidas Charalambos & Glass Gene, 2004, p. 2)

The 21st century has brought opportunities as well as challenges to teacher education. At the turn of the century, governments in Australia and China both designed and implemented policy initiatives on teacher professional development—"Australian Government Quality Teacher

Programme" (hereinafter to be referred as AGQTP) and "Primary and Secondary School Teacher Continuing Education Project" (hereinafter to be referred as PSSTCEP). Governments in Australia and China both try to improve teacher quality and enhance their professional standings by in-service training activities for all the school teachers. The two policy initiatives, which are crucial in the field of teacher education in their own countries, both have attained some achievements. Questions, suchlike what are the objectives of these initiatives, what are the similarities and differences of the implementation and evaluation of the two initiatives, deserve to be discussed and analyzed. The intention of this research is to take a comparative perspective to analyze the policies of teacher professional development in Australia and China based on the above two initiatives. The research tries to compare the objectives, implementation, evaluation and achievements of these initiatives in order to give a broad view of policies on promoting teacher professional development in Australia and China.

Concept clarification of teacher professional development

Professional development (or commonly known as "PD"), in a broad sense, refers to the development of a person in one's professional role (Villegas-Reimers, 2003, p.11). Although different scholars tend to have a variety of opinions on what teacher professional development is, they basically agree that professional development is the process of improvement on a teacher's professional knowledge, capability and professional status. For instance, Glatthorn regards teacher professional development as "the professional growth a teacher achieves as a result of gaining increased experience and examining his or her teaching systematically" (Glatthorn, 1995, p.41). Another example can be found in the research of a Hong Kong scholar named Lu Nai-Gui. According to his viewpoint, teacher professional development is a process that a teacher gains his (her) professional growth, acquires new knowledge, and improves professional capability continually through the whole professional career cycle (Lu Nai-Gui, 2006).

In Australia, the term professional development means "deliberate process designed for the purposes of teacher post-initial professionally related education and training" and it can be replaced by "training and development", "in-service education", "professional learning", "training and professional development" in different parts of the country (McRae, Ainsworth, Groves, Rowland, & Zbar, 2001). Therefore, in the Australian context of education, teacher professional development can be understood as the similar or even the same form of in-service teacher education, which differs from the definition given above (Ling; MacKenzie, 2001).

Chinese scholars pay much attention to the issue of teacher professional development because of the whole world tendency and the urgency to enhance teachers' professional level in China. Their understanding about what professional development is becomes much broader than ever before since more and more foreign researches have been cited and integrated. Many scholars in China consider that teacher professional development, which strongly emphasized the idea of lifelong learning, is the systematic process that teachers improve their professional level and make themselves become mature professionals (Zhu Xu-Dong, Zhou Jun, 2007; Lian Rong, 2007, 7-8; Chen Xiang-Ming, 2003; Department of Teacher Education in Ministry of Education of China, 2003, p. 50). More and more scholars in China insist such systematic process should include both pre-service education and in-service education. However, when referring to teacher professional development, they still emphasized more on in-service training rather than pre-service education.

Due to the education context in Australia and China, teacher professional development mentioned in this paper only focuses on school teachers' in-service education. It means the systematical and continual process that a teacher enhances his (her) professional level, acquires new knowledge and improves his (her) professional status. The two initiatives taken by

Australian and Chinese government respectively — AGQTP and PSSTCEP were both designed for primary and secondary school teachers to promote their professional development.

Context of the two PD policy initiatives

Context of AGQTP

The context factors which Australian government took into account when establishing AGQTP were improving student learning achievement, and the significant shift being faced by schooling. Australian Commonwealth Government regards improving students' learning achievement as their key strategic objective in the 21st century. Besides, they strongly believe that teachers with high quality can help to improve students' achievement. The Adelaide Declaration on National Goals for Schooling in the Twenty-First Century (hereafter Adelaide Declaration), which was released in 1999, expresses that one of the national goals for school education is to improve students' learning. It also claims that all the governments in Australia should "safeguard the entitlement of all young people to high quality schooling" (Adelaide Declaration, 1999). In recent years, many researches in Australia and overseas try to demonstrate the close relationship between teachers' professional quality and students' learning. For example, Australian scholar Peter Hill finds that effectiveness of teachers is the key factor to improve educational outcomes (Hill, 1993). Linda Darling-Hammond, an American Professor, also points out that "teacher quality variables appear to be more strongly related to student achievement" than other factors and policies promoting teacher development might help to improve students' performance (Darling-Hammond, 1999). As a consequence, designing and implementing policies for promoting teacher professional development, suchlike AGQTP, may help all the students in Australia to improve their learning achievement.

The transformation being faced by school education was also one of the background factors that Commonwealth Government considered. There is a strong positive trend rise in the median age of teachers since the late 1970s in Australia (Committee of Inquiry into Education and Training, 2003). In other words, school education has faced an ageing teaching population for years. A significant transformation has appeared in the field of teaching, as time goes by, "from education based on the inculcation of knowledge to higher order thinking, underpinned by skills to access and process information" (DEST, 2005). In response to such transformation, Commonwealth Government designed AGQTP to help teachers to get much closer to the right direction of schooling in the new century.

Context of PSSTCEP

Considering the domestic and overseas background factors, Chinese government indicates that the 21st century will bring opportunities as well as challenges to teacher education. They had to design a continuing education project for school teachers because of the pressure of international competition, requirement from economic development and the low level of professional quality of school teachers in China.

Yuan Gui-Ren, the minister of Ministry of Education in China, once pointed out that the government should improve national quality by education in order to enhance the international competitive power of China (Yuan Gui-Ren, 2001). Chinese government believes high quality education relies on high quality teachers just like Australian government does. As a result, teacher development initiatives, which can help to improve teachers' quality, will enhance China's international competitive power indirectly.

The government attaches importance to the strategy of invigorating the country through science and education in order to face the challenges in the economy field and they're convinced that education depends on qualified teachers. The first 5 to 10 years in the 21st century is the important phase of social economic development in China. The government has to deal with the problem that how to transform the burden of large population into the advantage of human

resources. Doubtless, high quality education, which relies on teachers' professional quality, is the key to solve this problem. To sum up, building a teacher development project can help government to cope with economic stress actively.

Chinese government has laid school education in a vital strategic position and they care about teachers' professional quality, especially since the new century. A majority of people in China still don't think teaching profession is un-substitutable or consider teachers can only be "paraprofessionals" (Lian Rong, 2007, p. 29). The average professional level of school teachers in China is low. And compared with some developed countries, the system of teacher professional development in China is far from being perfect. So, it is quite necessary for the government to design and promote a teacher development initiative at the turn of the century.

Implementation of the two PD policy initiatives

Based on the above context factors, governments in Australia and China built their own policy initiatives on promoting teacher professional development in succession at the turn of the century. Commonwealth Department of Education, Science and Training in Australia designed the program "Teachers for the 21st Century: Making the Difference" in 1999. As a branch part of this program, "Australian Government Quality Teacher Program" was established in 1999, started up formally in 2000 and lasted till 2009. Ministry of Education in China started "Primary and Secondary School Teacher Continuing Education Project" in Sep. 1999 and implemented this project till 2002. The main objectives, funding investments, the key elements and implementation of these initiatives are described and analyzed as follows.

Main objectives of AGQTP and PSSTCEP

Objectives of the two initiatives respectively

The basic function of AGQTP is to enhance school teachers' professional quality in Australia through the consistent negotiation of Commonwealth Government, state or territory governments and non-government education authorities. To be specific, the main objectives of AGQTP are to: improve teachers' professional skills and knowledge for the 21st Century; provide national leadership in priority areas of teacher professional development; enhance the professional status of teachers in Australia (DEST, 2006).

One of the objectives of PSSTCEP is to improve the whole country's teacher quality in order to meet the demand of quality-oriented education in China. Besides, Ministry of Education in China has also designed some specific objectives of the project: to select and train quality teachers; to improve teachers' computer application ability; to design curriculums and teaching materials for teacher continuing education in the 21st century; to establish related laws and regulations; to constitute an open system which includes the participation of higher education institutions, related authorities and teacher colleges; to develop experiments and researches on teacher continuing education (Ministry of Education of China, 1999).

The similarities and differences between their objectives

The similar objective of the two initiatives is to enhance school teachers' professional quality (including skills and knowledge needed for teaching in 21st century) and skills needed in professional learning priority areas (for example, computer application capability). Differing from the objectives of AGQTP which all aiming at teachers directly, some goals of PSSTCEP refer to building teacher continuing education system and establishment of related laws or rules.

Funding Investments for AGQTP and PSSTCEP

Funding investment for AGQTP

The Commonwealth Government provides funds for the program. The majority of these funds are used for starting and promoting the state and territory projects. The funding allocation for

state and territory initiatives is based on the proportional share of student enrollment in each state and territory. However, there is a minimum funding threshold of $400 thousand for each state and territory's jurisdiction. (DEST, 2005)

The total funding of AGQTP in the period 2000 - 2003 was $77.7 million, among which $6 million was used for promoting the policy, $70.2 million was used for activities at state and territory, $1.5 million was provided for the related authorities to implement the program. (DEST, 2000) From 2003 to 2006, the total funding was $82.4 million (DEST, 2005). The Commonwealth Government provided $139.9 million ($87 million used for state and territory projects) for promoting AGQTP from 2006 to 2009 (DEST, 2006). The funding investment for each state and territory from 2006 to 2009 is shown in Figure 1.

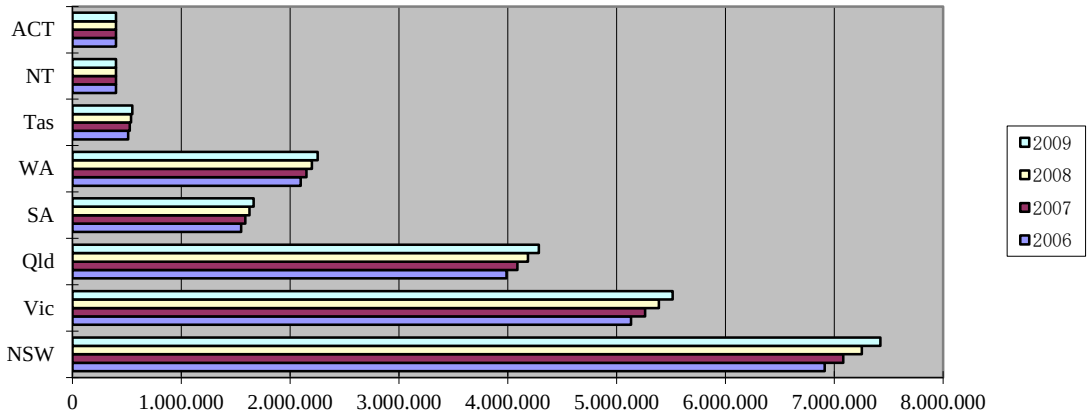

Figure 1[6]: *AGQTP funding by State and Territory (2006-2009)*

To sum up, the funding investment for AGQTP has a remarkable rise ever since the starting year. According to Figure 1, the funds used for state and territory based projects in most places of Australia have also increased during 2006-2009. The huge funding investment makes AGQTP become the most significant policy initiative in the field of teacher professional development by Australian Commonwealth Government in the recent years.

Funding investment for PSSTCEP

Differing from the funding source of AGQTP, local governments in China take the primary responsibility to afford funding for PSSTCEP. Chinese Central Government regards that local governments should be responsible for teacher continuing education and they should ensure that the funding investment of PSSTCEP is sufficient based on the principle of "local governments taking responsibility and administration at multi-level" (Ministry of Education of China, 2000). The funding provided by Central Government is only used for selecting and training model teachers and designing the curriculums and learning materials for teacher continuing education. Obeying the Central Government's strategic decision, local governments in China raise funding to support the objectives of PSSTCEP. Province government of Hunan had spent ¥315 million on building teacher training base from 1999 till 2002 (Zhu Yi-Ming, Tian Hong-Zhong, 2002). Zhejiang and Chongqing raised funding from three sources (local government, schools and teachers). Zhejiang has spent ¥120 million on training for model teachers and ¥80 million on preparing equipment and doing research for teacher continuing education (National Education

[6] Data Source: Department of Education, Science and Training. (2006). Australian Government Quality Teacher Program: Client Guidelines 2005 to 2009. Canberra: Department of Education, Science and Training.

Supervision Group, 2003). The total investment on teacher continuing education was ￥80 million in Chongqing from 1999 to 2003 (Zhu Yi-Ming, Tian Hong-Zhong, 2002). Province government in Fujian used ￥77.27 million for school teacher training during the period 2000-2002. The investment on model teacher training in Shandong Province was ￥21 million. Gansu had carried out many cooperative programs with foreign countries to raise funds and had invested ￥120 million on school teacher training since 1999 (National Education Supervision Group, 2003).

The differences between their funding investments

As a conclusion, the funding of AGQTP is provided by Australian Commonwealth Government while the funds of PSSTCEP are offered by local governments in China.

Actually speaking, the gap between Australia and China still exists in the field of funding investment of teacher professional development policy initiatives. Australian Commonwealth Government not only offers funding for program, but also sets standards of funding allocation.

Although Chinese Central Government designed six elements of PSSTCEP, they nearly did not offer appropriative funds for this project. The funding supplied by Central Government and local governments is mainly used for model teacher training and developing curriculums of teacher continuing education. Besides, the funding of PSSTCEP is very insufficient in some places as there is a huge difference of economic development among different parts of China. Some local governments forced teachers to attend training and professional learning activities and even made teachers pay activity cost by themselves. Such situations made PSSTCEP develop in an unhealthy way and even brought adverse social effects (Zhu Yi-Ming, Tian Hong-Zhong, 2002). Shortage of funding investment had restricted the development of PSSTCEP.

The key elements and implementation of AGQTP and PSSTCEP

Elements and implementation of AGQTP

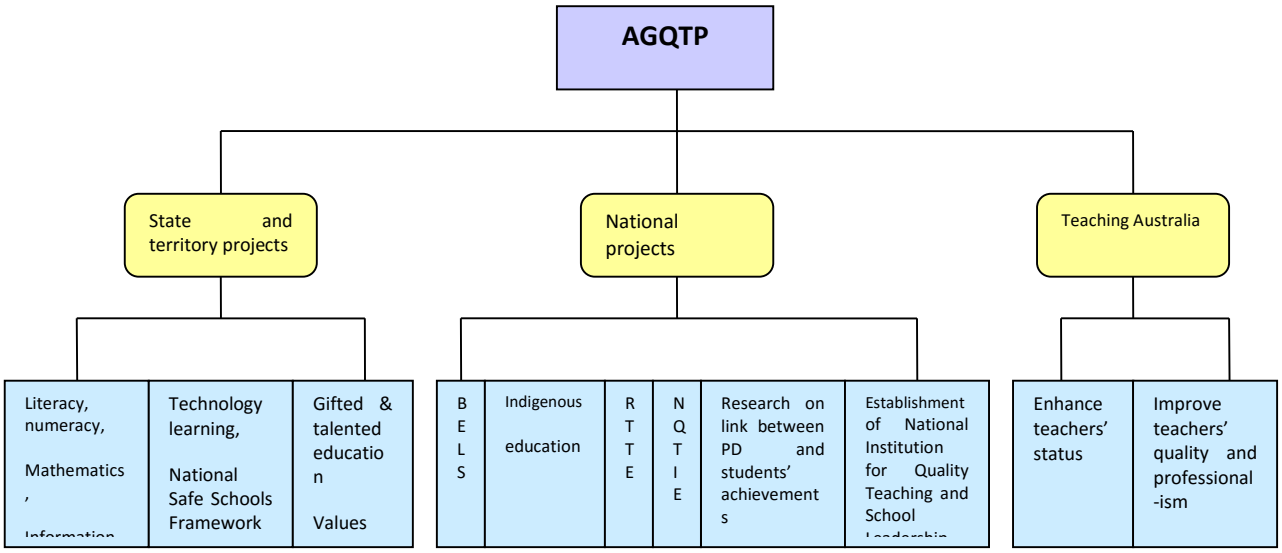

Figure 2[78]. *Structure of AGQTP*

AGQTP has three elements just like Figure 2 shows.

State and territory based professional learning projects: providing funds for teachers at government schools and non-government schools to promote their professional development, improving their professional skills and knowledge. The priority funding areas at state and territory level are just like Figure 2 demonstrates. The implementation if AGQTP needs cooperation from education authorities, including state and territory governments, Catholic and independent school authorities and teacher professional development associations. Education authorities who want to participate in the program must subscribe a contract on funding using with governments. A single cross-sectoral committee is built to deliver and fulfill the task of AGQTP through collaborative activities with state and territory governments, Catholic and independent school sectors, teacher professional teaching associations and state/territory Deans of Education. Education authorities may elect their representatives to take the responsibility of contact where cross-sectoral committees are not built.

National projects: designing and implementing some projects to support objectives of AGQTP under a broader national policy framework. National projects mainly focus on these goals: enhancing teachers' quality and status; improving school leaders' capability; doing some researches to promote teaching and school leading innovation; delivering some effective practices of Quality Teacher Program. Over 40 projects have been implemented or started at the national level (DEST, 2006). The main national strategic initiatives are shown in Figure 2 (DEST, 2005). National projects are approved by the minister or his/her delegate. The minister or his/her delegate also has the right to determine the funding provided for each national strategic initiative. The procurement processes for national projects may take the form of "open competitive tender, selective tendering, or funding agreements" (DEST, 2005).

[7] Data Source: Department of Education, Science and Training (2006). Australian Government Quality Teacher Program: Client Guidelines 2005 to 2009. Canberra: Department of Education, Science and Training.

Department of Education, Science and Training (2005). An Evaluation of the Australian Government Quality Teacher Programme 1999 to 2004. Canberra: Department of Education, Science and Training.

[8] BELS: 'Boys' Education Lighthouse Schools'; RTTE: Review of Teaching and Teacher Education; NQTIE: the National Quality Teacher Information Exchange.

Teaching Australia: Australian Institute for Teaching and School Leadership, which is a national body for the teaching profession in Australia, supports some objectives of AGQTP. Its practices aim to enhance teachers' status and improve teachers' quality and professionalism. Teaching Australia should sign a contract with DEST to achieve funding for activities.

Elements and implementation of PSSTCEP

The dividing way of elements of PSSTCEP, which differs from that of AGQTP, depends on the training objects and training materials.

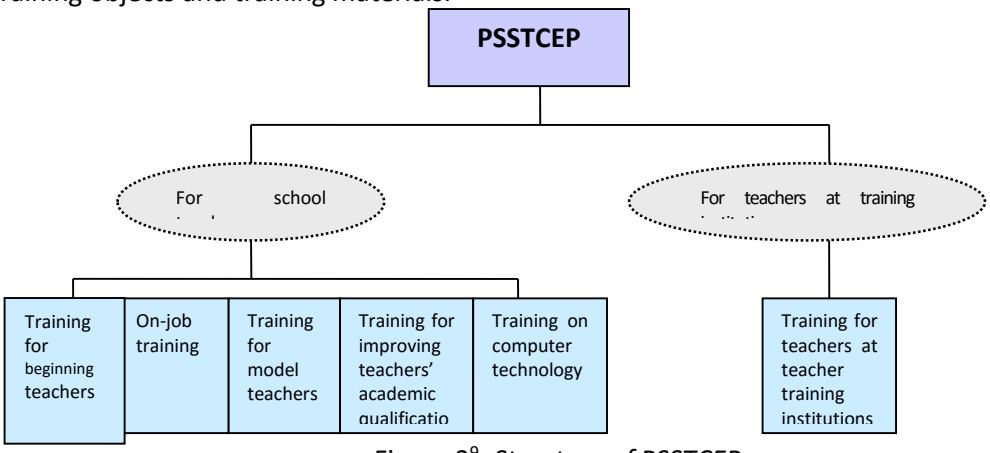

Figure 3[9]. *Structure of PSSTCEP*

PSSTCEP has six elements like Figure 3 shows: training for beginning teachers (who have entered to teaching profession less than a year) to help them to meet the needs of teaching profession; on-job training for all teachers who have entered into teaching profession for more than a year to meet the needs of quality-oriented education; selecting 1 million model teachers and training them into experts in the field of teaching profession or education research; improving academic qualification of all the teachers in China to enhance their professionalization; delivering computer technology training to all the teachers in order to make them acquire computer application capability; training for teachers working at teacher training institutions to make them work efficiently.

Ministry of Education in China also has designed four infrastructure projects (establishing related laws, designing curriculums and teaching materials, building networks, constructing evaluation system) and five necessary assurance measures (building an administration system, improving training system, doing researches related with teacher continuing education, strengthening evaluation and raising funds for the project) to ensure the six elements of PSSTCEP working effectively. The mechanism for assuring the implementation of the project is shown in Figure 4.

[9] Data Source: Ministry of Education of the People's Republic of China. (1999) Primary and Secondary School Teacher Continuing Education Project. Beijing: Ministry of Education of the People's Republic of China.

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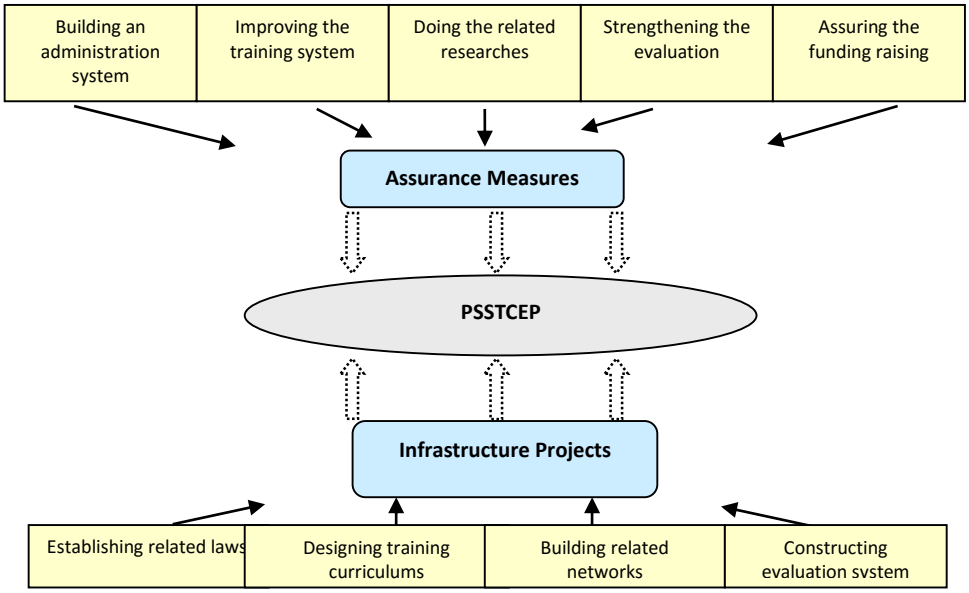

Figure 4[10]. *Assurance mechanism of the implementation of PSSTCEP*

The similarities and differences between their elements and implementation

The two initiatives have some differences between their objectives and they also have many different characteristics on their elements.

Firstly, the dividing way of the two initiatives' elements is quite different. The system of education administration in Australia is decentralization. In teacher education field, Commonwealth Government and state or territory governments have their own responsibilities. Commonwealth Government takes responsibility on establishing national teaching profession standards and related evaluation system. State and territory governments design their teacher education initiatives and managing methods based on their own circumstances. The dividing way of three elements, which depends on the different authorities and responsibilities of three governing bodies, can obviously reflect the characteristic of decentralization in Australia. In contrast to the situation in Australia, the system of education administration in China is centralization. Central Government in China makes the strategic decisions on education which should be obeyed by local governments. Central Government divided six parts of elements depending on the different training objects and training materials.

Secondly, the areas, that the two initiatives' elements emphasizing on, are also different. Government in Australia claimed the priority areas of professional development in AGQTP are some curriculum areas (for example, mathematics, science and information technology) and some special teaching fields (like talent teaching, values education). However, Chinese government attaches their importance to deliver fundamental continuing education to all the teachers in China through PSSTCEP. This project is a kind of teacher training initiative which has the characteristic of popularization and the training areas are basic and elementary.

The two initiatives have some common points on their elements even though their diversities are as clear as demonstrated above. Since globalization and informationization has a significant influence to many countries in the world, governments in Australia and China both focus on information technology training for school teachers through the two initiatives to help teachers improve modern teaching technology. Besides, both AGQTP and PSSTCEP have content on

[10] Data Source: Ministry of Education of the People's Republic of China. (1999) Primary and Secondary School Teacher Continuing Education Project. Beijing: Ministry of Education of the People's Republic of China.

http://www.moe.edu.cn/edoas/website18/level3.jsp?tablename=522&infoid=3579.

training for beginning teachers. One of the elements in PSSTCEP is training for beginning teachers who have entered teaching profession for less than a year. Australian government also offers great support to promote beginning teachers' professional development through AGQTP.

Evaluation of the two PD policy initiatives

Australian Commonwealth Government and Chinese Central Government both consider the evaluation of teacher professional development initiatives is important. And they both carried out some evaluation measures and published some evaluation reports or communiqués.

Evaluation of AGQTP

Department of Education, Science and Training attaches importance to the evaluation issue of the program. One of the conditions to attain funding is that the funding recipients and contractors should assist any evaluation activities of AGQTP by DEST. If funding recipients have undertaken their own evaluation of AGQTP projects, they should provide a copy of evaluation report for DEST for the overall evaluation of the program (DEST, 2006).

DEST published an evaluation report of AGQTP in 2005—"An Evaluation of the Australian Government Quality Teacher Programme 1999 to 2004". This report gives an evaluation and review of the implementation of AGQTP from its starting year to 2004. The data and information used for evaluation is basically from: existing activity reports, project reports; a survey of over 1900 principals; interviews with education authorities, related officers and key stakeholders; case studies of 55 initiatives. (DEST, 2005) The report assesses the following three issues in the context of program objectives and policy framework: the effectiveness of AGQTP in reaching the objective of enhancing teacher skills and understanding; the appropriateness of the program in the issue of meeting teachers' needs and governments' priorities; the efficiency of the related areas of AGQTP, suchlike value for funds and resources level, activity delivery, and assessment and reporting (DEST, 2005).

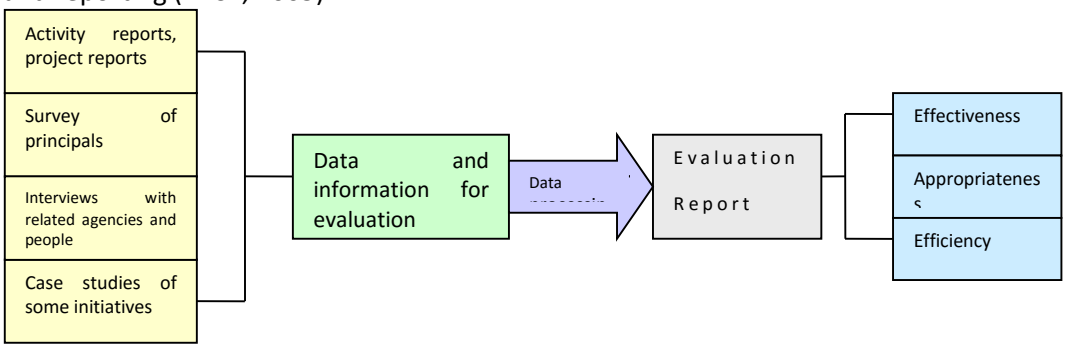

Figure 5[11]. *The Evaluation of AGQTP by DEST*

Evaluation of PSSTCEP

Chinese government also emphasized the evaluation and supervision issue of PSSTCEP. At the mid-late phase of PSSTCEP, National Education Supervision Group (NESP) had organized some experts and superintendents to inspect the implementation of PSSTCEP in more than 20 provinces and municipalities for many times. The related supervision activities initiated by NESP are presented as follows: checking the reviewing materials and files of the implementation of PSSTCEP; reporting from local education authorities and schools; conversaziones with officers of this project, teachers at training institutions, school teachers and school principal; investigation at training bases, schools and other field surveys; distributing questionnaires.

[11] Data Source: Department of Education, Science and Training (2005). An Evaluation of the Australian Government Quality Teacher Programme 1999 to 2004. Canberra: Department of Education, Science and Training.

(NESP, 2003) Several communiqués on evaluation or supervision of PSSTCEP were published in the official website of Ministry of Education. Generally speaking, these communiqués refer to the following issues: the implementation of this project and its progress; the practice modes and successful experience in all parts of the country; the main problems hampering the implementation; and policy recommendations.

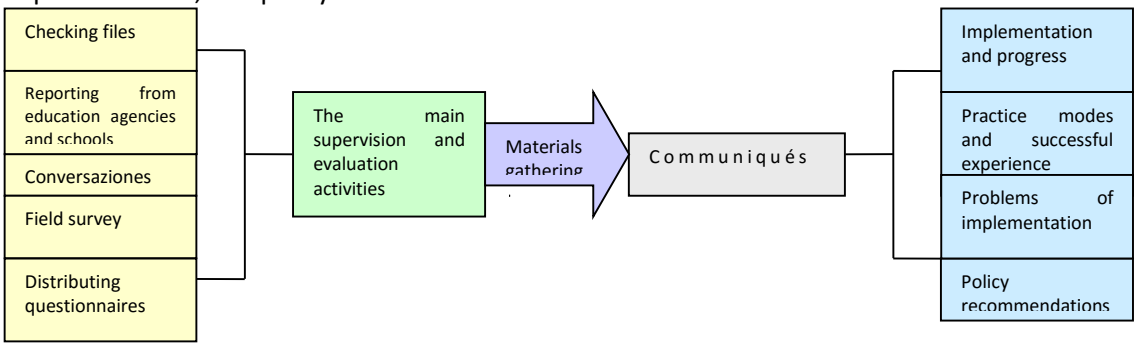

Figure 6[12]. *The Evaluation of PSSTCEP by NESG*

The similarities and differences between their evaluations

It can be concluded from the above that governments in Australia and China both emphasize the importance of evaluation of PD initiatives. DEST and NESG both carried out evaluation initiatives for AGQTP and PSSTCEP respectively and they both published reports or communiqués. Australian and Chinese governments both took some similar measures to get data and information for evaluation, like interviews or conversaziones with education authorities and related officers, survey of school principals, and delivering questionnaires.

Though the two policy initiatives have the above similarities on their evaluation issues, they also have some differences on evaluation. According to the data and information selecting, data processing and evaluation report itself, the evaluation activity of AGQTP seems to be a kind of education research which is scientific and systematic. However, the evaluation activities held by Chinese government are Central Government's supervision and inspection to local governments and schools. As a conclusion, the two governments have their own characteristics in policy evaluation matters.

The achievements of the two PD policy initiatives

AGQTP and PSSTCEP have got some common achievements: school teachers' professional quality has been improved in Australia and China; the professional status of teachers has been enhanced to some extent; a majority of teachers got opportunities for their in-service education; and modern teaching technologies have been strengthened.

The professional quality of school teachers in Australia and China has been improved

[12] Data Source: National Education Supervision Group (2002). Communiqué of Supervision and Examining of implementation of "Primary and Secondary School Teacher Continuing Education Project" in Hebei and other provinces (municipalities) by National Education Supervision Group. http://www.moe.edu.cn/edoas/website18/level3.jsp?tablename=1065&infoid=14295 Beijing: Ministry of Education of the People's Republic of China.

National Education Supervision Group (2003). Communiqué of Supervision and Examining of implementation of "Primary and Secondary School Teacher Continuing Education Project" in Beijing and other provinces (municipalities) by National Education Supervision Group. http://www.moe.edu.cn/edoas/website18/level3.jsp?tablename=1065&infoid=14285 Beijing: Ministry of Education of the People's Republic of China.

The professional quality of school teachers in Australia and China has been improved through the implementation of AGQTP and PSSTCEP. Australian government regards the improvement of teaching skills in priority areas as the development of professional quality while Chinese government regards the enhancement of teachers' academic qualification as the improvement of teacher professional quality.

AGQTP focuses on the improvement of professional standards of school teachers in government priority areas, suchlike science, literature and numeracy. DEST indicates that a number of evidences from evaluation data and information can show that AGQTP has a significant effect on improving the skills and understanding of teachers (DEST, 2005) 75% of the survey respondents admit that activities of AGQTP have a long-term impact on teaching practice. Besides, the survey by DEST illuminates that state and territory initiatives have gained huge achievements in all priority curriculums including literature, mathematics, science and vocational training (DEST, 2005).

The improvement of teachers' academic qualification is regarded as the development of teacher professional quality in China. A communiqué by National Education Supervision Group points out that: compared with the situation in 1999, the qualified rate of academic qualification of primary school teachers in Beijing and other provinces (municipalities) has increased by 1.55%, that of junior middle school teachers has rose by 4.67%, and that of high school teachers has heightened by 6.56% in 2002. (NESG, 2003) So, the quality and academic qualification of school teachers in China has been improved through the implementation of PSSTCEP.

The professional status of teachers in Australia and China has been enhanced to some extent

One of the original objectives of these two PD policy initiatives is to improve the professional status of school teachers. And this objective has been achieved to some extent.

One of the national strategic initiatives of AGQTP is the establishment of National Institute of Quality Teaching and School Leadership. And this institute tries to improve school teachers' professional status and has got some achievements. Evaluation by DEST also shows that teachers' self-esteem and confidence about their career has been improved (DEST, 2005). Nevertheless, limited evidence can demonstrate that community standing of teacher has been enhanced through the implementation of AGQTP.

The in-service teacher education system in China is immature. And many Chinese people don't regard teachers as professionals. Government in China emphasized on establishing related law and constructing in-service teacher training system to make teacher continuing education be more standardized, systematic than before by PSSTCEP. PSSTCEP also has an impact on improving teacher professionalization and enhancing community standing of teaching profession gradually (Li Jing, 2003).

A majority of teachers in Australia and China have received opportunities for their in-service education

A majority of school teachers in Australia and China have got opportunities for their in-service education due to the implementation of AGQTP and PSSTCEP.

AGQTP provides school teachers with professional development opportunities in all states and territories of Australia. For instance, 300 thousands teachers in Queensland had participated in the training activities of literature, numeracy, science and vocational education during 2000-2003 (DEST, 2005). PSSTCEP also provides many opportunities on continuing education for school teachers in China. More than 80% of school teachers had joined the activities of PSSTCEP and over 90% of school teachers had finished computer technology training in Beijing and other 10 provinces (municipalities) until Oct, 2000. (NESG, 2003).

The modern teaching methods (suchlike computer technology) have been strengthened in the two countries.

Activities of AGQTP and PSSTCEP have helped school teachers in Australia and China to strengthen modern teaching technologies, suchlike computer technology and multi-media technology.

Australian government attaches great importance to the modernization process of education. According to AGQTP' guideline of using computer network in teaching activities, government of New South Wales designed related programs to strengthen multi-media technology in the instruction for indigenous students. The using of multi-media technology mentioned here includes helping students to use websites, and telling stories to students by using digital movies. Thanks to PSSTCEP, 50% of school teachers in the countryside have accepted computer application technology training, and nearly 20% of school teachers can use computer technology in their learning and teaching activities. 95% of teachers who are less than 45 years old have reached the "elementary level" of computer technology using. (Li Jing, 2003)

Although they've attained the above common achievements, the two PD policy initiatives also have some different achievements due to the differences on their objectives and elements.

AGQTP has strengthened training for beginning teachers in order to help them to make better role transformation from students majoring in education into school teachers. The partnership of professional associations, higher institutions and other related agencies has been established, and the infrastructure of teacher professional learning has been consolidated. AGQTP helps to improve the teaching quality of indigenous students and maintain the cultural diversity of Australian society.

Other achievements attained by PSSTCEP are: helping to establish the system of school teacher continuing education to some extent; getting significant achievement on training for model teachers (Zhu Yi-Ming, Tian Hong-Zhong, 2002); promoting teachers who have accepted discipline training to meet the needs of the new round school education reformation (Li Jing, 2003).

Conclusion

Improving teacher professional quality is an important issue which has aroused great attention from governments both in Australia and China. AGQTP and PSSTCEP, which were taken at the turn of the century, are definitely crucial strategic policies in Australia and China.

It can be concluded that Australian government and Chinese government pay attention to some similar issues of teacher professional development through the comparison of objectives, implementation and evaluation of the two PD initiatives. For example, they both emphasize on training for beginning teachers and improving information technology of teachers. Besides, they both strengthen evaluation initiatives to inspect the effects of these policies. However, due to the different systems and the different situation of Australia and China, characteristics of the two initiatives' operation still exist just as discussed above.

Actually speaking, compared with the successful practices overseas, in-service teacher education in China is far from being perfect. To be specific, the duality model (Zhu Xu-Dong, 2009) of separation between pre-service education and in-service training in China can not bring the integration of all phases in teacher education. Neither teacher professional development standards nor the related frameworks have been set up in China. The standards for establishing training institutions and teacher professional development agencies also have not been designed.

Australian government has attached importance to in-service teacher education and teacher professional development ever since 1980s and has published some related reports on such issues. Government in Australia has taken many initiatives on promoting teacher professional development and made huge investment in policy operation since 1990s. As a matter of fact,

Commonwealth Government and state or territory governments have tried to negotiate to develop the national teaching standards and the national identifying system of teacher quality. According to the comparison of AGQTP and PSSTCEP, the big gap between China and Australia in the issues of PD initiatives' designing, implementation and evaluation still exists. Australian Commonwealth Government assumed to enhance the quality and status of teachers in older to improve teaching quality and student outcomes by AGQTP in a broader policy framework. However, the policy framework of teacher continuing education in China is still lacked. Central Government in China tried to establish this framework by constituting related laws and founding an evaluation system through PSSTCEP. Besides, although PSSTCEP has six elements and branch programs, many elements of it nearly have no appropriative funds from government at all. Hence, the gap in funding investment between PSSTCEP and AGQTP exists, too.

Improving teacher quality by taking related PD initiatives is a long-term process. This process not only needs the cooperation and participation by government, related education authorities, higher education institutions, schools, teacher training institutions and other stakeholders, but also needs the attention by all walks of life. Though the implementation of AGQTP and PSSTCEP has already finished, the two initiatives' impact on teacher quality improvement and related policy making still needs to be discussed and analyzed by following researches.

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Teacher education for practice

EDUCATIONAL INNOVATION AND THE ROLE OF MENTORING

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Abstract
Schools are experiencing a rapid change of educational practice with an increased demand of professionalism of teachers and teacher educators. Collaborative reflection and discourse in mentoring for teacher education are a basis on which change can occur. In the European project GIMMS (Gender, Innovation and Mentoring in Mathematics and Science) collaborative models of mentoring in science teacher education were studied. A central outcome was that mentoring changed during the lifetime of the project to a more collaborative model where student teachers prepared lessons with mentor teachers and they learned from one another. Extended collaboration across borders and policy involvement with stakeholders of different communities for educational innovation developed gradually over time. Overall the GIMMS approach was successful in developing innovation in science teaching and teacher education.

Keywords: mentoring, innovation, science teacher education, collaboration, border crossing

Introduction: Science education in transition

Schools all over Europe are experiencing a rapid change of educational practice in accordance with reform requirements and political demands. In order to guide these innovative processes modern solutions in teacher education need to be traced. Mentoring in teacher education is seen as an opportunity to generate reflective collaboration leading to such innovative processes. This innovative aspect involves third order political knowledge of teacher educators, emphasized here, in addition to the usual requirements of first order localized practitioner knowledge and second order contextual knowledge about teaching adult experienced teachers as Murray and Male suggest (2005, p. 131) "We define such mentors as being involved in second-order work (in that they are inducting student teachers into the profession), but it is important to note that this work takes place within the first-order settings of their schools, drawing on their localized, practitioner knowledge of those settings in order to induct student teachers."
Teacher educators as "second order practitioners" are expected to get involved in scholarship, research and a wider perspective across boundaries of narrow school contexts as Boyd and Murray (2011) propose in their guidelines for teacher educator induction. They argue, that these wide-ranging opportunities for learning in teacher education can best be described by an "expansive learning environment" in activity theory building on work-place studies by Engeström (2001). This environment is characterized by collaborative working across borders, supportive collegiality for teacher learning beyond institutional and governmental priorities, out of school learning for reflection and research in communities of practice.
A significant challenge for teacher educators is especially the underpinning of their practice by scholarship and research as Boyd et al. (2011) note. But cultures within university education departments vary considerably with regard to school-based scholarship and research and create different expectations and possibilities for academics and teacher educators. Here aspects of boundary crossing between different communities of practice (Wenger, 2005) come into play that need specific strategies and settings for collaboration as elaborated in a European project

with different case studies (Hansen, Gräber, & Lang, 2012). The process of change we see in these studies requires new skills and roles for teachers which lie beyond a specific classroom level and involve crossing boundaries amongst different communities of practice. This focus on interacting community members is a new way of looking at the process of change as shared meaning making. Usually change in the educational systems is directly tied to content as subject matter, goals, teaching methods or differences in student learning and not to the circumstances of shared meaning making.

Engeström (2001) suggests that we need to look at subject-object relations in a community as a way of understanding how communities interact. He portrays these in the form of a diagram which shows all of the relations between activity components within subsystems. A complete subsystem consists of all possible relations between a *subject*, belonging to a *community*, dealing with an *object* of an intended activity, using *artefacts* for this activity and recognizing *rules* and *division of labour*.

If applied successfully in communities of practice with a setting for discursive justification of outcomes, changes in teacher education may be relevant for educational innovation. This innovative aspect needs special higher order collaborative activities across boundaries with teacher educators as "third order practitioners" being in the center of this study.

Cochran-Smith and Paris (1995) argue that alternative visions of mentoring beyond traditional transmission models are needed to support teachers in collaborative mentoring and reflective practice. There are different perspectives of mentoring represented in models such as described by Maynard and Furlong (1995). They distinguish the apprenticeship, the competency and the reflective model. In our case the *reflective model* is of special interest for innovation in education. It reflects a partnership based collaboration of initial and in-career teachers and mentors within a community of learners at school, exploring practical experiences in class in a flat hierarchy. Mooney Simmie and Moles (2011) argue for a productive mentoring that takes account of context, is conducted by activist professionals within an ethic of care and is focused on critical thinking.

However, this process of collaborative teacher involvement is not easily achieved. Borders of the different communalities with different cultures have to be recognized and crossed. As Dengerink (2012) in a study about learning preferences of educators in The Netherlands could demonstrate, learning preferences of school-based teacher educators and teacher educators from higher education institutes were different. Experienced teacher educators in school were interested in cooperation of their school with higher education institutes or policy or colleagues. But in contrast to these preferences, teacher educators from higher teacher education institutes preferred to stay within their community, research subject didactics and publish their research findings.

In addition to this a system of teacher education and supervision often does not support professional autonomy and collaboration of teachers. The function of teacher education and supervision is part of a system assessing success in system-wide achievement standards. Such management of teachers does not foster constructive engagement in innovation and change.

In science education we see an emphasis on formal reasoning: systematic and disciplined approaches to the teaching of higher order thinking skills (Olson, 2002). Attempts to integrate ideas from outside the sciences or a discourse across or beyond boundaries of science subjects tend to be resisted in traditional practice. But it is not only subject matter knowledge or academic training that account for good teaching. Collaboration among stakeholders and its transformative power of curriculum change is seen as an important element of innovation. This requires professional autonomy as well and support for a discourse between equals of different professional knowledge in school practice. Collaborative reflection and discourse in a network of practitioners and stakeholders is the basis on which innovation and change can occur.

A discourse across subjects and beyond schools, in which the value of practice is discussed, not only entails thinking about reorganising subject matter and higher-order thinking, but finding ways to justify those values for the socialization of learners as active and engaged citizens and the perpetuation of a society's cultural norms and values.
The European GIMMS project (Gender, Innovation and Mentoring in Mathematics and Science) brings into focus the complex role of the teacher educator as external agent to the school community in efforts to elicit innovation and change in the pedagogical and professional practices at the school site. The complexity of this role is appreciated when we understand the school, and the higher education institute, not as value-free and neutral sites, but places where education is contested and politics and power struggles play out on a continuing basis.
In the GIMMS studies, coordinated by the University of Limerick, collaborative, egalitarian and reflective models of mentoring were used to introduce and study innovation in science teacher education. Seven case studies from Ireland, Spain, Germany, Czech Republic, Denmark and Austria demonstrate a rich diversity of presuppositions in educational systems and project assumptions and expectations about innovation and teacher education.

Elaborating research questions about innovation and mentoring
GIMMS was undertaken against the backdrop of PISA 2003 to 2009 (Klieme et al., 2010) and the teacher policy study "Teachers Matter" (OECD, 2005). In the PISA study changes in student achievements over time were interpreted as a result of changes in the educational systems and especially the quality of teaching was seen as a central challenge of the school systems (Klieme et al., 2010, p. 296; translated from German):"There is a lot of evidence, that the professional development of teachers is an outstanding resource for the quality development of the educational system". The PISA comparative achievement scores and the insight about the importance of teacher professional development were a starting point for curriculum innovation and inclusion work in the GIMMS project.
The GIMMS project has one of its focuses on differences and similarities of mentoring in the participating European countries and will use these insights to develop and pilot mentoring relationships between initial and in-career teachers in physics, chemistry and biology. Hence one of the key research questions to drive the project was: How can we develop better partnerships between initial and in-career teachers and teacher educators for continuing professional learning, education and innovation?

The framework for innovation
GIMMS developed an agreed evolving framework that regarded curriculum innovation and continuing teacher education as political text and context (Aronowitz & Giroux, 2002). Curriculum as political text means that there is always a political context in education requiring a political discourse. The frame for this discourse depends on theories of class struggle, resistance, reproduction, hegemony, critical pedagogy or ideology. In education it is not so much an economical but a cultural struggle for change. Giroux emphasizes the importance of cultural change including border crossing activities beyond resistance.
In our study a deliberative discourse was defined with a multiplicity of actors, including teachers, teacher educators and policymakers. The team adopted a model of mentoring that was deliberative (Schwab, 1973) and crossed national and institutional borders and boundaries between schools and teacher education institutes.
This type of work involved mentoring relationships of learning between a number of different actors. In the case of GIMMS this included teachers and teacher educators. These diverse voices needed, within a curriculum innovation process, to be liberating and not oppressive. Curriculum innovation in each national system or part of it is defined as discourse with diverse voices in a cultural field (Giroux & McLaren, 1986). Voice develops through a physical and intellectual

journey beyond boundaries of classroom, of disciples, of culture, of home and school learning. This means that curriculum innovation is justified by shared meaning making with a diversity of voices or stakeholders from a variety of communities in open 'public spaces' and not by top down decisions such as national curricula, prescribed standards or unreflected expert statements.

The cultural approach of deliberating discourse is a political approach using basic democratic rules and protocols as opposed to radical approaches of resistance or anti-hegemonial power in a class society. This cultural approach for generating a political discourse of this nature has to do with power of arguments and communicative competency (Habermas, 1984) in an ideal setting for voice that is not distorted by structural or physical forces. Any structural constraint identified, such as an aspect of the hidden curriculum, may itself become a topic for deliberating discourse. This recognises the roles of politics and power within educational questions and issues (Apple, 2011). It becomes a question of egalitarian participation within the discourse.

Mentoring models in national case studies

In the GIMMS project each participating country developed a setting, a public space, in which stakeholders from different communities came together to develop shared meaning about curriculum innovation, change and pedagogical innovation. In most cases these stakeholders came from an education department of a teacher education institute or university and different science departments of schools. Political or administrative stakeholders were an exception, a critical factor in a political discourse about curriculum innovation and change.

In *Ireland* a model of collaborative and reflective mentoring with mentors from schools and the university, documented in a teaching handbook with a list of criteria for collaborative reflection of teaching (Limerick University, 2011) was realized. Teachers agreed to work on innovative approaches to teaching and learning science through collaboration in a variety of 'public spaces'. This was new for schools and teachers. The TALIS *Teaching and Learning International Study* (OECD, 2009) showed that experienced teachers in Ireland were less familiar with higher-order cooperation that involved discussion on matters of curriculum and pedagogy. GIMMS *Ireland* teachers became involved in multiple layers of collaboration, in their school setting, with teachers from other schools and with teacher educators. They engaged, reluctantly at first, in reflective writing and later involved their pupils in this process. Toward the end of the project the teachers took part in a political discourse with a number of regional and national policymakers. This was initiated through a Curriculum Workshop (Lang et al., 2006), a setting with a variety of stakeholders.

The case study in *Denmark* focused on raising student motivation and gender sensitive practices through a model of mentoring in a school-based collaborative setting for learning between teachers, teacher educators and pupils in the classroom. Case study schools focused on experienced teachers' co-planning with student teachers and developing teachers' higher order cooperation with each other and with teacher educators. An experienced teacher was the supervisor of the student teacher during their practice placement. Traditionally teaching is perceived as 'private' and experienced teachers do not generally open their classroom doors for observation or feedback. Pupils' needs are at the center of any discourse between teacher educators, student teachers and experienced teachers. Subject matter often takes less pride of place in the lower secondary education system, while in some instances teachers may not be fully qualified in subject knowledge.

GIMMS *Germany II* generated innovation in a framework that discussed context oriented biology education. It was developed as a course for biology student teachers about ethical issues in a number of topics in biology. Novel innovative classroom materials were developed and reflected upon. The processes that led to these resource materials was the type of deliberative discourse generated by experienced teachers, student teachers and the teacher educator. The

underpinning principles were those of a collaborative, reflective and dialogical mentoring with student teachers on a number of different levels, including personal professional development. This expansive model of mentoring, adopted from Niggli (2004), was judged to be a successful way to change mentoring relationships from top down hierarchical expert-novice approaches to a model characterized by flat structures, mutual respect and dialogic exchange.

The *Austrian* case study used reflective models of mentoring using video as a tool for self-diagnosis, critical thinking and innovation. A practical approach for physics teaching was designed to support student teachers by developing and discussing lesson concepts. This gave support to student teachers to reflect on their own teaching methods. Student teachers were introduced to a reflective mentoring approach in order to prepare them to research their own teaching. GIMMS Austria supported a deep level of reflection and assisted to understand the importance of cooperation between teachers and others.

The case study in *Spain* used mentoring as apprenticeship between expert and novice teachers in ICT-enhanced inquiry. Mostly teachers are qualified as subject matter specialists, trained in a novice-expert system as student teachers and beginning teachers, and do not get involved in continuing professional development. The system has many written examinations. Teachers have a high level of freedom, with low levels of public accountability at the school, and appear to engage mostly in lower order cooperation, sharing administrative matters in preference to collaborative reflection. Teachers do not appear to connect with a feeling of shared responsibility to a wider education community. GIMMS Spain introduced curriculum innovation as collaborative mentoring between schools and the university in the area of materials science. There were innovative teachers in the project schools doing many interesting things in collaboration with university research groups. This is not the norm as teachers generally are not that interested in curriculum innovation and change. Four schools participated examining collaborative and reflective mentoring models between experienced teachers, student teachers and teacher educators. They focused on learning about scientific competencies in context-oriented science.

The case study in the *Czech Republic* introduced mentoring as an apprenticeship in constructivist expert-novice relations. Four case study schools focused on developing constructivist approaches to teaching physics, mathematics and computer science. This was unusual in a tradition where schools are tightly controlled, with detailed lesson plans and all topics and activities documented on a daily basis in a class book for public accountability to inspectors.

Germany I assessed and analyzed teacher professional development in the second phase of teacher education, during their school-based placement experience, in two different states. A central question about innovation in this study was how to develop better partnerships between initial and in-career teachers for continuing teacher professional learning. Teacher education in the federal state Schleswig-Holstein supported autonomy and critical feedback for teachers to a certain extent. This was different from a more conservative model of study seminars, found in the other state, Niedersachsen that was used for comparison purposes.

Method of inquiry

In the GIMMS project national coordinators delivered national and progress reports during a period of three years and participated in interviews. In a final interview they were asked core questions about their national policy with regard to science education and innovation, pedagogical practices and changes and models of mentoring. Some of these questions may get us closer to a better understanding of innovative processes and the role of teachers.

A cross-case analysis used a comparative lens about reflective elements of a collaborative discourse across borders in a ‘public space’ and for shared meaning making about innovation in teaching and teacher education.

What does this mean to the different national case studies in GIMMS and a cross case study about curriculum innovation? If we take a look at the national case studies with the political lens of deliberating discourse for educational innovation we will focus our view on the specific borders in a fragmented school system, diverse communities and their voices that open these borders for shared meaning making, collaborative settings with different stakeholders for reflective professional education and mentoring relationships of learning, deliberation of hidden constraints and ethical principles of discourse for shared meaning in an open 'public space'.

The following collaborative model with different communities of practice (Figure 1) was used as a basis:

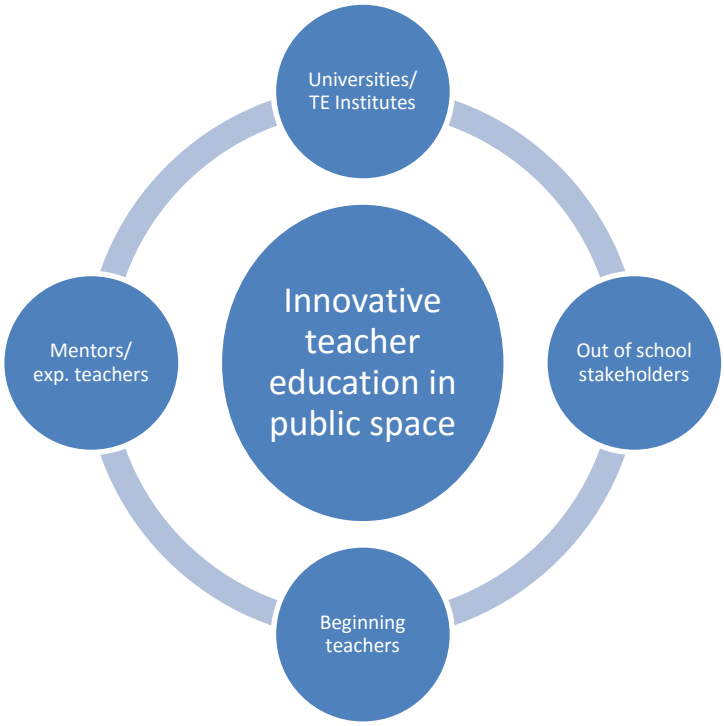

Figure 1. *Reflective elements of collaboration*

In this model each outer circle refers to a group of actors within a separate community. These groups may vary: Mentors in some case may be within the group of experienced teachers as defined in the graph, or may well be part of the university group. Out of school stakeholders include other actors, such as parents and policymakers. Each of these groups needs to collaborate in public space as a setting to realize innovative teacher education.

Results and challenges of the GIMMS case studies

Analysis of the GIMMS team meetings show the positioning of the national coordinators and teacher educators and their advocacy for cross-national understandings of the complexity of curriculum innovation and change. All coordinators argued for a conceptual framework that gave 'voice' to teachers across their professional lifespan, student teachers, beginning teachers and in career teachers, and was reflexive, creative and dynamic across borders for the purpose of innovative teacher education as outlined in our model:

We, as teacher educators, are challenging our own thinking in this project and supporting each other to develop newer and more innovative ways to assist teachers and (pupils) become more imaginative, we are willing to dialogue, not in a linear way, but embracing all the chaos of young people's growth and development, we are embracing the socio-cultural perspective…the teacher of mathematics and science in the twenty first century needs to have the ability to create classroom dynamics that develop a relationship of learning with young people and the meta-cognitive skills required for ongoing self-evaluation (GIMMS Team Meeting 04/10/2007, p. 16).

Towards the beginning of the GIMMS project work a comparative study was conducted with the seven coordinators using ratings on ten statements about factors supporting a discursive approach in national case studies. These ratings were self-ratings controlled by ratings of the other project members. Factors of discourse were related to a more school-based decision structure, reflective practice for mentoring, discursive "post-modern" professional development of teachers, collaboration in teaching and learning, gender awareness, networking and boundary crossing including political stakeholders.

Frequencies of agreements with positive statements were high for the categories school-based, mentoring, professional development and low for school development and policy involvement. Collaboration across boundaries, networking and policy involvement were rated with low frequencies. This means that a political discourse was found rather seldom in the national projects, only to a higher degree in the Irish and Danish project.

Final interviews of national partners were conducted in 2009 at the end of the GIMMS project to trace assumptions and expectations about educational innovation in science teaching and to develop a more general understanding of the ongoing innovative process. The seven case studies from Ireland, Czech Republic, Spain, Denmark, Austria and Germany, demonstrated a broad range of educational systems with various cultural backgrounds, innovative approaches and different teacher education philosophies that were interpreted as political struggles in a deliberative discourse for shared meaning making of diverse voices.

If we compare the initial results with the final interview responses about political discourse activities for innovation we find a reasonable increase. At the end of the project stakeholders of different communities were engaged to a higher extent in a deliberating discourse for reflective mentoring, curriculum innovation, inclusion and collaboration across borders between schools and teacher education institutes.

Mentoring changed during the lifetime of the project to a more collaborative model where mentors, teacher educators and researchers worked together or student teachers prepared lessons with mentors and learned from one another.

In the Danish case the co-planning and reciprocal learning between student teachers and experienced teachers was 'new' and innovative about the project. Experienced teachers and student teachers engaged with it and the teacher educators were at the school site for some of this co-planning. Traditional supervision roles of teacher educators and experienced teachers were challenged in this discourse such as the Danish example shows:

Our definition of our role is not the traditional supervisor role, it's a more collaborative version of mentorship, they are preparing the teaching together (student teacher and experienced teacher) and they are more in eye-sight with (us), they are coming from different positions and they merge that knowledge and every side is having new knowledge (GIMMS Denmark Coordinator 26/09/09; Mooney Simmie & Lang, 2012).

In the Spanish case study with an expert-novice model of mentoring at the outset this kind of co-planning between mentors and student teachers was not of primary interest but seen as a consequence of co-learning between mentors and teacher educators/researchers:

Very few mentor teachers recognized at any deep level their role in the development of awareness of sharing of expertise in designing teaching activities for teaching 'using scientific

evidence' in their classroom. In GIMMS Spain the experienced mentor teachers were more open to the co-learning opportunities found within the open 'public space' for discussion with other mentor teachers and the teacher educators/researchers (GIMMS Spain Coordinator 26/09/09). Co-planning of mentors and student teachers was seen as important but insufficiently realized in the Germany I case study due to a newly introduced teacher education system. Here the teacher education institute introduced modules for beginning teachers that were not sufficiently tuned with practical work of the schools and mentors to merge their knowledge as in the Danish case. This is critically reflected in the following interview (Mooney Simmie & Lang, 2012; Germany I):

In general mentors are not well trained. This is obvious we as beginning teachers experience, that we are trained very well for the module and then we give our knowledge to the mentors They don't know much about it and in our meetings for consultation the mentors are those, who can say the least about the given lesson. There should be done more so that trainers become trainers, which are now simple teachers who guide us."

In this case study a culture of cooperation and autonomy seems to be fostered through partnership based mentoring. But the opportunities for beginning teachers to discuss their work with mentor teachers in accordance with the teaching modules from external teacher educators were estimated to be low. Nonetheless this lower-order co-operation on the practical and technical aspects of professional work that seemed to dominate the mentoring processes was critically reflected for the development of a more inclusive view.

Overall the GIMMS coordinators considered that their findings illuminated the 'problems and possibilities' of teacher educators working in collaboration with experienced professional teachers at the school site. The possibilities included the 'newer' ways that student teachers, experienced teachers and teacher educators could work for co-planning and mutual learning. This generated the possibility of more collaborative forms of mentorship and better connectivity between the results from research and classroom practices and knowledge generation at the school site. The teacher educators saw this project as a way of strengthening the stance of the teacher as researcher, public intellectual and activist professional working across borders, for the development of a transformative and innovative science education experience for all pupils.

Conclusions

Curriculum innovation requires reflective practice to generate new ideas, make tacit knowledge of routines public and make new knowledge from practice. In a dyad between mentor and mentee, often in a school setting, there may be no explicit impulse for teachers to go beyond existing classroom practices and routines. An extended community in public space was required to move practice beyond existing borders.

A consistent driving factor in every of the cases was the interaction of engaged teachers with a university or research and development institution. Teachers become actors in curriculum reform through these collaborative partnerships crossing narrow school borders.

Extended collaboration across borders and policy involvement with stakeholders of different communities for educational innovation developed gradually during the lifetime of the project. In several cases small dyads of beginning teachers and experienced teachers expanded to collaborative settings with researchers, external teacher educators and political stakeholders. An important key for collaboration is the use, access and exchange of basic information between different communities "to merge their knowledge" as in the Danish example. Overall the GIMMS approach was successful in generating co-ownership and innovative approaches to teaching and teacher education. Mentoring models adopted were found to be successful in developing innovation.

Looking ahead we find a significant challenge in the educational system through enhancing teacher education and giving teacher educators support and opportunities to reflect on and

analyze their emerging practice. This will not only be a challenge for "second order practitioners" specifically learning about teaching teachers but also for changing the system as "third order practitioners" with expansive learning in public space. With Boyd et al. (2011, p. 34) we find it helpful "to frame the changes identified into the wider framework of the institution and the corporate plan. It is particularly appropriate for teacher education to seek to influence institutional policy on academic induction".

GIMMS results make for compelling reading for policymakers, teachers educators and teachers alike. They demonstrate that curriculum innovation matters, in the generation of 'new' and inclusive professional practices for all education partners. The findings highlight the need for sustainable educational innovation and change to be underpinned by democratic mentoring relationships that have the capacity to extend beyond the professional boundaries of each institution, be it school, university or state organization, for the generation of new knowledge and practices.

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WORK LIFE NEEDS CHALLENGE VOCATIONAL TEACHER EDUCATION

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Abstract
Special education teachers´ conceptions of holistic learning and rehabilitation describe learning as the realizer of everyday actions. It is attained by constructing the interactive relationship between the significant others and the practising the educative actions. Thus the question is about socioconstructivist learning. It is dependent on shared aims of the special needs students and teachers and on the conceptions of the professionals concerning the needed skills as the aims of teaching and tutoring.

Keywords: constructivism, coping, encountering, human conception, dialogicality

Introduction

Great challenges are issued to vocational special education today. Teacher´s profession is changing and it is seen for instance in the increasing need of special education, in the variety of learning environments, in the change of learning conceptions and in the challenge of encoutering students as individuals. New expertise appears to teachers as social and netbased action as well as competences which emphasize the ability to find together new solutions in new and changing situations (Mäki, 2011). Theoretically the question is of socio-constructivist approach to understanding learning and learning outcomes. According to the theory, learning is a process of becoming socialized and growing in a community. Learning is construed as an interaction with others cooperatively by adopting prevailing cultural practices as well as shared knowledge and values.

Socioconstructivist learning conception as the background theory guides the action of a special teacher in the multi-dimensional, wide action and learning environment. This is seen today for instance in the new organization of special education and the students´ placing in the neighbouring schools as well as in vocational institutes to study according to individual educational plans and guidance. The central idea of social constructionism is according to Gergen (2009) the construction of social reality in interaction in which all the meanings of phenomena and matters are created. It means that all that is considered true or rational depends on the state of interaction. As the central themes in the theory there appear the language, discussions and the responsibility for the process of building their relationships:*"…your words bring the meaning to my words, but without my words your words would get drowned in the emptiness"* (Gergen, 2009).

The roots of socioconstructionism are in kognitive-constructivist learning theory and in the aspects that emphasize the needs of an individual. Gergen developed the socioconstructivist learning theory in the 1950´s. This is also the time of bringing about Finnish vocational special education and the recognition of the special needs of rehabilitation which forms the frameworks of this research. The roots of rehabilitation date back to the 1940´s and 1950´s, to the rehabilitation and restoring the health of the disabled in wars and accidents. The development of rehabilitative therapies date back to the same time as the rehabilitative measures of physical and psychic injuries and traumas started to be restored after the wars. The development of

education from restoring and mending measures to the preventive and supporting measures in the personal control of life is a significant change to the new understanding of the rehabilitation paradigm.

A common feature of the phenomena of special education and rehabilitation is anchored thus in the context of disability and appeared especially just after the first world war when the emphasis of vocational education was laid upon the development of vocational education and vocational special education in Finland. Vocational education has a significant task in supporting the growth of the young and in their vocational identity formation. Vocational special education is part of vocational education with the purpose to support and promote the students in attaining their learning goals by the means of special education. Students complete their studies in vocational special intitutions and have different prospects of employment and rehabilitation which are always based on personal needs and situations of life. The research programs of international rehabilitation and / or rehabilitation (e.g. NIDRR, 2007) take also a stand to the emphases concerning rehabilitation. The features that arise are work and employment, health and action, technology as the promoter of accessible environment, independent living and integration into society as well as developing the measuring tools of rehabilitation science and the politics of the disabled.

Is vocational special education necessary or will it disappear as a concept and phenomenon along the integration and inclusion? The need for special education can appear for instance due to the reasons connected to learning, illness, disability, marginalization or handicaps. Vocational special education has thus a very heterogeneous target group from the most difficult mentally retarded persons to the gifted young whose need of special education may be connected to mental, health, social or drugs problems. The solutions will then be searched for in personal environments, parentship, adultship, the practices of educational institutions and other factors influencing on the situations of the young lives (Kaikkonen, 2010; Miettinen, 2008).

The purpose of the research

In my article I will deal with the theme of the title from the viewpoint of the professional staff of special education schools. The context reveals a holistic picture of the functional ability and its connection to the required competences of the professionals in special education. The research findings will be anchored in the planning and development work of vocational special teacher education. The purpose of the research was to recognize the necessary competence requirements of the teachers and other professional staff in supporting the holistic functional abilities of the young and the young adults.

The research question was: How do the professionals of a special school conceive the support of the holistic functional ability of students?

In vocational special education the conceptions of diversity and vocation are integrated. We can speak of a cross-scientific phenomenon which focuses, besides the viewpoints of special and vocational education, on medical, social, economical and law sciences. In my article I will examine the conceptions of the professional staff working in a special school about holistic functional ability in the frameworks of the rehabilitation science. The role of the holistic rehabilitation of students is included in the targets of special education strategy.

Research material and the analysis of the data

The material of this qualitative research consisted of a half-structured thematic interview of thirteen (13) professional staff members in the special school. They represented seven different fields of science: a special teacher, psychologist, social worker, rehabilitation councellor, physiotherapist, occupational therapist and speech therapist. The reseach material is connected to my doctoral thesis (Koukkari, 2010). The rehabilitation workers were interviewed and their interviews were recorded. That material was not published in the doctoral dissertation. For the

present study the material was analyzed with qualitative content analysis. In the content analysis the material is exmined by analyzing, looking for similarities and differences aiming at a holistic conception of the the phenomenon to be exmined in regard to a wider context and research results of the field. The purpose of the analysis is to create a literal and clear description of the pehenomenon studied (Hsieh & Shannon, 2005). In my research I try to add the information value of my material to be benefited in the educational planning in vocational special education.

Findings

The research material yielded conceptions about physical, psychic, psycholological and social characteristics of the rehabilitees, mainly intertwined with each other. Holistic conception of a person is related to humanistic conception of people and is connected to socio-constructivism as well.

The first theme: holistic functional ability

"Holistic functional capacity is psychological, physical and social, encompassing life as a whole, enduring all that life brings. One must enter the world of the student and understand her/his messages. The goal is to consider the person entirely, as she/he is, and against her/his background."

The research results showed that different professionals´ conceptions about holistic functional ability were based on the dimensions of the body (anatomical structures and physiological functions as the bases of the functions), individual dimensions of functions (meaningful action with significance to the person) as well as on social and cultural dimensions (society, culture, technics and the environment in promoting functional ability).

The interviewed professionals describe a special school as learning environment in which multi-professional cooperation in supporting the learning of students is necessary.

"It is good from the viewpoint of holistic learning that we have various professionals in multi-professional teams and one can always get help if one cannot find keys to particular problems."

In the professionals´ conceptions there appears profession-centeredness, which brings a sectored view about the understanding of the person as a holistic creature.

"It is true that we in a way cut a student into slices, since every professional sees the student through the lenses of his/ her own frameworks… When a student comes to this school as a whole person, we open him/ her for a while and then cut into slices after which he/ she is again put together wishing that he/ she would become more healed and functional entirety than before."

The importance of a teacher in special education is emphasized as a supervisor and educator. The philosophical starting point is the appreciation of human value and stressing the equality in all questions connected to studies, work and good life. Human conception is guided by the values system in which normality and abnormality which are typical of special education are understood as a holistic person, unique with his/her individual qualities and needs.

Rauhala (2005) describes the person's holistic formation as intertwined physical, psychological and social characteristics so that a change in one part of the entity affects cumulatively also the other parts. The holistic character of a person thus means that the entirety is more than the sum of its parts, so the influence of partial factors on each other can neither be predicted not prevent. Kirby and Davis et al. (2005) asks if it is possible to treat the special students holistically with their weaknesses and strengths without defining the specific need of support.

Rauhala (2005) stresses that the person's body dimensions contain limitations in her/his functional ability. For example the sensations formed in the human body shape the person's perception of her/his identity, well-being, and the possibilities of functional ability. Meaningful action motivates and activates the person to individual solutions promoting her/his functional ability. Thus the person's resources, motives and individual needs have a crucial role in guiding

the actions. The solutions and values of societies, including cultural attitudes bound to them have a central role in experiencing and promoting the functional ability. Living environment can create premises or barriers to people's coping in everyday life. Understanding a person's uniqueness in defining the functional ability makes it possible to find individual interpretations in regard to personal life situation.

The second theme: dialogicality

"*Cooperation and interactive skills are surely of utmost importance in learning. We must be able to share and receive information and not to be so jealous of our own subjects that competence can be found from others and in that way we can get a wider conception through it."*

Dialogicality describes personal attitudes to life which starts from a dialogical relationship (Bakhtin, 1986); it is a skill of thinking together (Isaacs 2001) in which the spoken word is the shared area between the speaker and the interlocutor (Voloshinov, 1990). Creating a common understanding is always an active occurrence in which the dialogical discussion constructs the shared reality of the participants. The aim is to understand more of the other´s message which, again, will help the speaker him/ herself to understand his/ her own viewpoint more. Dialogicality is not always self-evident, but it offers challenges to professional competence.

"I'm interested in the students in a broad holistic way and it is not necessarily appreciated in the other professional groups. It may be partly due to my personal nature. I'm pretty strong and I go to another person´s space very easily, which some people perceive as a threat. Some special education teachers feel it very offensive if, for example, a speech therapist takes a position on reading and writing issues. It's terribly difficult for me to assess where that comes from."

The purpose of dialogical discussion is not only bringing up a contract but creating a context in which it is possible to achieve new contracts. The aim is to find the basis of common conceptions which promotes the coordination of values and their combination.

"In the meetings they always start from medical hindrances and diagnoses and also the physical side is always much emphasized in the discussions. These things are devoted a lot of time, and psycho-social view and family are left aside, they have as if been forgotten."

The third theme: human agency

"It's important that the students feel human agents rather than receivers of instructions and requests. The support of the student's growth and development is a demanding task. The more the student has functional ability, the more she/he naturally wants to do things her/himself, because it's a pleasure to go forward in trying and doing."

The professional staff of the special school understands that supporting the holistic functional ability of the students is connected to the way in which the professionals can recognize the particular life situations of the students, their personal resources as well as their possibilities to cope with the challenges demanding change.

The conception of human agency means that people build their lives and the prospects of their lives in the frameworks of their resources, social-cultural contexts and the structures and limitations of their environment (Katsuhiro, 2007).

In the interaction of the students and the professionals, the change of professional support into helping and "curling" is often experienced as the hindrance in learning. Overflowing helping and caring cause the students the feeling of not being appreciated and valued but he/ she is regarded as an object of diagnosis (Koukkari, 2010.) In the frameworks of rehabilitation science the functional ability is approached through (*human agency)*.

The measures connected to the organization of teaching in special schools can also be regarded as included in human agency. Multi-disabled students were satisfied with the solutions which had been decided for them in choosing their learning environments. This became evident in the conceptions they had about the choice of their schools and the aspects of the choices

appreciating their individual needs. The conceptions varied concerning the arrangements supporting learning in special schools and typical neighbouring schools which both were experienced as meaningful learning environments (Koukkari, 2010).
In the findings the professionals described as the feature promoting students´ human agency with the following words: *"a good attitude which confirms the wish to work for students".* The professionals in the special school experience that participating in teaching and guiding is the common task of many professionals and specialists.
"Organizing the teaching is participated by special teachers, the councellor of studies, headperson, therapists, parents, social workers, rehabilitation councellor, the representatives of educational administration in the communities."
The teacher´s significance from the viewpoint of the learning process is described in the following way:
"It has actually been easier when you have been able to go to a special school. The teacher has had the importance that how I experience and understand the matters. That the teacher has a considerable role just like in life in general. That if the teacher is bad or is not motivated or does not catch something that I explain, so everything goes down. That the teacher must have certain knowledge of the things, be able to deal with them. When you go to school, so the teacher has a really great role in the beginning, how the school starts and how I have the strength to go to school. That is not dependent on only you. It is surely dependent on the teacher as well."
According to Miettinen (2006, pp 323–326) special school students should not be closed to their own circles and not to be deprived of the possibility to identity formation in their personal environments. According to her a good learning environment, the competence of the staff and the accessibility to necessary support services are still extremely important in the choices concerning the school and studies of a disabled child or young person. They shall be paid attention to in the choice of school forms and in integrating in the society.
In the research results it became evident that the realization of the integration was connected to the developmental challenges as part of the holistic support. According to the research findings there is not a systematic assessment method for the evaluation of integration.
"The follow-up of the realization of the teaching in the cases of integration does not exist. It happens only so that a student comes to us to tell how the affairs have come out and if a choice has failed. It is difficult for us professionals to know beforehand about the final result, although preparations are made individually and in various ways."
To the realization of social integration there is connected a purpose to promote the student´s social growth and development as well as to strengthen his/ her possibilities to participate in and cope with various interactive situations. For a student in the need of special support integration means e.g. social acceptance, equal treatment, possibility to go to school or kindergarten among other citizens as well as educational and professional support by the parents and professionals in the environment which does not presuppose seclusion from among other actors. From the viewpoint of the realization of social integration, the individual attention and meaningfulness of educational measures and decisions have been noticed to be significant in later phases of life (Koukkari, 2010).

The fourth theme: encountering
The interviewees described their work through encountering people.
"It's extremely important to pay attention to the student's resources, listen to her/him and support the development of her/his self-esteem, respect the student with all of her/his weaknesses and see better the potentials that the student has. You don't thus emphasize the weaknesses, because there are enough of them. Your own coping must be in condition.
The conceptions reveal that a special school as a learning environment is an entity consisting of many kinds of events. The starting point of successful cooperation and action is seen "*genuine*

dealing with things so that families and students are heard. That what is their conception of the things in question and how the prevailing problems are solved. It is important to reflect on the fact whether we professionals know the real needs of the students or do we only think that we know."

In encountering the question is about appreciation and respect. The latest studies of pedagogy (e.g. Uitto, 2011; Wihersaari, 2010) emphasize the student´s genuine encountering as the most significant factor in promoting learning and attaining learning targets. Genuine presence has a motivating influence raising positive feelings even in the endevours which are felt unpleasant. Holistic encounter in the special school´s day is seen according to the findings as follows:

"The activities which support and promote learning and change whose core is the student´s personal capabilities and skills to master new situations as well as find solutions to changing and change awaiting problems in different situations of life and action environments."

For this a student needs competent guidance and teaching, and the professionals need resources for personal encountering.

Personal encountering of the student in a special school every day is sometimes very challenging, which appears in the following conception:

"*In general, cooperation with all workers is important, since a student´s situation at its fiercest is such as there is, on the side of school subjects, physiotherapy, occupational therapy, speech therapy and psychotherapy, and this should be created into a reasonable whole."*

Conclusion

The main results were: multi cooperation is necessary, although the professionals' conceptions were sectored. The dialogue was not self-evident to the professionals, thus it creates challenges to the situational learning. Human agency creates:

"*A good attitude, which assures the desire to work for the students. It is important to consider if we professionals know the real needs of the students or if we only imagine that we know the needs."*

Encountering the challenges together with the professionals improved the student's personal ability and skills to manage her/his new situations and find solutions.

In addition to the special competence of professionals, the target of professional work should always be the whole individual person as an unique human being. The aim of learning should be understood in connection of the life situation of the students. Thus the primary aim is not only regaining normal ability to walk or adding to the pressing force of fingers. The aim is meaningful life from the learner´s point of view promoting social opportunities with the integration of the learner´s power resources, abilities and skills. Shared aims direct the cooperation of special education professionals and have infuence on selecting the teaching methods leading to the necessary practical changes in the educational environments. Prospective teachers should be exposed to varying perspectives and be given opportunities to develop the discretion needed to choose the most appropriate skills to implement their choices.

This means to the professionals and teacher educators: listen to the students, create an accessible environment, respect the specialists' perceptions, appreciate dialogical approaches and try to implement student-centered principles in the curricula design and practice within the frameworks of the socio-constructivist learning conception.

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WORK LIFE PERIODS IN DEVELOPING A TEACHER´S VOCATIONAL COMPETENCE

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Abstract
A great significance in Finnish vocational education has been given to work life contacts and cooperation. Educational institutes are supposed to have systematic interaction with work life networks. It is mainly realized through on-the-job learning periods of students and teachers. As vocational teacher educators we must be aware of the key elements that affects to successful teaching. This is why teacher trainer should also know the possibilities that work life co-operation embodies. The following questions have been raised: 1) What meanings do teachers give to work life periods? and 2) What is a successful work life period like? Besides students and teachers, educational organizations need work life cooperation to be able to train their students efficiently. Skilled and competent workers are the most important resource in work life and even the prerequisite of success. Through mutual efforts both parties can influence on the realization of their purposes in meaningful ways.

Keywords: expertise, on-the job learning, professional networks, project work, skills

Introduction

Professional competence is made up of the mastery of practical skills and the theories connected to them. In the traditional model vocational education institutions offered the theoretical bases which enabled students to practice professional skills in work life. During the latest ten years Finnish vocational education has adopted a new action model according to which the contents are taught jointly by educational institutions and work places. The most essential thing in the new model is the functional interaction through which both participants tend to confirm and develop the mutual relations, quality and actuality of work life and education (Illeris, 2011).

In successful cooperation it is important for teachers to be aware of the situation in the field of their professions. To increase the teachers´ knowledge of work life and deepen the cooperation, the teachers´ work life periods were developed to correspond the respective periods of students. The periods were designed to reach from two weeks to three months. During them the teachers work in the jobs of their expertise areas, either in enterprises or in the public sector. The research was based on cognitivist-constructivist-humanistic conceptions on learning, especially on the experiential learning model. The research approach was phenomenographic and the narrative and comparative research material was analysed qualitatively. The research showed that work life periods were considered positive experiences by the teachers in regard to both professional competence and pedagogical development. Professional knowledge became up-to-date, which strengthened professional awareness. Work life periods offered possibilities to reflect on the aims, methods and assessment criteria of students as well as the developmental trends in education together with work life representatives.

I personally participated in the work life period and simultaneously acted as an observer of the concert project of vocational music teachers. The project was planned together with concert houses. We prepared music performances, rehearsed and performed them in three concerts in autumn 2010. According to my experiences careful planning of the periods is very important, because it is directly connected to experienced success. The central aim of all the preparations

is the development of the teacher´s personal competence through the successful realization of the period.
My experiences were in accordance with the research literature on work life learning, although our projects were shorter than the ones reported. It is the only detail to be criticized in the reform, though the reason for the brevity of the period was mainly due to the institutional curriculum, not to attitudinal tendencies. Still I felt that the period was positive concerning my professional competence, growth of professional awareness and motivation. Positive experiences supported also coping at work. My colleagues felt that placing themselves in the situation of students going to work life periods was very useful, and it was directly transferred to developing the practical arrangements of cooperation in their periods, too.

The background and principles of work life cooperation
One of the most significant challenges in Finnish vocational education has been connections to work life. Until the end of the 90`s education was made up of theoretical studies and possible working practices. Cooperation and interaction between educational vocational institutions and work life was scanty. At its worst the situation may have been in the turn of the 80´s and 90´s, when the experts questioned the sense of all vocational education if separated from work life. Then the action was based on the studies in the educational institution with theoretical knowledge in the centre. Informal experience, for instance gained at work was neither recognized nor validated (Jokinen et al., 2009; Klemelä, 1999).
Development of work life cooperation was included in the plans of vocational education in 1995. At the end of the same decennium students´ work life periods as part of qualifications were included in the new educational plans of secondary vocational education (Virtanen & Collin, 2007).
The position of work life cooperation as part of education has become further strengthened. For instance, students´ work life periods were increased in the curriculum reforms in 2009-2010. The goals of educational policies were to add work life periods as widely as possible to all vocational education and offer education more than previously in genuine work life environments (Koramo, 2011). In the new development plan of education and research by the Ministry of Education and Culture strengthening the work life contacts of educational institutions is imposed for one of the important development objects (OKM, 2011a). Implementing and developing vocational education will be achieved together with work life, and all shall learn the basic skills of their vocations and entrepreneurship in their respective fields of knowledge.
Vocational competence, which is appropriate and in accordance with the needs of work life presupposes cooperation between educational institutions and work life. It brings up the need of developing the competences of teachers. The teacher must have, in addition to professional and pedagogical competences, for instance communication skills which are seen in the ability to plan, develop and evaluate new kind of work life oriented education.

The competence of a vocational teacher
Suggestions have been made to define the basis of vocational teacher´s professional awareness to be composed of four cornerstones - professionalism, pedagogy, interaction and personality. They contribute to analyzing teacher paradigms and their changes. The significance of particular cornerstones varies according to professional fields, when teachers give different meanings to professional awareness. There are, in fact, features common to all professions and shared by teachers (Tiilikkala, 2004).
Among the cornerstones of the professional awareness of the teacher professionalism is the competence which is gained through education to the profession and through work experiences. On the other hand it refers to the teacher´s knowledge demanded in the profession and the

contents knowledge to be taught. Pedagogy is a wide and multidimensional conception which is connected to the professionalism in a teacher´s work. Tiilikkala (op.cit.) reflects in her research on pedagogy asking: What is teaching for? Is it for the student´s own life, work life or society? What is the duty of the school/ teacher in regard to the student as a maturing and learning person?

Interaction in learning is an important element, which is connected to educational interaction in the vocational teacher´s work and to the teacher´s way of presence in teaching occasions. It is also meaningful in the communication between the educational institution and work life, when it is in connection with both professionalism and pedagogy (Tiilikkala, 2004; Sinclair, 1994). Personality means in this context the teacher´s professional personality, which is construed of professional experiences and their reflections on the teacher´s work. Although there is no special model of teacher personality, a "good" teacher personality appears in different ways in different fields. This is probably due to the fact that the vocational teacher´s professional identity is strongly tied to his/ her professional field and its culture (Tiilikkala, 2004).

Helakorpi (2007) presents a rather similar view of teacher expertise dividing it into four competence areas: substance, pedagogy, development and working community. Two first mentioned are convergent with Tiilikkala´s classification. Helakorpi includes interaction and personality in pedagogical expertise, but raises personal and work life oriented developmental competences as well as work community skills as separate aspects. Helakorpi´s view emphasizes the reflectivity in a teacher´s work, which means ongoing observation and assessment of the changes in various sub-areas of the expertise. Thus the four dimensions of the reflection on teacher´s work are: 1) professional reflection in regard to the world of work in the profession, 2) reflection on research and development in regard to the world of research, 3) pedagogical reflection in regard to the learner and teaching, and 4) work community reflection in regard to the school organization and its social relationships and working methods.

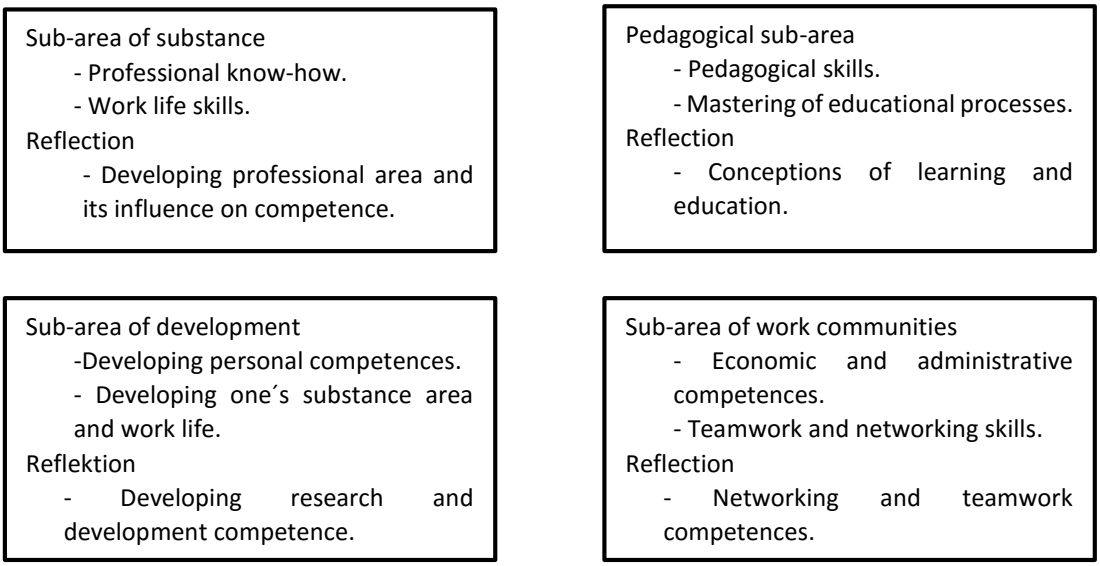


Figure 1. *Vocational teacher´s expertise and the targets of reflection (Helakorpi, 2007).*

The contents of a teacher´s competence are not permanent. The needs of work life and education change, technical development, production and action policies as well as organizational structures live. The knowledge of educational areas and professional practices as well as the expectations of vocational education change. Competence requirements presuppose keeping up with time and the anticipation of future changes. It is not possible only by acting in

a school-centered way but the teacher has to seek for continuing education and for practical experiences in work life (Illeris, 2011; OPH, 2009).

Teachers´ work life periods as part of cooperation

The work life period of a vocational teacher means in this context planned working in a work place in the person´s professional field with fixed time from one week to a few months (Eerola, 2007). It offers a possibility of updating and developing one´s professional competence and gives provisions for evaluating knowledge and skills which the students will need in their future work. On the other hand work life periods act as the basis of the teacher´s conceptions of the targets of student learning so that after qualification students would be prepared to meet the needs of employment (Cort et al., 2004).

To educational institutions work life periods offer a tool with which to observe the quality of education, a method to widen cooperation networks, a possibility to develop local and regional work life and the educational organization as a service organization. Work life periods have a great significance also in promoting teachers´ coping at work (Eerola, 2007).

The research reports of secondary and tertiary vocational education and their work life cooperation (n=21) consider work life periods a very important form of cooperation which brings added value directly to a teacher´s work. The teacher finds it for instance easier to develop teaching methods towards greater work life-orientation, when he/ she is concretely aware of the topical measures and policies in the appropriate working field of his/ her profession (Jokinen et al.,2009).

The matter was taken into account both in the Ministry of Education and Culture and in vocational educational institutions. The Ministry of Education and Culture started a developmental project ”Competent to work markets” in autumn 2011 as a part of the ESR (European Social Finds) projects of 2007 – 2013. Work life skills should be developed during the work life periods and by participating in continuing education with the aim of creating teacher facilities to develop teaching in regard to the experiences of work life periods, to develop substance knowledge as well as to create facilities to systematic cooperation between the work place and educational institution (OKM, 2011b).

Vocational educational institutes have reacted to the increase of work place learning by arranging possibilities for teachers to participate in continuing education and in work life periods. Table 1 shows that more than a fifth of secondary vocational teachers have participated in work life periods yearly.

Table 1. *The participation of secondary vocational teachers in work life periods in 2006-2010 (Koramo 2011).*

2006	2007	2008	2009	2010
22%	26%	27%	23%	18%

The percentage of the participation can be regarded as rather good, although it has decreased a bit during the last few years. According to the results it would seem that teachers are interested in work life periods and on the other hand the educational institutions have adopted them as a part of the development strategies of their staffs.

The significance of the work life periods to a teacher

Several projects developing teachers´ work life periods were carried out during the first decennium of the 2000´s in Finland. The information service system of the European Social Fund (ESR) lists altogether 18 different vocational development projects in Finland in 2001-2007. Out of them 15 informed about the number of the participants in the periods; it was 376 teachers. (ESR, 2012)

According to the project reports teachers felt that during the work life periods they could create genuine interaction which was significant in the joint development of the education between schools and work places. The influence can be seen both on the promotion of teachers´ personal competences and concrete integration of the school and work place actions (Op.cit.). Personal benefit concerns all fields of vocational teachers´ professional competences, as figure 2 shows.

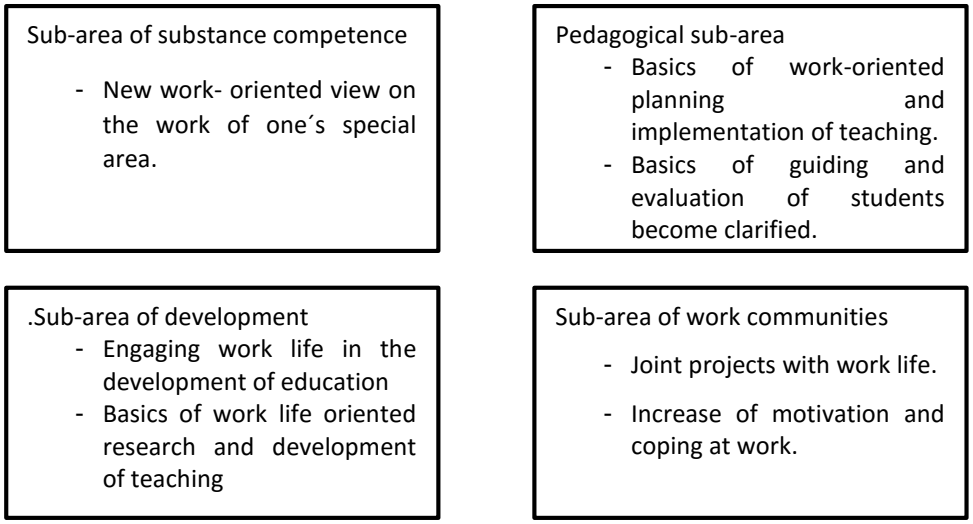


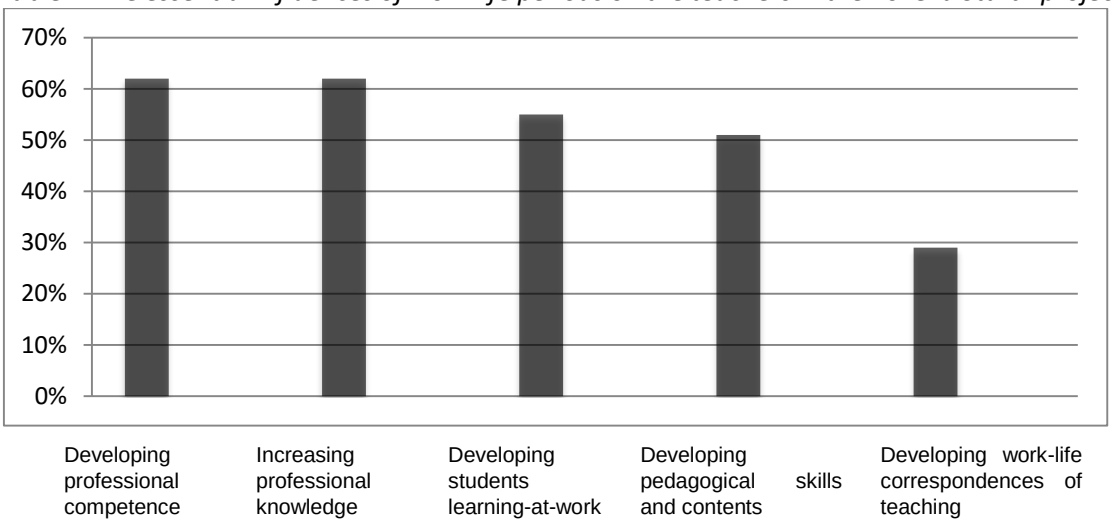
Figure 2. *The most central benefit of work life periods to teachers compared to the sub-areas of expertise according to the feedback informatiom (ESR, 2012).*

The benefit from the cooperation of an educational organization and work life to the development of education is based on increased communication. Educational institutions and work life have come nearer to each other more fruitfully than before. Due to the cooperation, work life is informed e.g. about the guidance and evaluation of a student in his/her learning-at-work period and of the contents of education, purposes and realization. In addition, in the feedback of work life there emerged a positive observation of having given a possibility to influence on educational development (ESR, 2012).

In the Kokeva Start –project carried out in the years 2003-2007 100 teachers participated in the work life periods after which they evaluated their success. The conclusion of the feedback draws together the conceptions of teachers who stated that they had benefited from the work life periods more than they had expected. The most common positive influence appeared to be the development of personal professional competence, increase of personal professional knowledge and the development of the students´ learning-at-work and vocational demonstration tests (Eerola, 2007).

These findings are also given in Table 2.

Table 2. *The essential influences of work life periods on the teachers in the Kokeva Start –project.*



According to the final reports of the ESR projects the work life periods would seem to motivate a teacher to develop teaching in joint efforts with colleagues, work places and students. As the outcomes of work life cooperation there arose concrete results e.g. learning material, work period guide books, educational plans and learning-at-work pages in the net (Op.cit.)
What are the concrete results of learning at work periods in the long term? The following outcomes have been found:
Teachers´ work motivation is improved
Teachers´ inclination to maintain and develop work life contacts is increased
Teaching plans their realization develop to the direction of work life needs – the connections of learning at work and educational institutions get improved
Work places are interested in and better informed about education
The quality of learning at work gets better (Eerola, 2007).

My own experiences of work life periods in the field of music

I was a leader in a project which was to develop work life contacts in secondary vocational education. The aim was to create an interactive model for cooperation between a music education institution and work life which would also include teachers´ work life periods. The starting point of development in the project was an approach common to music profession which emphasized collaboration, interaction and the contextuality of learning. Essential in the action was also that the teacher could get guidance from a professional in music for planning and implementing work-life periods (Billet, 2002).
The method of project learning is not actually a new thing. It has been used widely in secondary and tertiary education. It integrates in a natural way professional working, educational aims and professional growth. Learning takes place in natural contexts based on collaboration, including also autonomous work. A joint project with work life brings essential ways and styles of working into part of studies offering thus the participants concrete experiences of the culture and employments in the field (Vuorivirta, 2006).
In the field of music there emerges a challenge from integrating the above mentioned things into work life cooperation. What should a teacher´s work life period be like so that it would include active cooperation in genuine work situations of the field, cooperation and constructive social interaction? Motivating tasks connected directly to a musician´s work, crossing the border

between educational institution and work life, as well as the project work supervised by a professional of the field were all seen as a functional solution to the problem (Jarvis et al., 2003). Based on the above mentioned reasons a method was developed to be suitable to workshop actions during the periods. In them teachers performed concerts together with professional musicians. Carrying out workshops includes the preparation of the music to be performed, personal instrumental rehearsing as well as ensemble work and performance with a professional musician. Workshop work is closed with evaluation meeting in which the central matters of the realization and learning are discussed. Figure 3 presents the basic idea of the activities and process of the realization.

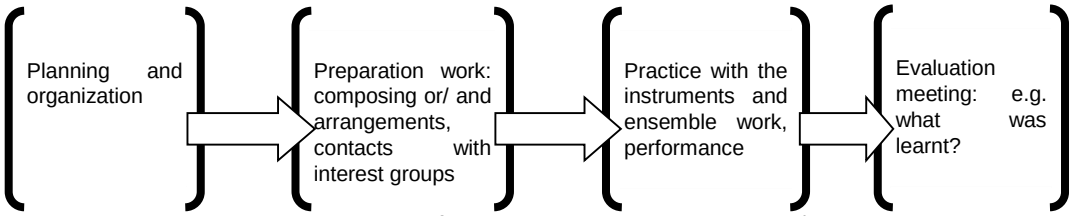


Figure 3. *The basic idea of the activities in the musicians´ workshop*

The figure shows that the action model of the workshop is very flexible. It bends to very variable productions according to the themes. Further, the conversion to different needs and new purposes has been programmed in the model. In other words, as a learning environment it follows the time and serves the needs of work life and education in very many ways.

I participated in a work life period which was organized in autumn 2010. The planning of the period was started in the previous spring when the contents and aims were stated. Our idea was to perform the music of Miles Davis´ disc Birth of the Cool according to the most original versions. The orchestra consisted of teachers and professional musicians who brought the viewpoint of work life to the action of workshop. Work life was also represented by the concert houses in which the performances were carried out. Marketing and advertising procedures were planned with them.

The goals of work life periods were negotiated together in good time before the actual period. Belonging to personal development plans, each teacher´s developmental needs were discussed and written down as concretely as possible. The procedure is very recommendable, since it gives a good basis for the evaluation of learning outcomes after the work life period.

Carrying out the actual period took place according to the general model of action in the field of music. After the arrangement of music material we started personal instrumental rehearsals. The entity was finalized through an ensemble practice period which included four joint rehearsals of the whole ensemble. The number of rehearsals may feel scanty, but it is not so. Professional musicians´ competence must be on the level that the number of rehearsals expressed is sufficient for performing any material.

The way of acting in our work life periods was very cooperative. We worked as a team and learnt from each other and, on the other hand, helped each other succeed in our joint effort. In the field of music cooperation is of great importance, since the audience will always be offered an entity containing many parts. A single musician´s important task is to make a co-player´s music sound as good as possible. In a case like this it is possible that also his/ her own playing will enrich the entity.

The work life period in the field of music was a positive experience. The added value from it correlates to the things reported in the research publications. I feel that I got a possibility to test my competences and skills concerning my substance knowledge in regard to the requirements of the field, for instance to the fact how I can adopt artistically challenging music in a limited time. From the pedagogical point of view the work life period made me better equipped for

guiding the students´ learning-at-work periods and for preparing them to the vocational demonstration tests. Interaction with professional musicians and their interest groups brought new views on the development and realization of various parts of qualification requirements. For instance, the realization of the vocational demonstration tests via concerts was changed so that they were totally moved to work life, to the genuine work contexts in the field of music.
The goals of work life periods were thus attained considerably well. It gave a teacher important experiences about the days of a professional musician and a good picture of the many-sided work. The only thing to be developed concerns the width of the period which should be at least from two weeks to one month. A period of one week is too short to give a sufficiently clear picture of the work life of musicians.

Conclusions and discussion

Educational institutions need work life cooperation for guaranteeing high quality in training new professionals. Work life needs skilled workers who are the most important resource for them and the key to success. Through joint cooperation both parties have a possibility to realize their own needs in a meaningful way.
Teachers´ work life periods add to the cooperation between schools and work life in significant aspects. Carefully planned and skillfully guided working in the employments of a teacher´s substance field predisposes her/ him to the up-to-date practices of the field and creates preconditions for availing of them in teaching. Work life experiences also offer a teacher a chance a) to confirm his/ her knowledge of the practices and work cultures in the field, b) evaluate and reflect on the professional theory and practice of the field, c) make good use of the refreshed conceptions in developing teaching (Alderman & Milne, 2005.)
Cooperation opens many kinds of opportunities to improve the quality of education. The teacher can develop curricula together with the work life representatives, develop the plan of organizing the learning-at-work periods of students, develop the plan of organizing vocational demonstration tests and prepare shared projects. The teacher will also have in her/ his work life periods a good chance to support the work place instructor in planning the learning-at-work periods and vocational demonstration tests, in guiding and assessing the students and in quality assurance (Eerola, 2007).
In Finland the work life cooperation of educational institutions has been developed in several EU- financed projects during the last ten years. The outcomes show that teachers´ work life periods should be part of cooperation in the future. A teacher´s role is not that of a school official like previously, but e.g. the facilitator of learning, lifelong learner, cooperator as well as a many-sided expert of vocational education.
The challenge in the realization of a teacher´s work life period is issued by the costs of hiring a substitute teacher for the period. One reason for the decrease in the number of work life periods may be the diminished project funding and moving the cost to the educational institutions alone. In the future it would be interesting to try a kind of swapping with work life. When a teacher starts the work life period, a professional from work life will substitute her/ him. The idea may seem too radical at first sight, but is it necessarily so? I believe that through proper initiation the method would be possible. It would deepen the companionship of the educational institution and work life, which would benefit the both parties.

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BUILDING INTER(MULTI)CULTURAL REPERTOIRES OF THOUGHT (AND PRACTICE) FOR FOREIGN LANGUAGE TEACHER CANDIDATES

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Abstract
A scholar-practitioner approach to teacher education that presents a teacher educator self-study of teacher candidates' responses to coursework as a means to understand how they 'learnt' and appropriated multicultural/intercultural education approaches when choosing materials to teach a foreign language. The paper describes a one-semester course programme (*Education, Multiculturality and Globalization*), in a Master program for teachers of English and Spanish for Basic Education, in Portugal. The course program is described as to its theoretical propositions, materials, pedagogical approaches and practical activities. The paper analyses written posts of students to the classroom blog and specific reflexive questions (through a questionnaire) to which the students responded at the end of the course program in written form. The paper puts forward the argument that in order for meaningful learning to emerge, multicultural and intercultural education should be closely linked to the specialization field of teacher candidates.

***Keywords*:** intercultural education, multicultural education, foreign language, globalization, teacher education

Introduction

It is generally accepted that culture matters in the foreign language classroom and that learning a foreign language constitutes an intercultural exchange. However, what is to be understood as intercultural exchange through learning a foreign language is generally limited to learning about some stereotypical behaviors of the 'other' foreign' culture, some eventful ceremonies, some of its artifacts and turns of phrase, rather than a complex system of affiliations of power and identity that impacts on learning and schools. The teaching manuals may be to blame for this, but in our view, teachers have been involved in almost no formal intercultural education either at the initial teacher training stages or through continuing education.

When it comes to reflect on the meaning of intercultural or multicultural education for school practice, teacher candidates appear to be only superficially aware of their own multiple cultural affiliations (race, ethnicity, gender, ability) and of those of their pupils. This certainly affects their self-conceptions as multicultural educators or even the realization that being an educator in multicultural societies requires complex critical intercultural knowledge and understanding that cannot be exclusively reduced to linguistic exchange and superficial cultural knowledge. Cultural difference in schools is frequently simplified to a binary non-conflicting essence of 'all different and all the same' and to the individual level of each student or teacher, as personalities, rather than members of multiple cultural affiliations that impact on how they see themselves and are seen and treated by others or to historical backgrounds of privilege and under privilege. Teaching culture through language is often reduced to stereotypes and 'high culture' artifacts and events.

In the changing and ever more mobile world of today, depending on the more or less radical positions that may be occupied within the field of multicultural and intercultural education, we suggest that teacher educators should guide teacher candidates to understand the complex cultural affiliations of the cultures and languages they learn and will teach about, their own socio-historical rootedness as educators, and the network of interdependences on institutional and cultural power relations to which every individual and educational system is connected. Teacher educators' role should also be that of enabling teacher candidates to understand how their own identity cultural positions of privilege (or under privilege) and prejudice may be founded on under-examined generalities and binary oppositions about individuals and their group affiliations, and on a shallow approach to the foreign culture (most of the times grounded on language without the cultural components associated to it). This kind of understanding is crucial to respond to multicultural populations of diverse students and to address their specific needs as well as to prepare every student for global and intercultural life, which we assume to be the task of all education.

We also suggest that in order for meaningful learning to emerge, multicultural and intercultural education should be closely linked to the specialization field of teacher candidates. In our view it is important that teachers of any subject integrate multicultural/intercultural approaches. This paper presents the case of foreign language teacher candidates integrated in a Master of Teaching English and Spanish in Basic Education (MTESBE) in Portugal who followed a foundation course in 'Education, Multicultural Societies and Globalization' (EMG) and presents a teacher educator self-study of university students' responses to coursework as a means to understand how they 'learnt' and appropriated multicultural/intercultural education approaches when choosing materials to teach a foreign language.

Context

The *EMG* foundation course that integrates the MTESBE at the Castelo Branco Polytechnic Institute is a one-semester course that incorporates international research and experience, while focusing on the particular regional urban Portuguese context of the inner Beiras, in Portugal, and its specific needs, funds of knowledge, and cultures of learning. It is part of the three-semester MTESBE curriculum. To enroll in this Master program students are expected to have studied both English and Spanish as foreign languages for 3 or 4 years of undergraduate study. While no experience in education is required, many of the students who enroll in this course are already teachers who specialize in one of the foreign languages mentioned and seek professional qualification in a second foreign language.

The EMG course's aim is to interlink globalization, education and multicultural/ intercultural education by focusing on cultural diversity and how it may be used to advantage by foreign language teachers. Students are expected, by the end of the EMG course, to understand the foundations of cultural diversity from an anthropological perspective in its multiple dimensions; to identify the main characteristics of globalization (Castells & Cardoso, 2005) and multiculturalism in Portuguese society with a special emphasis on educational contexts; to be familiar with experiments and controversies in multiculturalism and intercultural education and to identify the educational professionals' role in multicultural societies that adopt intercultural policies (Banks, 2004, 2007), as well as to become familiar with educational projects developed in response to multicultural and global contexts (Kymlicka, 1995; Landis, Bennett & Bennett, 2004; Gorski, 2009). These competences are developed through a study program that gradually takes students from general theoretical approaches to multicultural and intercultural education approaches to foreign language teaching.

As coursework students are expected to respond weekly to class blog inputs and to get involved in weekly oral/written debates on particular multicultural /intercultural themes. The students' project work consists of two parts, namely: identifying foreign language materials that

consciously address an intercultural/multicultural education dimension and to be able to theoretically explain how they do so; secondly, to identify the three best resources, among all presented by their peers, and to highlight how they think those resources address issues of intercultural/multicultural education. For this particular class project we worked with the classifications proposed by Paul Gorski (2009), in his study of US syllabi for teacher multicultural education, of (1) conservative multiculturalism, geared towards assimilacionist practice and the mainstream; (2) liberal multiculturalism, that values difference and diversity; and (3) critical multiculturalism, which gives attention to power, privilege and the implications of difference. This classification is used by teacher candidates to position their choice of foreign language materials within a scale of multicultural approaches. Issues of curriculum and policy were not considered. The focus was essentially on pedagogical materials and classroom strategies and how they address diversity.

Theoretical approach

From a theoretical perspective the EMG course focuses on globalization issues and their impact on the future of education, such as global economy and global technological networks and their impact on societies and education (Castells & Cardoso, 2005). It addresses social development tendencies such as increased mobility of populations, flexibility and adaptability to working conditions, the clash between increasing globalized networks and tendencies to regionalize and localize contents that may give rise to social and political conflicts (Fukuyama, 1992). It further addresses changes in education that place great emphasis in preparing students for risk societies, dominated by uncertainty, the unknown and change (Bauman, 2001). There is a strong emphasis on 'intercultural education' that focuses on power relations and how they feed and are kept alive by controversies by multiculturalist policies. European and US concepts of 'multicultural' or 'intercultural' education' are amalgamated in this paper, though 'multicultural' is used in the sense that there is recognition of difference and that there are multiple cultures in one space/time dimension, while 'intercultural' is used in the sense of interaction between those cultures so as to give rise to a hybrid 'third space'. Students are theoretically made aware that each of these concepts may conjure alternative scenarios in a classroom: a celebration of the diversity of a cultural 'other'; developing cultural sensitivity and tolerance toward 'others'; multicultural competence; analysis of socio-political contexts for issues of power, inequity or social justice; or counter-hegemonic practice and resistance.

Most teacher candidates are prepared to accept a conservative and liberal multicultural approach to education that advocates the need for teachers to be prepared to work with specific groups and identities, and to address tolerance and celebration of diversity. Some still hold homogenized views of cultural groups and unconsciously work with stable gaps between 'us' and the 'others' (Gorski, 2009), while others (mostly those that were already acting as teachers) show awareness that having individuals in their classrooms from diverse cultural and linguistic backgrounds constitutes a challenge most teachers do not know how to solve.

From teacher candidates' reactions in debates and on the class blog, the liberal approach to multicultural education that expects teachers to analyze and reflect on their own identity positions, prejudices and preconceptions in what concerns issues of ethnicity, gender, social, class and other binary oppositions, such as rich/poor or native/immigrant, was the kind of multicultural approach that was met with greater ease and understanding. However, many students failed to see the immediate connection between how their preconceptions might have a direct impact on inequity and under-privilege in schools, or how curricular diversity might promote intercultural education.

One student in particular was prone to embrace a radical multicultural approach and frequently offered suggestions on how to de-construct instances of oppression and take concrete action to

change educational systems with a view to equity and using radical pedagogies of transformation.

While on a theoretical level, it might be easier for students to engage with and adhere to liberal and critical views of multicultural education, when asked to choose teaching materials that they considered intercultural or multicultural, and to do so using the scale proposed by Gorski, they frequently relied extensively on multicultural education as celebration of diversity at schools through 'having a day of the other culture' or a 'language day' for a specific culture such as English or Spanish. They tended not to address the fact that heavy stereotyping is sometimes engaged in through these well-intentioned activities, which teach under-examined generalities. Students also revealed lack of resources and initiative to engage with their limited socio-cultural consciousness and often relied on simplifications (Gregory & Potts, 2011).

These attitudes were actively debated during classes and through the presentation of samples of teaching materials that address multicultural/ intercultural education from diverse viewpoints and from multiple multicultural/intercultural approaches through the teaching of a foreign language. Some of the materials shared with the whole class were the following: the 'on the line project', among other projects, http://www.oxfam.org.uk/coolplanet/ontheline/otlexplain/abindex.htm); *The European Language Portfolio* (CILT 2006)*, Autobiography of Intercultural Encounters* (Byram et al., 2011)*,* and *Mirrors and Windows* (Huber-Kriegler at al., 2003).

From my experience as teacher educator, there are two challenges that need to be addressed in multicultural/intercultural foreign language teacher education: the first is to lead teacher candidates to move from a superficial notion of culture to understanding the complexities of culture and their implications to class, gender and equity relations in society as part of intercultural communication. This needs to be done at a conceptual level, as has been shown by Hollins (1996) and Rose (2011). The second challenge is to find the pedagogical tools that will engage teacher candidates' perceptions and understanding.

Culture as power relations

Rather than fully agreeing with Rose (2011) that 'one site of reform is teacher knowledge about and dispositions toward diverse students', which immediate foregrounds institutional policies, we prefer to focus on developing the teacher candidates' perceptions in regard to socio-cultural factors, racism (Banks, 1976, 1988, 2004), and invisible unexamined common assumptions and biases, and to do so first on a theoretical level and later applied to their specialization area.

For instance, Portuguese educationalists and educational settings are prone to avoid racialized discussions for fear that they will highlight the difference between white and black students. They thus fail to acknowledge that race has an impact on the lives of people (Pollack 2004) and that the category of 'black/race/ethnicity' is quite central in everyday perceptions and central to many power struggles in post-colonial multicultural Portugal. This attitude, which prompts negative stereotyping and prejudice based merely of appearances and physical characteristics, is rooted in centuries of historical denigration of the many peoples of Africa that were colonized and dominated. This was a generalized attitude of students of the EMG class, who often claimed that 'for me there is no difference between black and white children. Children are children." In fact, this is one of the issues that created most theoretical and rhetorical struggle in the teacher candidates' discussions during class, as predicted by Ladson-Billings (1994) for American populations.

A second issue that constitutes a site of resistance is that of equity education in diverse environments. Teacher candidates respond to the notion that all students are not the same in class with the inference that they should all be treated equally and that differences should be obviated; difference is immediately assumed as a problem for the teacher, who besides teaching the mainstream students 'the same', will have to address the needs of special education pupils

with 'different' approaches and materials. This may be considered a 'negative perception of diverse students' (Rose, 2011) on the part of teacher candidates, which was most of the times reduced to one kind of diversity: special needs pupils, characterized for their lack of ability. Teacher candidates failed most of the times to include in their discussions aspects of diversity that concerned class, gender or sexual orientation, overt or dissimulated negative discrimination and stereotyping. Cultural diversity, in the sense of describing a different culture, its customs, food or folklore, by contrast, was celebrated as enriching points of view.

Language as one type of human diversity that disturbed the homogeneity of classrooms was generally handled as a case apart by teacher candidates, to which schools already offer provision and that would eventually be solved with the progressive integration of foreign, immigrant or refugee children in mainstream classes. Little consideration was generally given to the fact that pupils would be learning a foreign language through another foreign language or that they would do their schooling in a foreign language and how this might have an intercultural impact.

Pedagogical materials

Research has shown that there is a combination of empirical study and coursework among the pedagogies most widely used to assess and promote the socio-cultural consciousness of teacher candidates in relation to the impact of cultural affiliations in the classroom and the school cultures of learning (Rose, 2011).

However, as a first stage of a teacher educator's self-reflection on students' responses to coursework, this project will eventually be followed by field work once the teacher candidates enter their school practice semester (the third semester).

Notwithstanding, in the Portuguese context of higher education, which often foregrounds theory before practice, we think it important to work on students' understanding of concepts they will later put into practice in multicultural classrooms and which, in this case, were interwoven with practical applications to teaching resources.

The pedagogical materials shared and discussed with teacher candidates as samples for their project work revealed diverse engagements with language and culture and offered multiple perspectives on multicultural and intercultural education.

The project 'on the line' uses as organizing cultural principle the Greenwich meridian that crosses diverse schooling environments and shows the importance of networking north and south, their interdependence and multiple points of view and versions of reality that may be shared by pupils in classrooms. It offers the possibility to study cultures, values, lifestyles, and worldviews of individual identity groups through the school environment, in respect for their diversity. I think it is a good example of how one can concentrate on particular group identities without falling into the conservative multicultural approach that requires assimilation to the mainstream culture.

The European Language Portfolio was presented to teacher candidates as a central tool used in the foreign language classroom in Portugal and other European countries, which has a part devoted to intercultural education in the sense that it promotes opportunities for pupils to describe and reflect on intercultural experiences they have had and how they have affected them.

Both *The Autobiography of Intercultural Encounters* and *Mirrors and Windows*_focus on communicating across different linguistic and cultural backgrounds and aim to move the emphasis from linguistic competence to intercultural competence. Intercultural competence involves, in these teaching materials, paying attention and learning how to interact with diversity of modes of living, ways of thinking and ways of seeing. These materials also focus on self-knowledge and re-valuation of episodes of cultural encounters. One student, for example, mentioned how *Autobiography of Intercultural Encounters* reminded her how she had felt when two siblings arrived from China in her English classes in Portugal. They spoke neither English nor

Portuguese and communication was very difficult. She was able to imagine their sense of desperation and loss, but also communicated her sense of impotence. Another student reported having experimented devaluation and dismissal because of speaking Portuguese in France, among relatives.

Methods

In order to describe a teacher educator's self-reflection on students' responses to coursework, this paper documents, through the critical and conscious choices of pedagogical tools to teach a foreign languages (English or Spanish) by teacher candidates, how they integrated theoretical points they learned and wrote about in a class blog.

The research questions of this project might be formulated in the following way:

What are the teacher candidates' initial perceptions of multicultural/intercultural education in schools?

How do oral debates and writings (in the classroom blog) reflect their conscious and unconscious assumptions about multicultural education in the context of foreign language teaching?

How do these notions impact on their choice of materials to teach English/Spanish from a multicultural/intercultural perspective?

Researcher and participants

As teacher educator and researcher, I planned the coursework, lectured on the points mentioned in 3 and monitored both the class blog discussions and class debates. Teacher candidates had to respond to the class blog weekly. The fifteen three-hour sessions were both face-to-face and on line synchronous sessions, which took place during the first semester 2011/2012.

Only 9, out of the 16 students enrolled, attended classes. 8 were enrolled in the three-semester master program. Among these, 6 already had a teaching degree in English and Portuguese and 3 had no educational background at all. 1 student attended classes not integrated in the Master program, although she wishes to do so in the future. She works as a teacher of foreign languages. Having practicing teachers in the classroom was unexpected, but explored to advantage, because it allowed the researcher to contrast field experience of those teacher candidates that already teach and those that have had no direct professional contact with schools.

Data collection and analysis

This study is based on the teacher candidates' oral contributions to debates and weekly contributions to the class blog, both in their mother tongue (Portuguese) and in English, on the teacher educator' notes after class oral debates and discussions, written after each 3 hour session with students, as well as on the final task developed by the teacher students, where they had to suggest the three best foreign language materials (for English or Spanish) from a multicultural/intercultural perspective. The students' project work included research into several teaching materials that had to be chosen as examples of good multicultural practice. From all the materials gathered, the students had to further refine their choice for the 3 best multicultural teaching materials and offer a theoretical justification for their choice.

The blog entries were purposely conceived as requiring reflexive responses from teacher candidates and they follow a pattern that addresses the following reflexive path: what teacher candidates understand education to be about in a globalized world; how they conceive of their own cultural identity positions; their understanding of the impact on cultural diversity in schools in the European context; how they imagine their response to cultural difference in the foreign language classroom and in schools as multicultural settings; what they consider important, and value, as intercultural and multicultural education and as culturally responsive teaching; and what they would value in a multicultural/intercultural project.

Initial perceptions

The teacher candidates' first reactions to scenarios of societal change were to advocate 'critical attitudes towards existing educational practice'; and to reinforce their views of pupils 'as individuals who need individualized attention, each with their own needs'. Initially, teacher candidates define 'multicultural/intercultural education' as "an exchange of cultures", "a negotiation between cultures" and education to "change the frames" (in the sense used by Bauman (2001), "the ability to relate to others and interact with them" and as 'tolerance of those that are different and have 'other' cultural, national or linguistic affiliations. One student also defines 'multicultural education" as "a rhetoric unable to change reality". One teacher candidate mentions culture clash as 'inevitable' and 'necessary', as part of the need to accept and recognize different cultural, racial and social affiliations of students.

Once they had read a report on education in Europe and Paul Gorski's (2010) critique of US multicultural education syllaby in "*Five Shifts of Consciousness for Multicultural Educators"*, teacher candidates chose to comment on the following issues:

- the contrast between understanding 'multicultural education' as accepting diversity, as long as it can be integrated into the mainstream, and 'multicultural education' as education that strives to critically address social justice and equity, respect and negotiation of common aims among diverse points of view;
- the lack of equity and opportunity of mono-cultural curricula to accommodate diverse populations of pupils;
- the need to adapt curricula to the socio-political conditions of learners;
- the need to take into account diversity in learning styles;
- education and classroom practices as ways to eliminate educational inequities;
- the gaps that arise between theoretical propositions and practice in what concerns issues of equity and social justice;
- recognition that there is a tendency in Portuguese schools, which the teacher candidate rated wrong, to view pupils from other social/linguistic groups as homogeneous 'others' and to expect them to be assimilated into the mainstream culture;
- the meaning of being multiculturally competent, which one teacher candidate presented as understanding 'the relations between own identity, and culture, language, education and citizenship".

Visible differences, such as those of race/ethnicity and less visible differences, such as ability, nationality, language.

While reflecting on their own practice and the learning contexts they are integrated in, those teacher candidates that already practice as teachers in schools highlighted the following:

- schools are not concerned with learning/teaching multicultural education and they act as if by incidentally promoting this or that ethnicity point they were integrating minority students;
- many teachers are unaware of how they should deal with multicultural diversity in their classrooms or how to advantageously explore cultural heterogeneity;
- educational policies only meet school's needs half-way because of their emphasis on mixed-ability classes and on accomplishing the curriculum;
- many teachers fail to recognize the unequal distribution of resources and opportunities that inevitably divides their pupils into achievers and under-achievers;
- schools do not accommodate easily a concept such as 'equity'; they prefer to work with the concept of equality, to which they are partial and are used to.

Intercultural education in the context of foreign language teaching

Having discussed multicultural and intercultural education from a theoretical standpoint, teacher candidates were asked to decide (in theory) what should be part of an intercultural educational project in the context of learning/teaching foreign languages.

Some students' responses highlight conservative multicultural projects that tend to essentialize the 'other' culture: celebration of 'the day of a particular culture', exhibitions of artifacts and customs of a particular culture or celebrating other culture's festivities. However, mention is also made to revising the representations of people from other cultures in school manuals.

Some students tend to focus on promoting closer relations between the school and parents / the community through specific campaigns, happenings and conviviality moments that would bring diverse communities together to share personal and cultural experiences.

A shared suggestion is providing physical and virtual mobility experiences for students as a way to engage them in negotiating diversity first hand.

Other suggestions include: a multicultural class journal, open to the contributions of the whole school community (parents, pupils, stakeholders) to highlight threats and opportunities, advantages and disadvantages of living in diverse multicultural communities; the inclusion of short-stories about the cultures represented at school; collecting information for a book of jokes and proverbs from diverse cultures.

Only one student focuses on changing the class teacher role from lecturer to tutor and consultant and assessing cultural content through any subject matter.

The choice of materials

There is no space here to go through the initial choice of materials for teaching and learning foreign languages from an intercultural perspective by teacher candidates. From the more than fifty resources collected, teacher candidates were asked to choose the three best resources and to justify why. The list below summarizes their suggestions. Students were asked to consider whether their suggestions would fall within the concepts of 'conservative', 'liberal' or 'critical multiculturalism' presented by Gorski (2009) and while some students still showed some confusion as to the type of multicultural approach, the majority seemed to be able to assess adequately the type of multicultural approach they were favoring.

Practical implications

Gorski (2009) claims that 'most multicultural education courses are not designed to prepare teachers to do the full work of multicultural education", which may be also true of the experience described. However, while this kind of course may not easily change mindsets in one semester, as a foundation course it establishes a learning background that seeks to integrate socio-cultural, political and economic perspectives that may impact on the understanding of how to teach and learn a foreign language in a culturally sensitive way and in respect for multicultural and intercultural practice.

Data collected shows that the teacher candidates were able to make a good selection of resources for learning and teaching a foreign language and promote intercultural/multicultural education and proved to be conscious of the kind of multicultural approach they prefer, which was mainly a 'liberal approach'. They also clearly confirmed that they recognized the limitations of 'conservative multicultural approaches' that tend to homogenize and stereotype groups of people through their 'customs', 'festivities' or 'food festivals'.

If we were to organize the pedagogical materials presented, in terms of intercultural/multicultural learning outcomes, a liberal multicultural approach would predominantly emerge that is concerned with promoting cultural sensitivity, tolerance and celebration of difference as well as analyzing biases and prejudices and trying to change mentalities. Some teacher candidates prefer to approach these materials through an identity

dimension, such as Muslim religion, others approach it through some form of oppression such as racism or sexism, while others still search for pedagogical strategies that allow for a critical examination of social conditions or promote some kind of social activity the pupils could engage in.

There may be some kind of resistance to engage with cultural complexity as relations of power between privileged and underprivileged groups that sets out invisible lines of privilege that impact on the cultures of learning in schools, but on the whole this constitutes a small empirical research project that confirms that teacher candidates are able to use theoretical multicultural/intercultural concepts in practice.

The resources collected may not be wholly consistent liberal critical and radical approaches to multicultural education, but they do go beyond the celebration of the 'other culture' day, as is current practice in schools, and they pool together a collection of pedagogical multicultural approaches that might be used by any foreign language teacher as part of their linguistic and intercultural teaching aims. As such, they may constitute valuable resources for the foreign language classroom.

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PROMOTING ENTREPRENEURSHIP EDUCATION IN VOCATIONAL LEARNING CONTEXTS

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Abstract
Entrepreneurship education is made up of inner and outer entrepreneurship. The aim of inner entrepreneurship education is to support the importance of individual spirit of enterprise in studies and work life as well as to help the learner understand that the possibilities of success will be found in oneself. The development of entrepreneurship education is one of the topical aims of education in Finland and is included in the compulsory studies of teachers and teacher educators. A national project for it was started in 2010 and is financed by the Ministry of Education and Culture. The present study is part of the national project.

Keywords: constructivism, enterprise, experiential learning, humanistic learning conception, innovation

Introduction

How a teacher should carry out entrepreneurship education? At its best it is a flexible process rich in experiences. The purpose of didactic and pedagogical methods of entrepreneurship education is to create a path from pre-school to university.

In entrepreneurship education leading oneself is the basis of meaningful action. It presupposes self- knowledge, ability to regulate one´s actions, define meaningful aims and act effectively towards them. Creating the methods and models should be a joint task of school organizations. Creativity, self-confidence and innovativeness should be supported by them as well. The principles of entrepreneurship education were stated by the EU (Lissabon, 2003) to make entrepreneurship a basic skill of citizens. Consequently, entrepreneurship education was taken into the curricula of general and vocational education in Finland.

Entrepreneurship education consists of both inner and outer entrepreneurship. The aim of inner entrepreneurship is to support the significance of entrepreneurship at individual level in studies and work life as well as to help the learner understand that the keys of success will be found in him/herself. Simultaneously the learner will be guided to find the meaningfulness in his/her life and become socialized in society.

Developing outer entrepreneurship is the hoped-for continuance of inner entrepreneurship. It should be supported by vocational education as well. In all national economies employment is supported more and more often by private and public entrepreneurship, and this process is desirable. Above all, the most important aim is still the individual person, his/ her inner entrepreneurship and success. The inner spirit of entrepreneurship should be cherished in every individual. Finding it out needs a wise pedagogue who asks: what can we do to kindle the spark?

Theoretical background

The teachers´ professional development is seen as a process of conceptual change in this study. Based on the constructivist learning conception, humanistic conception of people and dynamic epistemic conception, the model of entrepreneurship education is viewed as a process which occurs in two interdependent contexts. They are a social theoretical locus, i.e. an experiential

and reflective group where teachers and students can give voices to their ideas of learning and teaching and reconstruct their knowledge, and a practical locus where they can experiment, experience and reflect on their experiences and pre-conceptions. (cf. Gorodetsky et al., 1993.) The sequence of these two loci can vary, but they are mutually dependent. Consequently, the next passages deal with individual and organizational viewpoints of entrepreneurship education.

Individual characteristics

There are numbers of various misconceptions and beliefs of an entrepreneur personality. According to the studies (Keskinen & Virtanen, 2001) analyzing the personality doesn't yield any special view of the phenomenon. Instead, studies of the situational factors in learning environments and the motivational structures of an individual offer a starting point for the research. The focus is individual inner learning which supports outer actions. Entrepreneurship education is stimulated by the learner´s observations; traditional teaching which is based on quantitative evaluation does not create entrepreneurial attitude. The learner should be allowed to influence on his/her learning process and find prerequisites for the forms of collaborative learning (Remes, 2003).

Individual inner entrepreneurship is manifested as an active behavior and social intelligence. It adds to individual effectiveness and productiveness. In the changing situations of work places these people employ themselves better than others in carrying out business ideas. Consequently, inner entrepreneurship seems to be equal to responsibility, innovativeness and future-orientation.

At an individual level inner entrepreneurship can be seen as a personal target of development, a goal of mental and social growth, employment, success in work life and ability to change individual goals, i.e. as a lifelong process of professional growth. Thus the basis of a person´s purposeful action includes leading oneself. It is an ability to regulate one´s actions, set meaningful goals and act effectively towards them. All of the aims presuppose sound self- image which school community should support.

The development of entrepreneurial attitudes will start from individual experiences. Thus identity, social interaction and intentionality develop the learners´ world views. They are crystallized in the ways of doing, seeing, feeling, communicating and learning (Gibb, 2005). Entrepreneurship education is wider than business education which is easier than to educate people to grasp new chances (Baumolin 1968). The core of entrepreneurial learning is context-bound action between collective and individual dynamics (Kyrö et al., 2007). The action integrates theoretical knowledge and practical learning (Swedberg, 2000; Lope Pihie & Bagheri, 2011). Useful competences are also the skills of planning, problem solving and decision making (Shane, 2003).

Values

The value basis of entrepreneurship education begins from personal values and attitudes and is added by various aspects of entrepreneurship. The education is not to make everybody into an entrepreneur but to increase personal inner entrepreneurship in general. The values are connected to the needs of work life but also to the conceptions of people of themselves as lifelong learners. The task is to serve the whole mankind.

Among the values of educational communities there are competence and encouragement. The learners are spurred to the top of their personal performances. In the same way the organizations of work life are continually renewing, reflective and exert self-evaluation. They shall break old limitations, reward innovative initiatives and define themselves once and once again.

Global, European and national economies

The EU (Lissabon 2003) has stated that entrepreneurship education should be made into one of the basic skills of citizens and to increase the European competence to gain in the global economic markets. A central purpose of Europe was by 2010 to appear globally as the most competitive and dynamic economy based on knowledge. For this the learners should be prepared continuously by education. The EU also tries to increase such pedagogical practices as tend to active citizenship of the learners and their self-directed employment measures in the future as well. (European Commission, 2004; The Ministry of Education and Culture, 2004; Remes, 2004).

Globalization in economics is one of the greatest challenges for the Finnish and European educational systems at the moment. Young unemployment varies in EU countries from nearly 30% to 50 % in the employment statistics. In all educational forms of young people entrepreneurship education should gain more emphasis to prevent marginalization. In addition, the demands for increasing effectiveness are growing on all levels of organizations. Employees are considered sub-providers, individual entrepreneurs, and their work is based on entrepreneurial values. The changes of global economics are difficult to foresee, since business fluctuation and changes in the fields of operations are faster than ever, which increases individual responsibility and requires individual readiness for change. What makes it increasingly important is the above mentioned youth unemployment rate which is expected to stay at a high level over the next few years in Europe. Entrepreneurship is the best solution for the unemployment problem. School education is the crucial factor to enhance entrepreneurship at individual level.

Pedagogy of entrepreneurship education

Due to the phenomena mentioned above, the development in Finland led to the fact that entrepreneurship education became added to the bases of curricula in general and vocational education, and educational organizations are bound to offer entrepreneurship education to all learners as a compulsory theme in all subjects. Thus teachers have to include the principles and aims of inner and outer entrepreneurship in their curricula, pay attention to developing entrepreneurial learning environment, create networks and become aware of commercial life when planning learning environments as well as integrating entrepreneurship education into study subjects and cultures. Teacher educators are obliged to acquire necessary competences to be able to include them in their teacher education programs.

What appear essential in the pedagogy of entrepreneurship education are the learners´ individual activities. For that reason pedagogy must pay attention to experimental processes which give opportunities to reflective learning. Teaching is to set up from the right frame of reference and proper approaches to various age groups. Each age group should be given relevant challenges. The factors influencing the success of teaching and socialization into entrepreneurship are school culture, teachers, students, parents and the social environment. The problem areas are theoretical approaches without empirical aspects.

Entrepreneurship education must include conceptual thinking, too, but it should come after a concrete experience. Empiricism, constructivism and conceptual thinking support each other and offer a good starting point for reflective learning. The focus is in problem solving skills, moving from conception-centered and passive knowledge to solving practical problems and inventing new methods.

Knowledge and ideas are availed of simultaneously by analyzing the present performing ability in relation to the acquired knowledge. Education also directs to the future. A good goal is positive, concrete, re-evaluable and explains what the learner has to do and how. If the aim feels unreachable, the hindrances have to be considered. In this way the entrepreneurship education can state what the learner´s presuppositions are and what she/ he has to learn more.

An educational school community which functions in an entrepreneurial way is not dependent on money and resources in the first case, but is, instead, dependent on ideas and measures to reach the aims with, maybe, less money. The present way of acting shall always be questioned and the aim directed to the future by pursuing reforms and innovations. They shall be guided by strong core prospects and strategies, and the whole staff will be involved in it.
The curricula and courses should integrate entrepreneurial contents availing of working and teaching methods, e.g. the support of autonomous learning, team work, tutoring, mentoring and activities sponsored by connected enterprises. These aims should be opened also in research strategies, staff development, business networking and everyday cultures of educational organizations.

Table 1. *Different approaches of traditional and entrepreneurial didactics.*

General traditional didactics	***Entrepreneurial didactics***
learning from a teacher	learning from the others
passive role as a listener	learning by doing
learning from a written text	learning from personal discussion and argument
learning in the framework of the teacher	learning by finding out
learning from the teacher´s feedback	learning from many people´s reactions
learning in organized scheduled environments	learning in flexible, informal environments
purposeful learning	learning without the stress of purposes
copying from others is evaded	learning by borrowing from others
mistakes are feared for	mistakes are for learning
learning from notes	learning by solving problems

Research context and methods of the study
Vocational teacher educators in Oulu University of Applied Sciences have carried out optional courses on entrepreneurship education (6-12 ECTS credits) 3 times as a part of national research project.
Preliminary research questions were:
1. How can individual entrepreneurship potentiality be influenced on?
2. How can an organization promote the development of a learner´s inner and outer entrepreneurship?
The material for this pilot study was collected by half-structured course feedbacks, oral follow-up discussions, virtual discussions in the national entrepreneurship education network and open questions to student teachers and vocational teachers (Attachment 1). The data from the research persons, i.e. student teachers (N=50) as well as from the vocational secondary teachers (N= 42) were analyzed mainly by the qualitative content analysis, with the phenomenographic approach. The curriculum of the pilot project is given in attachment 1.

Findings
Individual level. Positive mental images of entrepreneurship were a fruitful starting point, as one of the participants stated: "*Nothing is more meaningful than challenging oneself every day*."
Experiences and stories of entrepreneurship were dealt with through deep dialogue processes. The means of education: excursions to business enterprises, learning-at-work periods and reflection after the experiences lead to find a personal attitude towards the matter.
The foci of traditional and entrepreneurial education were compared with each other and they appeared in the following way in follow-up group discussions.

Table 2. *Foci in traditional and entrepreneurial learning according to the views of target persons (student teachers).*

Traditional education	**Entrepreneurial education**
the past	the future
knowledge	insight
passive understanding	active understanding
absolute objectivity	emotional sharing
symbolic processing	processing of events
written communication and neutrality	personal communication and influence
concept	problem or possibility

Inner entrepreneurship can also be seen as a goal of personal development and as the aim of individual and social growth and development. Individual employment and success in work life are highly connected to the commitment to communities, guidance of one´s own life and positive self-image as well to a capacity to change personal aims. They lead to a lifelong professional growth process of an individual.

Table 3. *Recognizing and developing an individual learning path towards entrepreneurship according to the target persons´ group discussions (4 groups) during the course.*

Aims at individual level	**Strategies**	**Evaluation**
become aware of entrepreneurship as a choice of life, and dreams to come true	learners should be presented entrepreneurship as a realistic way of employing themselves	the curricula should correspond to the aims; every subject should contain the aspects of entrepreneurship
recognize one´s entrepreneurial potentiality, self-efficacy beliefs, skills of leading oneself and the challenges of development	learners´ entrepreneurial qualities should be recognized and learning from mistakes be supported, the culture of shared learning be cherished	core qualities for success are positive atmosphere, teacher´s interactive skills and teaching methods as well as attitudes and values, learners´ planning skills, self-assessment and reflection
to educate the learners to avail of their entrepreneurial facilities, daring and activities as well as to encourage them to experiment and take initiatives	learning metacognitive skills, developing problem solving skills, knowledge acquiring and applying as well creative thinking. Bringing new information should be well-timed from the perspectives of understanding and self-regulation	networking with enterprises, availing of sponsored facilities from enterprises
construct environments supporting entrepreneurship in vocational schools	new innovative learning environments inside vocational schools in which the learners share their everyday lives	demands of resources and commitment to school community and willingness to practice entrepreneurship education
to create realistic images of entrepreneurship education in a positive way; learning by doing and learning from experiences	excursions to enterprises, entrepreneurs´ visits to school and learners´ participation in the occasions	Offers plenty of chances, if successful, to schools and learners about the realization of entrepreneurship
basic knowledge of business	facts about business and its significance to national economics	gives a concrete picture of entrepreneurship, its risks and opportunities
learning-at-work –periods should support inner and outer entrepreneurship	meaningful period at work life is preceded by pre-training at school	appears as an individual way of acting and social intelligence

In other words, the path towards entrepreneurial learning environment stresses the following aspects: 1) a learner´s activity and autonomy are based on the constructivist conception of experimental learning. 2) Efforts are made to place the learning in simulated or real-life situations. 3) Students should find it possible to interact directly with the learning target. 4) In planning teaching the problem oriented learning is emphasized instead of subject orientation. 5) Studying is a holistic and lengthy process instead of short lessons. 6) The students are supported by tutors and specialists. 7) The role of a teacher should be that of a supervisor´s.

The above ideas were expressed by the student teachers who participated in the courses on entrepreneurship education. The views were idealistic as can be expected from the persons who have not ample experience of how school organizations work. They had been made acquainted with what entrepreneurship education might be in practice. The courses were optional, so the participants appeared also to be a kind of hand-picked groups from amongst all student teachers.

Open answers from employed vocational secondary teachers tell another, less idealistic story. Still they also see that entrepreneurship education should be an experiential learning process, and the model should be built individually from the learner´s starting points and his/ her goals. Different entrepreneurship classes would be, according to them, the best way to carry out education. They also feel it important to define different goals and methods to various age groups. In this way the result is a meaningful model. *"Inner entrepreneurship education is treasure hunting!"*

On the school level, entrepreneurship education should be considered a global aim. Learning environments and methods should favor entrepreneurship whenever possible. The factors leading to understanding entrepreneurship were emphasized. The students should be encouraged to participate in national and international projects demanding individual and interactive competences.

Youth entrepreneurship profile consists of a) knowledge, i.e. facts, feelings and experiences, b) skills, i.e. knowledge and experience needed to perform a specific task or job, and c) competences, i.e. knowledge, skills and applied and mastered know-how in given work situations.

The learners should be built, from early school years, the right conception of inner entrepreneurship. In vocational education the focus is to build a path from inner to outer entrepreneurship, from one goal to the next including individual purposes and aims. In the comprehensive school level entrepreneurship education should be designed according to the age groups in the following way:

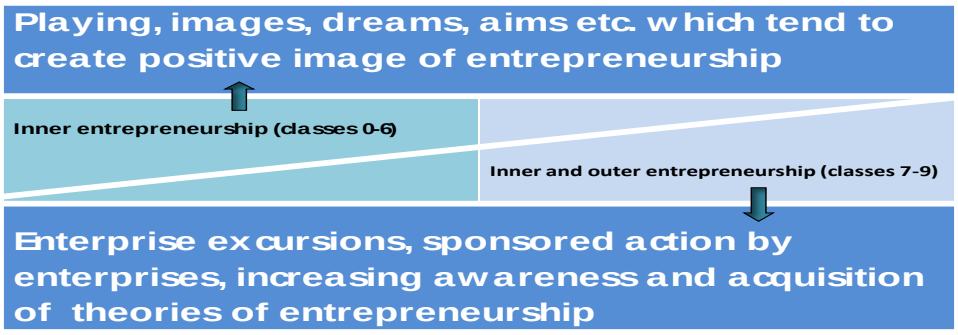


Figure 1. *The contents of entrepreneurial education to the age groups from 6 to 15 years*.

The dynamics of effective network in vocational education according to the views of both student teachers and vocational secondary teachers can be presented as the steps in the following way.

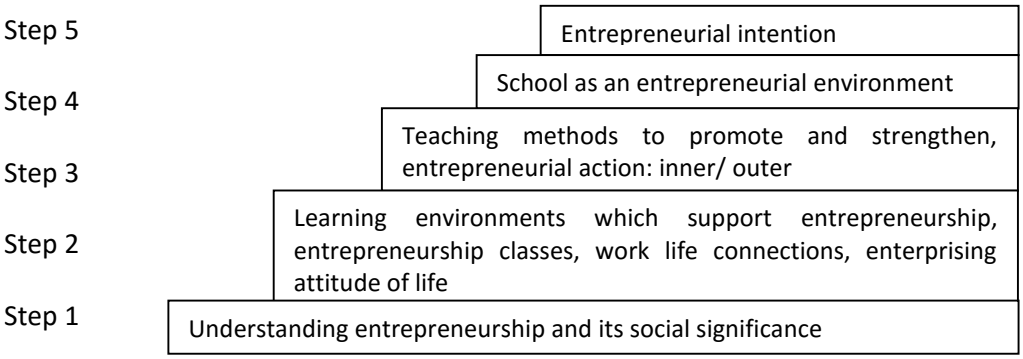


Figure 2. *The steps of entrepreneurship education.*

What does that path mean to *an educator*? It is important that as early as possible the students get acquainted with small business enterprises, especially those owned by the earlier students in the same institution. The respondents from all levels of education explained that the path in figure 2 will
1) give advice of what you could teach to young people,
2) can help you identify your personal training needs,
3) can develop and use training material for the training process,
4) implement the tools for each step,
5) tell how to measure the entrepreneurial intentions of young students,
6) build the local network, and
7) promote the ideas in the local community.
8) You could ask entrepreneurs to come into your class.
9) You can also organize contests, e.g. treasure hunting.
10) A very important goal is to make young people dream of what they want to become, as the dreams will often get realized.

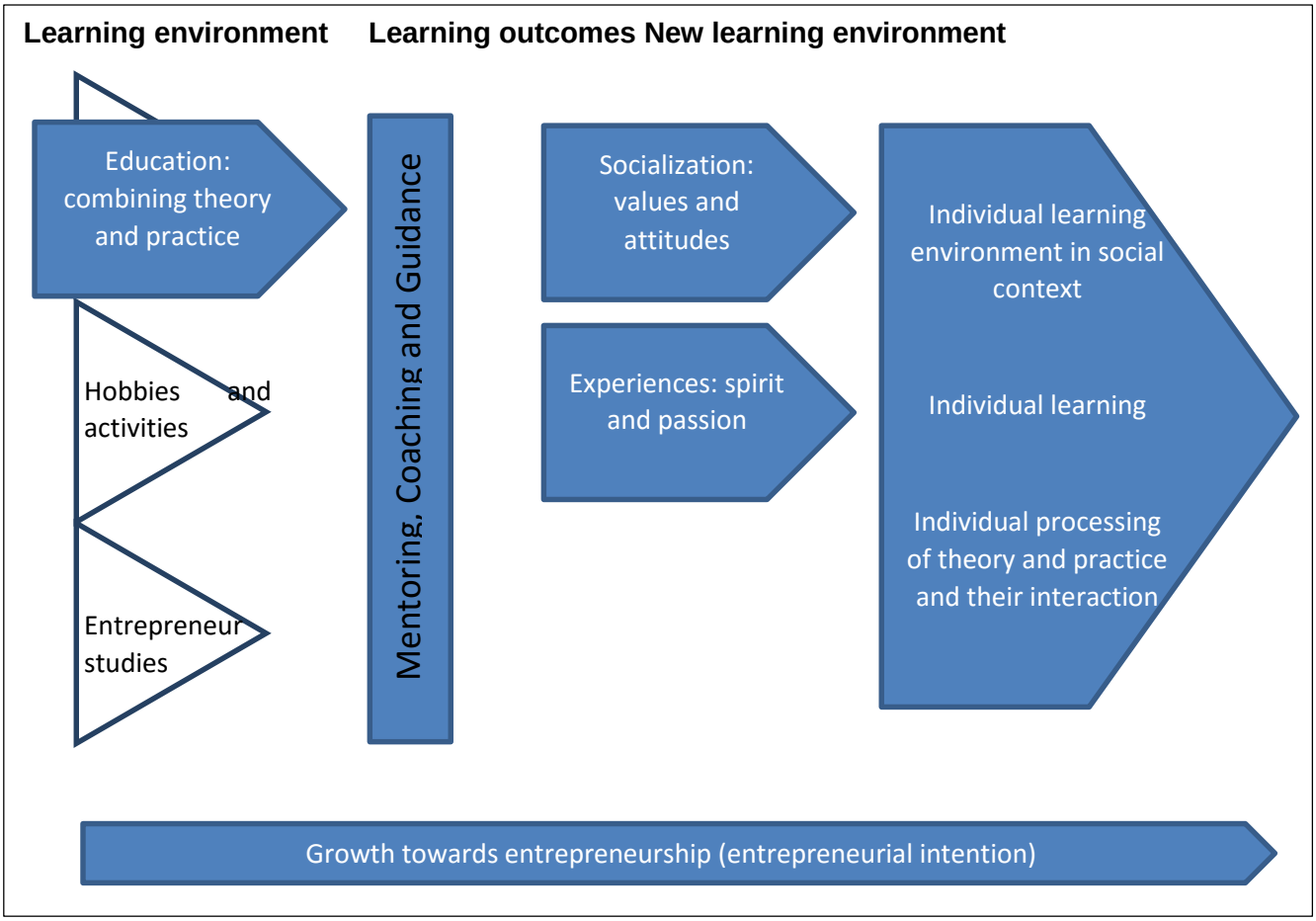
What are the challenges for school organizations and teachers to realize entrepreneurship education totally or partially? The respondents of the secondary vocational education stated several reasons for that. First they explained that entrepreneurship education has not been defined clearly enough: its contents have not been opened for the teachers. Students, on the other hand, feel that present entrepreneurship education is marketing and business oriented education, and, consequently, teaching is not a bridge to real entrepreneurship. Teachers are not, either, oriented to entrepreneurship, especially in secondary vocational and general education. Subject teachers feel that since they have no proper education in entrepreneurship behind them, they find it difficult to realize it themselves or together with colleagues. Part of the teachers think that realizing entrepreneurship education presupposes more shared planning in school communities, and the subject should be opened up in the curricula. Integration into different subjects is seen necessary. In this way it could lead to cooperation across the borders of different subjects. Daily work should contain entrepreneurship workshops which could support the development of entrepreneurship intention of the students. This presupposes the engagement of all educational organizations to entrepreneurship education.
The results represent a normal dualistic phenomenon of teaching approaches: in the starting phase the teachers are full of eager idealism. Their stories of themselves as teachers are

different from those of observers. (cf. Hindin et al., 2007, p. 372) The change processes are frightening: the teachers may cherish the myths of teaching, i.e. of being omniscient (cf. Guskey, 2002; Britzman, 1986). After having got experiences and found the world of realistic approaches, they come back to reality. It means that in times of change they move on the border of real and idealistic self images.

Conclusion

The research shows that young people need motivational factors and clear aims to support their learning, also that of entrepreneurial learning. They need mechanisms to test their ideas (e.g. SWOT analyses) and evaluate them. For that they have to learn knowledge and skills as well as practical ways to turn ideas into practices. They need flexible systems and processes to be able to proceed in personal ways. They need individual, integrated support and guidance. Mentoring students and teachers is a way to solve problems facing them. The attitudes of both teachers and students are utterly important. The teacher involvement triggers the change. The students are to individualize the targets. Finally, financial resources are also needed.

The following figure shows the way of creating a new learning environment.



Discussion

We live in postmodern society. It presupposes that every individual shall create their own paths of life as the result of their choices. In addition, they shall learn autonomy, self-regulation, reflectivity and find their personal inner entrepreneur as well as the right attitude to entrepreneurial life. Education can influence on an individual´s potential entrepreneurship which presupposes individual learning process. The learner has to commit him/-herself to the learning process which the whole educational organization should then support. The process cannot be promoted by a single teacher, but it must be collective.

A future entrepreneur, whether inner or outer, is not necessarily revealed by education. Social learning and phenomenological personality theories support the development of inner entrepreneurship and may lead to outer intentions. It presupposes interactive and social learning processes when the growth towards entrepreneurship takes place in interaction. The contexts can thus strengthen the qualities of both inner and outer entrepreneurship.

In entrepreneurship education the teacher should move from group-centered curricula towards wider individually centered learning and action, when the aims and contents are synchronized in the learning processes. The more profound understanding of entrepreneurship in school organizations exists, the better might it lead to innovative action and recognizing the signals of change in our time. This, again, will produce new models of action locally and in national and global economics.

What is the message to teachers and teacher educators? Education must follow time and recognize weak signals of change. Being aware is not enough. Instead, based on the challenges,

new approaches to teaching must be developed. Teacher education must question the old practices in the direction of competences and innovation pedagogy. Teachers and teacher educators are makers of change.

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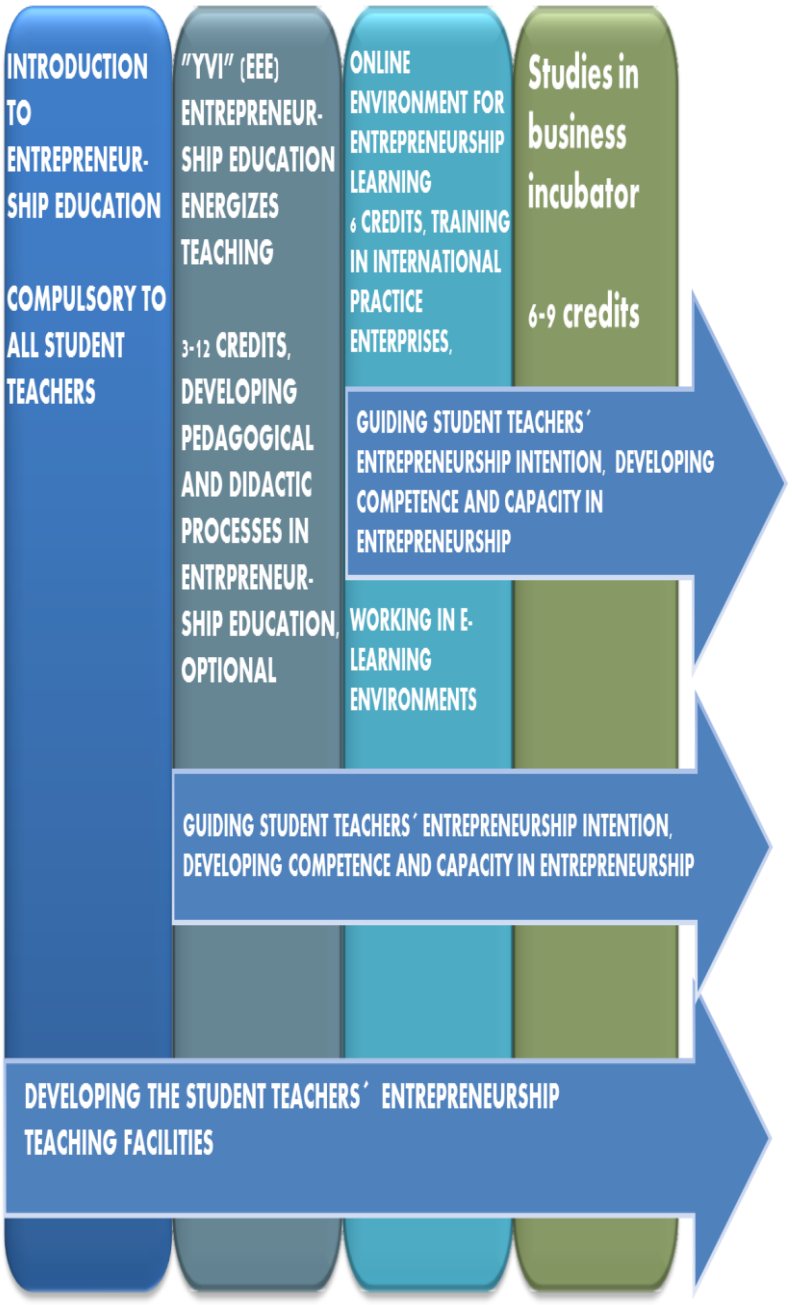
ATTACHMENT 1. The curriculum of the pilot poject.



ATTACHMENT 2. A questionnaire to employed vocational teachers.

A PILOT RESEARCH ON ENTREPRENEURSHIP EDUCATION
A QUESTIONNAIRE FOR SECONDARY LEVEL VOCATIONAL TEACHERS 2011.
ANSWER THE QUESTIONS IN YOUR OWN WORDS.
WHAT ARE THE MOST CENTRAL CHALLENGES IN TEACHING ENTREPRENEURSHIP?
DOES THE PRESENT TYPE OF ENTREPRENEURSHIP EDUCATION ENCOURAGE THE YOUNG TO BECOME ENTREPRENEURS IN FINNISH SOCIETY?
HOW DO YOU UNDERSTAND THE MEANING OF ENTREPRENEURSHIP EDUCATION?
HOW SHOULD ENTREPRENEURSHIP EDUCATION BE CARRIED OUT IN SECONDARY VOCATIONAL EDUCATION?
WHAT COULD BE AN IDEAL MODEL OF REALIZING ENTREPRENEURSHIP EDUCATION?
WHAT IS YOUR

VIDEO ANALYSIS OF TEACHING AT HUNTER COLLEGE

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Abstract

The faculty of the School of Eduction at Hunter College of the City University of New York, USA, the chief preparer of teachers for the public schools of New York City, has built and deployed an online system for capturing, uploading, analysis, and assessing the act of teaching in the classroom. Required of all candidates for certification, Hunter's Video Analysis of Teaching program has served more than 5000 graduates in five years. This paper describes what was done at the College, how it was accomplished, what has been learned so far, and plans for next steps.

***Keywords*:** education, teacher training, teacher preparation, digital video, open standards, teacher evaluation, video analysis, online video

What we have done

Five years ago, with generous support from Bobbie and Lew Frankfort, the Hunter College School of Education embarked on a voyage of video analysis. We required all of our candidates for certification and degrees to capture themselves at work on video, and then to subject this recording to several forms of analysis. We thought that this would help the candidates improve their teaching, and enable the faculty to focus on classroom practice. So far, more than 5,000 teachers have gone through our process of video analysis, which we have modified based on our experience. Today, the process consists of eight steps.

The assignment

The faculty member in charge of each student teaching or internship seminar assigns the video analysis as a requirement of the course. In some cases, they simply ask the student to capture an entire lesson. Others define the task more closely, asking students to capture evidence of a specific technique that the class has been working on. The assignment most often occurs in the second half of the semester, when the candidates have had a chance to acclimatize to their student teaching placement, and have taken full responsibility for a lesson. With more than 60 different faculty members supervising these seminars, we see a healthy variation in the nature and details of these assignments.

The capture

The student teacher plans a lesson suitable for video analysis, borrows a camera from the college, sets it up, and does a practice capture. Perhaps the supervising teacher helps to aim the camera. After a few practice takes, the teacher shoots an entire lesson, from beginning to end, 30 or 40 minutes, depending on the nature of the work. *TechNote: We use small, inexpensive cameras that capture and compress the video into a web-ready, standards-based MPEG4 format, the Sanyo Xacti camera. We have just built an app that lets students use iPads, iPhones, and iTouch devices to capture, compress, upload and analyze their videos on a single device.*

The revelation
The student puts the memory card from the camera into the computer and watches the video. Here the motor of growth starts to spin. Most of our students have never watched themselves teach. What they see in this first viewing reveals their work in a new way. From posture to diction to gesture, from classroom management to student response, from content mastery to questioning skills, they see themselves in a new light. The process of self-improvement begins at this point, as they become aware of their own peccadilloes, peculiarities, and possibilities. For a few, the revelation is disconcerting enough to provoke a second capture. *TechNote: Our cameras do not use videotape: they record directly into memory cards as MPEG-4 files, so they can be read directly by the computer.*

The upload
To make the video available for further analysis, the teacher connects to Hunter's video server and uploads the lesson that was captured. This is done with three clicks of the mouse: one to select the faculty member who will review the video, one to select their own name, and one to start the upload. Once uploaded, the teacher adds a brief description of the context for this sample of teaching, and other information necessary for the faculty supervisor to understand it. *TechNote: We built our own server software to manage the uploads, running on a Unix server, and employing 100% open-standards programming with HTML, SQL, and PHP.*

The self-analysis
The motor of growth accelerates as the teacher applies Hunter's online analysis tools to the video. Based on his or her own interests, or the designs of the supervising faculty, the students examine their videos through the various lenses provided by Hunter's online system. They may measure the extent of teacher vs. student talk in the session; they may apply one of the national teacher quality rubrics to the video; they may provide a running reflective commentary for their supervisor. The full array of analytical tools is available to the teacher. *TechNote: The Hunter faculty has designed a dozen different online tools for analyzing and evaluating the videos. In our system, any video can be viewed and analyzed with any of the online tools.*

The expert analysis
As the teacher analyzes the video, so does the faculty supervisor, online and asynchronously. The faculty member watches the video, reads the student's description, and uses one or more of the online analytical tools to take notes, make commentary, or quantify certain aspects of what's observed. The video may be rewound, sped up, slowed down, or viewed in one section in detail over and over. More than one faculty member may analyze a single student's video, looking at it perhaps through a different analytical lens. In this way a wide range of expertise may be brought to bear on the classroom experience.

The conference
The student meets with the faculty supervisor to discuss the video, and identify implications for improvement. By now, both are quite familiar with the content of the classroom experience captured by the camera. They view it together in real time, stopping and starting, and accessing particular moments, so as to make the conference concrete and useful. In many cases, excerpts from the video are shared in the student teaching seminar. Again, the motor of growth is extended and enforced.

The improvement
Because they are teaching every day, the participants in the video analysis program are able immediately to apply what they have learned from the process to their practice in the classroom.

From their preparation for the video capture, through their revelation, to the various analyses, and finally at the conference, the candidate identifies specific areas where their work can be improved. This, of course, is the purpose of the program.

The video clip library

We ask students who have gone through the process of video analysis to contribute an excerpt of their teaching to a permanent library that is used in seminars, methods classes, and other parts of Hunter's teacher preparation programs. The faculty and students annotate and tag these clips so that they can be retrieved easily. Our library today contains more than 3500 such clips.

What we have learned

More than 5,000 students have gone through the process of video analysis at the Hunter College School of Education over the last five years. From preschool special educators to 5th-grade teachers to counselors, from math teachers to principals, they have captured themselves at work on video and subjected the results to self-analysis, peer analysis, and expert analysis by the faculty. We have learned many things from this work about the craft of teaching, about supervision, about professional development, and about the technology of online digital video. This article concentrates on what we've learned about the best ways to set up the analysis system to be most useful to the student.

Observable vs. hidden

Most systems of teacher evaluation include both observable and hidden attributes of good teaching. For instance, in Charlotte Danielson's *Framework for Teaching*, we find both the very observable "Using Questioning and Discussion Techniques," as well as the somewhat obscure "Growing and Developing Professionally." The first you can see in a video from the classroom; the second you can't. Or in James Stronge's list of skills, we find the hard-to-see "Holds reading as a priority," as well as the very visible "Links instruction to real- life situations of the students." Video analysis has proven to be much more useful when it restricts itself to actions that can be seen and heard in a video clip. The hidden attributes distract the analyzer, and so we've found it better to remove those from the rubrics for video analysis.

Conceptual vs. concrete

Likewise, the more concrete and specific the thing you are looking for, the more appropriate to video analysis. We have found that very general statements such as "knowledge of content and pedagogy" (from Charlotte Danielson) are far less useful to the developing teacher than specific items such as "Uses nonlinguistic representations such as mental images, graphs, acting out content." (from James Marzano.) Just as Doug Lemov urges teachers to employ targeted "precise praise" with students, so we have found that precise and specific items in a rubric are much more useful in video analysis.

Description vs. evaluation

When a student, or a supervisor, or a faculty member first watches a classroom video, the natural tendency is to leap to evaluation: "That's great teaching!" or "This lesson needs work." But this is a dangerous jump. Much more useful to the process of developing teachers' skills is to begin with description, and later work toward evaluation. Force yourself to watch a video and look cooly for certain target behaviors, stopping the video and tagging the behavior when you see it. Objective, careful and detailed description has proven more valuable than a quick evaluative judgement.

Checkbox, scale, or counter?

Most teacher evaluation rubrics are presented as scales, from one to five, designed to evaluate how well a teacher performs one of the skills in the list. And so this is how we started as we built our online video evaluation tools. But we found along the way that this is not necessarily the best teaching skills, and watch a video with all of them in mind at once, we'd be wasting our time. Better to develop a short list of a dozen targeted behaviors clustered around a single concept, and look carefully just for those. Then go back, and look at the same video with another set of items. The results are much more eye-opening and useful to the teacher. And so we have developed multiple lenses through which to view the videos: a lens that focuses on English language learner behaviors, and another that looks at questioning, and so forth. The video may be examined under each of several lenses in turn, for a more thorough analysis.

Self-analysis

Probably the most powerful motor for improvement is the reaction of the teacher to seeing him or herself on video. We have found that if we focus their attention on their own behavior, by having them analyze and quantify their video repeatedly through several structured lenses, they become motivated to learn and change. Starting with self-analysis, then moving to peer analysis and expert review, forms a powerful progression of professional development.

Summary

For video analysis of to be useful, it should concentrate on those attributes of teaching that are observable and specific, while at the same time avoiding the obscure and abstract. It should perform first a thorough description of the acts of teaching, through multiple lenses, before attempting an evaluation. And it should rely as much as possible on structured self-analysis as a motor for growth. And while all this is happening, we should be on the lookout for important things that we did not see before.

National impact

U.S. Secretary of Education Arne Duncan describes the Hunter video analysis program as the most sophisticated technology tool for the preparation and improvement of teachers. Steve Cantrell, director of the national Measures of Effective Teaching project funded by the Gates Foundation, has called on Hunter to help design for them a system for video analysis. The New York State Regents changed their regulations for the certification of teachers to require video analysis according to the Hunter model. The National Council for Accreditation of Teacher Education, with advice from Hunter College, is revising its accreditation to include performance recorded on video. The American Association of Colleges for Teacher Education, also with Hunter's advice, is revising its standards to incorporate video analysis. Many schools and organizations have called on Hunter to learn about and apply our work on the video analysis of teaching, including the Pearson Corporation, McGraw-Hill, High Tech High and its national consortium, Harlem Success Academies, Lehman College, and the Rhode Island Department of Education.

PLENATITUDE – TEACHER EDUCATION FOR EFFECTIVENESS AND WELL-BEING

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Abstract
The role and functioning of schools are changing as well as what is expected of teachers, (who face growing and diversified challenges); consequentially well-being at our schools is endangered. As teachers and teachers' educators our concern is: how to improve schools' and teachers' effectiveness[13] and promote well-being? Believing that the path to effectiveness is through evidence-based practice, according to research results (meta-analysis and effect-sizes), we decided to determine which factors have more impact on schools effectiveness; teachers arise as a significant factor, accounting for about 30% of the variance on pupils' achievement. So, we´ve searched for factors that have significant impact on teachers' effectiveness. Evidence shows that, among other factors, giving/receiving feedback, beliefs and expectations, self-efficacy, establishing clear goals, effective interpersonal communication and classroom climate are determinant. In face of these findings, we've explored how Neuro-Linguistic Programming can contribute to improve teachers' effectiveness, through professional training.

Keywords: teachers' effectiveness, neuro-linguistic programming, teachers' education.

«For teachers can make education a thing of joy and success
or a matter of frustration and despair.»
Gage 1977, 13

Education has moved its emphasis away from ensuring that all students go to school to ensuring that all pupils learn while they are at school, meaning «from planning the quantity of education to planning the quality of education» (Postlewaite, 2004, *cit. in* Anderson, 2004, p. 13). To ensure quality we must promote schools efficiency and well-being for all its elements.

Why an evidence-based approach? Teaching is a complex reality and teachers, «in the myriad judgments they make every day, would be more professional in those judgments if these were based upon the accumulated evidence from their own practice and from that of the profession as a whole» (Pring, 2010, p. 210). Lemov (2010, p. 6) diagnoses: «One of the problems with teaching is that there's a temptation to evaluate what we do in the classroom based on how clever it is, how it aligns with a larger philosophy, or even how gratifying it is to use, not necessarily how effective it is in driving student achievement». We agree with Petty (2009, p. 1) who supports an evidence-based practice, not custom and practice: «People often mistake

[13] Efficacy studies happen in a controlled environment or clinical laboratory, while the effectiveness studies are performed in real contexts, in order to evaluate the results in everyday practice (as the APA Division 12, cf. Diniz-Neto and Feres-Carneiro 2005, quoted in Webster-Stratton, C., Gaspar, M., Seabra-Santos, M. (in press).

common practice for best practice, and seem to prefer the comfort of the crowd to thinking for themselves using hard evidence.»
Petty (2009) characterizes an evidence-based teaching practice: uses the methods that work best (the 20/80 rule)[14]; understands the learning process (in terms of brain science); finds the problems and fix them (contextual factors).
Therefore, this author presents as principles of an evidence-based practice:
We need all the evidence to make sound decisions;
It's not enough to know what works, we need to know why;
We need to find the critical success factors that are failing in our teaching context and fix them;
We need to review/monitor our teaching constantly in the light of the evidence.

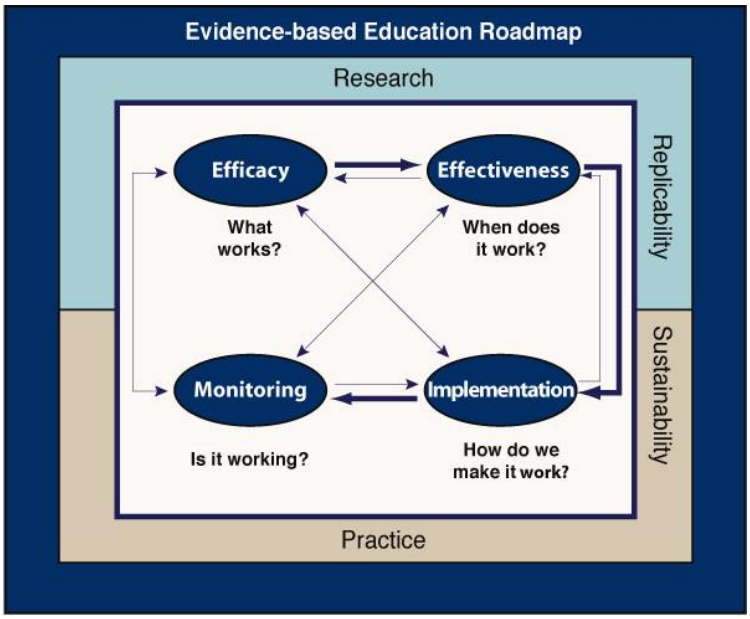

Figure 1. *Evidence-based education model (Wing Institute)*[15]

Summarizing: «We want the truth (evidence rather than tradition), the whole truth (all the evidence), and nothing but the truth» (Petty, 2009, p. 5). In this framework, Petty (2009) points out a road for teachers to promote change in their practices by creating their own evidence: action-research, 'theory in use', beliefs analysis, feedback gathering about the way they teach.

What does research shows that works on enhancing schools' effectiveness? More than knowing research results, filtering them is required since, has Hattie (2009, 1) states, «in the field of education, one of the most enduring messages is that "everything seems to work"»; therefore, attention must be focused on what causes difference in a significant way, by using effect-sizes[16]. This author points as the 'hinge-point' the value of .40, meaning that only values above that are significant as efficiency indicators:

[14] «Twenty per cent of what you do makes 80 per cent of the difference, so let's work smarter, not harder, by concentrating on the factors that make this difference» (Petty 2009, 3).
[15] Retrieved from http://winginstitute.org/The-Wing-Institute/Our-Activities/.
[16] The advantage of using the effect-size method is that effect sizes can be interpreted across tests, classes, times, etc. (Hattie 2012).

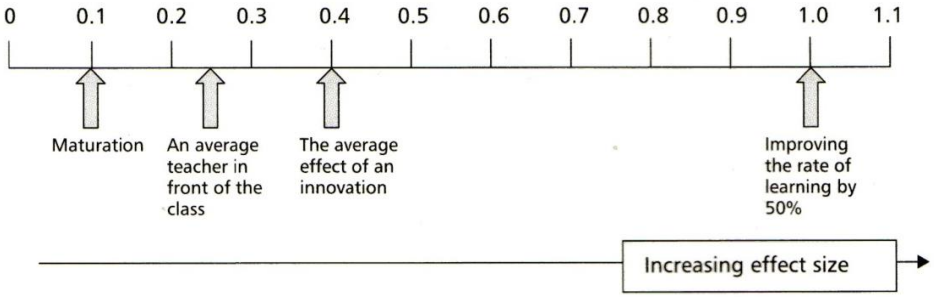

Figure 2. *Comparing effect-sizes, according to Hattie (Petty, 2009, 60).*

Effect-sizes are, indeed, a brilliant source of evidence (Petty, 2009). Hattie (2003), based on hundreds of meta-analysis, has determined the impact of each factor on students' achievement, according to effect-sizes, being teachers' impact weight evident:

Table 1. *Effect-sizes of school factors on students' achievement (Hattie, 2003, 4)*

Influence	*Effect Size*	*Source of Influence*
Feedback	**1.13**	Teacher
Students prior cognitive ability	**1.04**	**Student**
Instructional quality	**1.00**	Teacher
Direct instruction	**.82**	Teacher
Remediation/feedback	**.65**	Teacher
Students disposition to learn	**.61**	**Student**
Class environment	**.56**	Teacher
Challenge of Goals	**.52**	Teacher
Peer tutoring	**.50**	Teacher
Mastery learning	**.50**	Teacher
Parent involvement	**.46**	**Home**
Homework	**.43**	Teacher
Teacher Style	**.42**	Teacher
Questioning	.41	Teacher
Peer effects	.38	Peers
Advance organisers	.37	Teacher
Simulation & games	.34	Teacher
Computer-assisted instruction	.31	Teacher
Testing	.30	Teacher
Instructional media	.30	Teacher
Aims & policy of the school	.24	School
Affective attributes of students	.24	**Student**
Physical attributes of students	.21	**Student**
Programmed instruction	.18	Teacher
Ability grouping	.18	School
Audio-visual aids	.16	Teacher
Individualisation	.14	Teacher
Finances/money	.12	School
Behavioural objectives	.12	Teacher
Team teaching	.06	Teacher
Physical attributes (e.g., class size)	-.05	School
Television	-.12	**Home**
Retention	-.15	School

TALIS[17] report (OECD, 2009) presents an analytical model of the associated factors of an efficient education which has the following variables: teachers' characteristics (demographic and employment profile); school and classroom characteristics (background); professional

[17] Teacher and Learning International Survey.

development characteristics; teaching practices and beliefs; school evaluation characteristics; teachers' praise and feedback; leadership style.

Why is important to promote teachers' and learners' well-being? As Hunt, Wiseman and Touzel (2009) state, the great challenge for schools is to balance two concerns: develop and implement instructional programs that lead to greater academic success while also supporting the individual affective needs of their students.

According to Lawson (2010) well-being is important for at least two reasons: (1) wellbeing is multidimensional and has a wide sphere of influence in people's lives; (2) students and teachers bring into schools and classrooms their relationships and states of wellbeing, all of which have a powerful impact on teaching/learning.

So, although effective teaching primary purpose is increasing academic achievement, two additional points are important (Hunt, Wiseman and Touzel, 2009): (1) the most effective instruction associated with academic achievement produces positive affective ends; (2) no instructional strategy or behaviour should be applied for achieving academic gain which results in affective loss.

Weare and Gray (2003) report the benefits of promoting emotional and social competence and well-being (identified both in literature and on research): improvement in teacher performance, improvement in pupils' behaviour, increased inclusion, improved learning, greater social cohesion, improvement to mental health. Matos and Carvalhosa (2001) present the results of several studies which indicate that: a direct relationship between the perception of a positive school climate and well-being of students (Battistich and Hom, 1997; Samdal et al., 1998); a school that promotes a sense of belonging and of having support facilitates students' personal and social development and their well-being (Battistich and Hom, 1997; Matos and Carvalhosa, 2001c).

School population need to have a sense of belonging. This school connectedness is increasingly identified as significant for enhancing young people's resilience, pro-social behaviour and learning outcomes (Benard, 2001; Libbey, 2004; Cunningham, 2007). Connectedness encompasses how students feel at school, their participation and engagement with learning, and the quality of the relationships they experience (Bond et al., 2001; Whitlock, 2006). There are also studies in mental health (Raphael, 2000; Rowling, 2005), anti-bullying initiatives (McGrath & Noble, 2006) and school effectiveness and wellbeing (Zins et al., 2004). It is linked in the school effectiveness literature with school efficacy (Hargreaves, 2001), school leadership (Leith & Reihl, 2003), mental health (McKenzie et al., 2002) and positive outcomes for students (Putnam, 2001).[18]

Weare and Gray (2003) refer that to promote learning of emotional and social competence school and classroom climate, in its key-aspects, must be based on and foster warm personal relationships, encouraging positive communication and autonomy and promote security and clarity.

Teachers' well-being is also important. Weare amd Gray (2003) identifies teachers' behaviour and attitudes as a main factor which determines how efficiently pupils learn emotional and social competences and experience emotional and social wellbeing. Therefore teachers' needs must be taken in account and met in order to promote their well-being; professional development should contribute.

How important is teachers' effectiveness? Being teachers «the greatest influence on student achievement *over which we can have some control*» (Hattie, 2012, p. 22), we need to ensure

[18] Studies mentioned in this paragraph are cited in Roffey (2008).

that this greatest influence is optimized to have powerful positive effects on our pupils (Hattie, 2003).

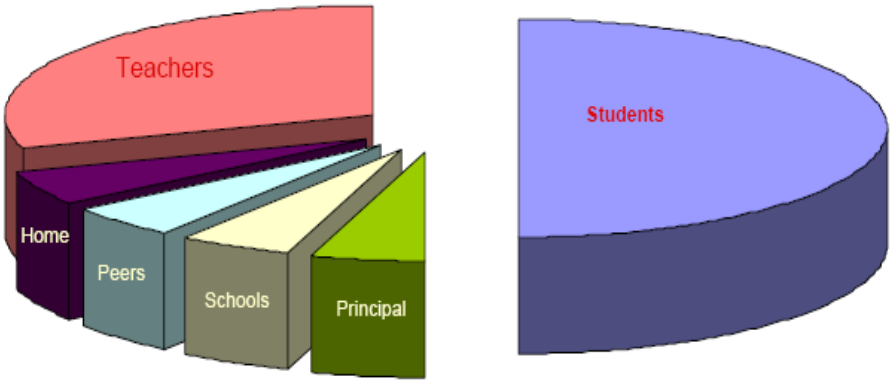

Figure 3. *Percentage of achievement variance (Hattie 2003, 3)*

Research shows that differential teacher effectiveness is a strong determinant of differences in student learning, far outweighing the effects of differences in class size and class heterogeneity», being the impact of teacher effectiveness (or ineffectiveness) additive and cumulative (Anderson, 2004, p. 20).

Researchers have always wanted to list the characteristics of an effective teacher, promoting extensive research in this direction[19]. Being teachers' characteristics relatively stable traits that are related to and influence the way teachers practice their profession, Hay McBer (2000, cited in Anderson, 2004) identifies twelve teachers' characteristics organized in four clusters:

Professionalism – commitment, confidence, trustworthiness, respect;

Thinking/reasoning – analytical thinking, conceptual thinking;

Expectations – drive for improvement, information seeking, initiative;

Leadership – flexibility, accountability, passion for learning.

Burden and Byrd (2007, cited in Hunt, Wiseman and Touzel, 2009) suggest that the most essential effective teachers' characteristics may be placed into three categories:

Knowledge – professional, pedagogical and pedagogical content;

Skills – to use their knowledge efficiently;

Dispositions – values, commitment, professional ethics, beliefs, attitudes.

Petty (2009) describes expert teachers as those who set challenging goals, have very deep understanding of teaching and learning, monitor learning and provide feedback, and structure effective teaching in high-stakes exams. Hattie (2003) makes the distinction between experienced teachers and expert teachers, claiming teachers' expertise/efficiency can be promoted according to the following categories:

[19] Perrott (1982) presents several lists of criteria, produced by educational researchers, with effective teachers' characteristics since 1960.

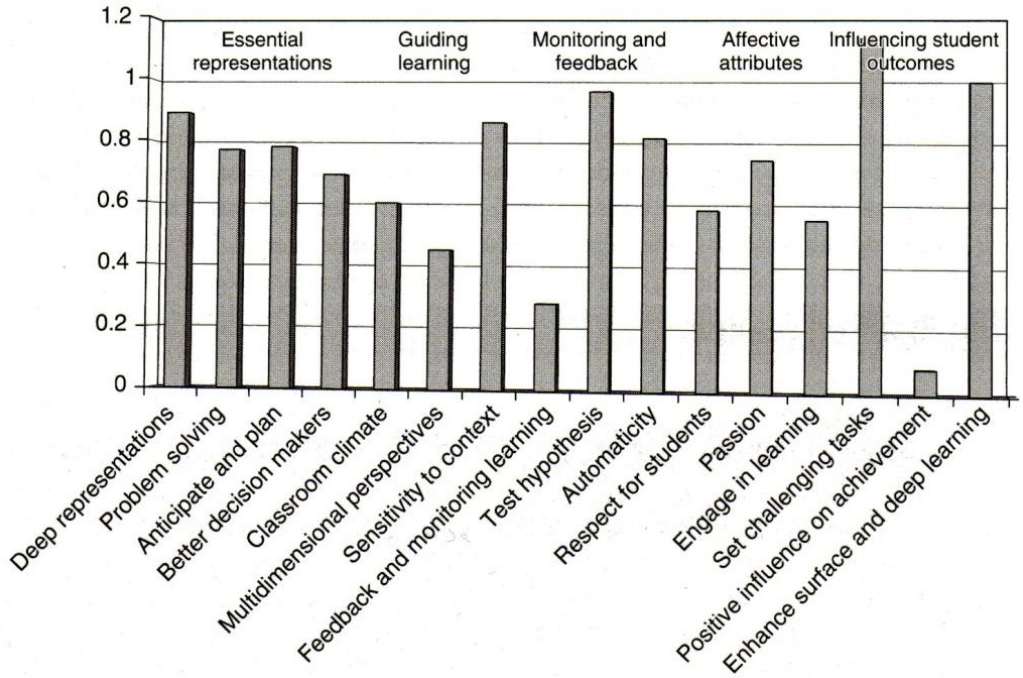

Figure 4. *Effect-sizes of differences between expert and experienced teachers (Hattie, 2012, 29)*

Hattie (2009) states that, summarizing, what works is: define a challenging goal, get the students to work in that direction and give them feedback of what they've already achieved.
According to TALIS (OECD, 2009), two variables are important pre-conditions for teachers' professional success: teachers' self-efficacy and classroom climate. Portugal has negative indices in these variables: teachers' self-efficacy (-0,08) and classroom climate (-0,39), being TALIS average 0,00 on both. The same report refers that teachers practices and beliefs have a significant impact in these two variables.

How does self-efficacy sense is related to teachers' effectiveness? Self-efficacy perception is a construct related to teachers' beliefs and influence their accomplishments (Ashton, 1984; Tavares et al., 2003)[20]. Teacher's self-efficacy sense, according to Denham and Michael (1981, cited in Castelo-Branco, 2006), contributes, in a significant way, to the perception that teacher has of his/her practice and students' achievement.
Self-efficacy perception is a fundamental human conduct construct, since when someone believes and develops self perceptions of capabilities, creates the path to achieve objectives. Bandura (1986, cited in Castelo-Branco, 2006) states that personal efficacy self-perceptions constitute the best predictors for involvement and persistence in different tasks, explaining the three dimensions of tasks confronting:
First dimension - self-efficacy perceptions that determine whether a behaviour is started or not;
Second dimension - experiences of self-efficacy that determine the amount of effort expended on a task;
Third dimension - perceptions of self-efficacy that predict the individual persistence in face of obstacles and adverse circumstances.
Also for teachers self-efficacy sense has a cognitive and an affective component (Ashton, 1984). The cognitive component involves two aspects: (1) the feeling of the probability that teachers can cause positive changes in students (according to their expectations of themselves and of students), (2) the assessment teachers make their own skills or abilities to cause such changes

[20] Authors cited in Castelo-Branco 2006.

(Denham & Michael, 1981). The affective component refers to the sense of pride or shame associated with the sense of efficacy (Denham & Michael, 1981)[21].
In the last three decades, a growing body of empirical evidence supports Bandura's (1977) theory: teachers' self-efficacy beliefs are related to the effort teachers invest in teaching, the goals they set, their persistence when things do not go smoothly and their resilience in the face of setbacks (Tschannen-Moran, Woolfolk & Hoy, 1998, cited in Tschannen-Moran & Hoy, 2005). Teachers' sense of efficacy has been related to their behaviour in the classroom and to student outcomes such as students' self-efficacy beliefs, motivation, and achievement (Anderson, Greene & Loewen, 1988; Ashton & Webb, 1986; Midgley, Feldlaufer & Eccles, 1989; Ross, 1992)[22]. Several studies have found that students with teachers who score highly on self-efficacy did better on standardized tests of achievement than their peers who are taught by teachers with low self-efficacy beliefs (Moore & Esselman, 1992; Anderson et al., 1988; Watson, 1991; Bamburg, 1994)[23].
Therefore, «teachers' beliefs in their own self-efficacy is related to their effectiveness» although it doesn't mean it's his cause (causal direction), most likely «the relationship goes both ways» (Muijs & Reynolds, 2011, 93).
How teachers' self-efficacy can be promoted? TALIS Report (OECD 2009) states that more professional development is often associated with greater teacher self-efficacy; therefore teachers' educators have a core role to play. The growing demand attributed to teachers' professional and practical knowledge must not, in this framework, neglect personal development and understanding of themselves as key aspects of teachers' professional growth.

What is classroom climate's role on teachers' effectiveness? Teachers' effectiveness is related to and dependent upon students' outcomes, therefore teachers need to create classroom climate[24] which support and promote students' success (Hunt, Wiseman & Touzel, 2009).
The importance of attending to classroom culture has been emphasized by Alton-Lee (1993, pp 82-83, cited in Anderson, 2004, p.55): «to focus on the instructional dimension without attending to the lived culture of the classroom context make invisible some of the most significant questions about both the learning and the well-being in classrooms».
Muijs and Reynolds (2011) present several studies and meta-analysis in which classroom climate is identified as an important factor in pupil achievement (Mortimore et al., 1988; Brophy & Good, 1986; Rosenshine, 1979), self-esteem (Fraser, 1994), pupils' participation in the classroom and democratic values (Cotton, 1997); lower levels of bullying and victimization (Shechtman, 2002). Byer (2000) also mentions studies which provide evidence of positive relationships between students' perceptions of classroom environment and learning outcomes (Fisher & Fraser, 1983; Martin-Reynolds & Reynolds, 1983; Moos, 1979; Trickett & Moss, 1974); students' perceptions of classroom environment explained substantial variance in their learning outcomes (Anderson, 1974; Fraser & Walberg, 1981; Walberg, 1976); there is a positive relationship between students' perceptions of the classroom climate and: academic achievement (Moos & Moos, 1978), social attitude (Fouts, 1987; Fouts, Chan & Biao, 1993), motivation (Knight & Waxman, 1990; Zevin, 1983), academic self-concept (Van Egmond, 1960; Knight & Waxman, 1990), self-esteem (Schmuck & Schmuck, 1992).
In short, the development of a classroom climate really safe, generating confidence and acceptance is crucial in children and adolescents education and for success of any educational practice requiring a deep involvement by the teachers, reflecting not only on their professional

[21] These authors are cited in Castelo-Branco (2006).
[22] Authors cited in Tschannen-Moran and Hoy (2005).
[23] Authors cited in Muijs and Reynolds (2011).
[24] Classroom climate «can be defined as the mood or atmosphere created by a teacher in her/his lassroom, the way the teacher interacts with pupils, and the way the physical environment is set out» (Muijs & Reynolds, 2011, p.137).

skills but - as a professional who deals with persons - also reflecting on their own personal and social skills (Comenius, 2009).

How feedback has such impact on student´s achievement? Hattie (2009) synthesized effect-sizes across meta-analyses to determine what has significant impact on students' achievement and stresses feedback as «the most powerful single influence enhancing achievement» (p. 12). Hattie's meta-analysis of 13,209 studies found that feedback from teachers and/or peers produced an average effect-size of 0.81; Marzano's meta-analysis of 488 studies involving students receiving feedback on the processes they used to complete a specific task produced an average effect-size of 0.74 (Petty, 2009).
So, feedback «is one of the most powerful influences on learning and achievement, but this impact can be either positive or negative», meaning that «the type of feedback and the way it is given can be differentially effective» (Hattie and Timperley, 2007, 81). In fact, research shows considerable variability on feedback effect-sizes, which indicates that some types are more powerful than others (Hattie, 2009). The least effective forms of feedback are praise, punishment and extrinsic rewards; the most powerful form of feedback provides cues or reinforcement to the student related to learning goals (Hattie, 2009).
There must be a clear distinction between providing instruction and providing feedback, because, when feedback is combined with effective instruction in classrooms, it can be very powerful in enhancing learning. Feedback is what happens second, it can only build on something; it is of little use when there is no initial learning or surface information. So, «feedback needs to provide information specifically relating to the task or process of learning that feels a gap between what is understood and what is aimed to be understood» (Sadler, 1989). According to Wine and Butler (1994, p. 5740) «feedback is information with which a learner can confirm, add to, overwrite, tune or restructure information in memory, whether that information is domain knowledge, beliefs about self and tasks, or cognitive tactics and strategies».[25]
Since «the main purpose of feedback is to reduce discrepancies between current understandings and performance and a learning intention or goal», the «major feedback questions are "Where am I going?" (learning intentions/goals/success criteria), "How am I going?" (self-assessment and self-evaluation, "Where am I going to next?" (progression, new goals)» (Hattie, 2009, p. 176-177).
According to Hattie and Timperley (2007, p. 82) feedback can be provided in different ways: «affective processes (increased effort, motivation, engagement), cognitive processes (restructuring understandings, confirming correctness/incorrectness, indicating more information, pointing directions, alternative strategies)».
To be really effective, feedback must be a two way road. As Hattie (2009, p. 173) found feedback is even most powerful when it is from the students to the teacher: «When teachers seek, or at least are open to, feedback from students as to what students know, what they understand, where they make errors, when they have misconceptions, when they are not engaged – then teaching and learning can be synchronized and powerful». Petty (2009) enhances that expert teachers seek feedback to test their own understanding of what is happening in their classrooms to determine their effectiveness and also give more feedback to their students.
Petty (2009), synthesing research findings, presents feedback stages:
Presentation of Information to Students (student starts constructing their knowledge of the topic)
Application (student constructs or improves their construct of the topic through an activity)

[25] Authors cited in Hattie and Timperley (2007, p. 82).

Product (student produces a Product from the learning activity, as a performance, answers, a document, etc)
Feedback (student receives feedback on the Product)
The same author operationalizes feedback stages on a conceptual map.

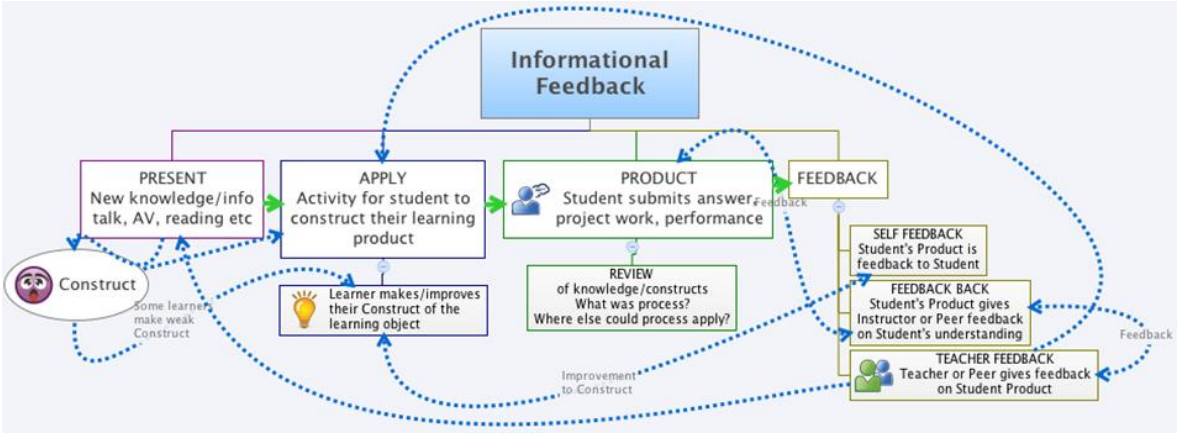

Fig. 5. *Feedback Loops*[26]

It's clear that providing and receiving feedback requires much skill by students and teachers. «To be effective, feedback needs to be clear, purposeful, meaningful, and compatible with students' prior knowledge and to provide logical connections» (Hattie, 2007, p. 104). It also needs to prompt active information processing on the part of learners, have low task complexity, relate to specific and clear goals, and provide little threat to the person at the self level.

What's teachers' education role on effectiveness enhancing? Unesco Report (Anderson 2004) sets a path to improve teachers' effectiveness by:
Overcoming teachers' reluctance to change – mostly caused by (a) a lack of awareness that change is needed, (b) a lack of knowledge (procedural) of how to change, (c) the belief that changes will not make any difference to their students;
Support the improvement efforts – providing opportunities to benefit from mistakes (as a source of information), providing opportunities to learn from others, treating teachers as individuals.
To overcome reluctance to change we need to play close attention on what might motivate them to get involved in an evidence-based practice. In a study[27], all teachers reported to be «willing to engage with evidence if they thought it would help them enhance pupils' learning [and] help them to make a difference». Cordingley (2010) addressing teachers' training, aiming an evidence-based teaching practice, states that new knowledge must be integrated into teachers' practice so that they accept the risk of promoting change.
In our days, the problem is not lack of information, but rather, lack of teacher training evidence-based. As Muijs and Reynolds (2011) state, the next decade presents new challenges from the increased knowledge from educational research and from the new knowledge from cognitive neuroscience. «Responding to these challenges through utilization of conventional methods of teacher education and professional development is unlikely to be adequate» (Muijs and Reynolds, 2011, p. 316).
Teachers' education has a core role to play; for instance, Portugal is one of five countries in which the amount of professional development taken by teachers is significantly associated with

[26] Retrieved from http://thekglawyerblog.com/ptblog/articles/how-to-do-feedback-in-plt-an-evidence-based-approach/.
[27] Teachers answered a questionnaire: members of National Teacher Research Panel, participants at TTA-funded research networking conferences, and teachers of TTA's School Based Research Consortia (Cordingley, 2010).

classroom climate (OECD, 2009). In terms of professional development, according to this report, Portugal is slightly below the average percentage (88.5%) of teachers who participated in professional training in the previous 18 months, with 85.8%. Simultaneously, is significantly above the average percentage (54.8%) of teachers who wished to participate in more training, with 76.2%.

A relevant data is that a significant proportion of teachers (more than half) think that professional development does not meet their needs (this is common across disciplinary groups). The extent to which this undermines the effectiveness of teachers is not measured by TALIS, but «it is difficult to imagine that such deficits are not to some extent detrimental to effective teaching and learning» (OECD, 2009, p. 77). These results point the need to ensure professional development opportunities that match teachers' needs.

Teacher education must give teachers the tools for effectiveness. Lemov (2010) states: the path to excellence teaching is the focus on technique and its constant refinement, associated with strategy[28]. OECD (2009) advises teachers to use a wider range of instructional strategies and techniques. Torrance (2010) refers to '*knowledge about action'* and '*actionable knowledge'*.

Teacher training towards effectiveness must be implemented both before and during teacher careers: «No matter how good pre-service training for teachers is, it cannot be expected to prepare teachers for all the challenges they will face throughout their careers. Education systems therefore seek to provide teachers with opportunities for in-service professional development in order to maintain a high standard of teaching and to retain a high-quality teacher workforce» (OECD, 2009, p. 49). Successful programs involve teachers in learning activities that are similar to those they will use with their students (*idem*).

What's Neuro-Linguistic Programming (NLP)? NLP can be defined shortly as "the study of the structure of subjective experience" (Dilts, Grinder, Bandler, DeLozier 1980, cited in Wake 2010, p. 13).

NLP has its origins in the early 1970's when a student of mathematics, Richard Bandler, and a professor of linguistics, John Grinder (University of California, Santa Cruz), began a process of discovering how masters (like Milton Erickson, Virginia Satir or Fritz Perls) in the domain of therapeutic communications performed. What distinguished the work of these individuals was their unprecedented success with cases and clients that other reputable therapists had failed:

[28] This author makes the distinction between strategy and technique: strategy is a generalized approach to problems, a way to inform decisions; a technique is an action, can be practiced, honed and adapted throughout life.

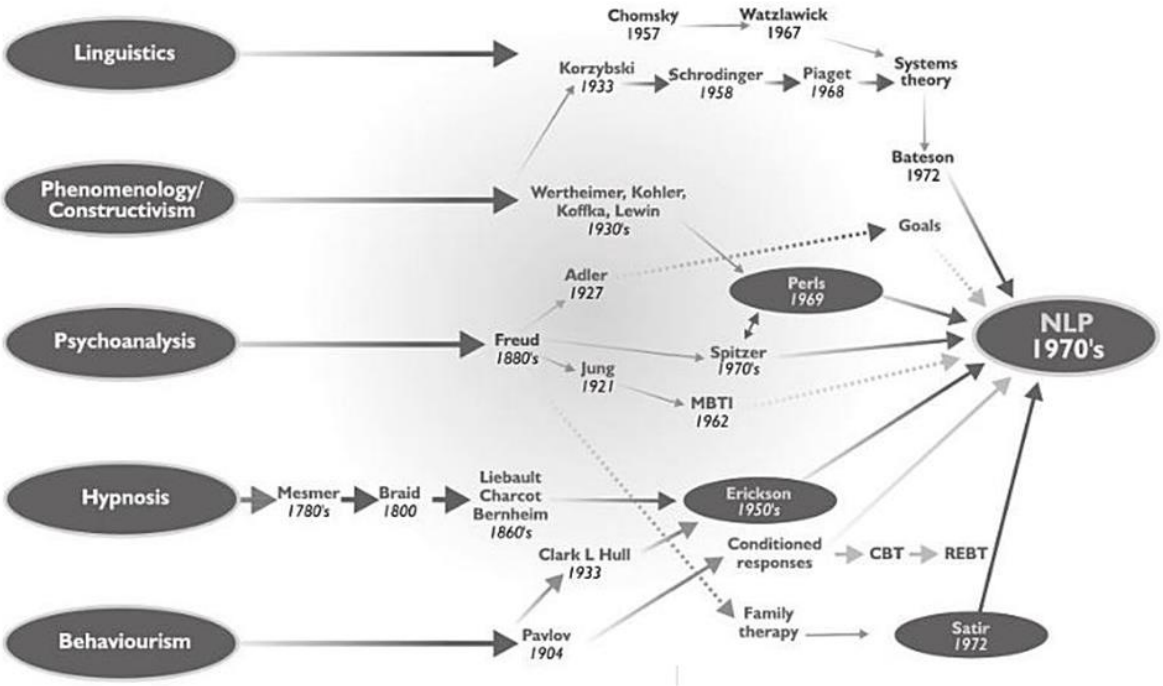

Figure 6. *Map of influences on NLP (Wake 2010, p. 9).*

So, the significant difference of Bandler and Grinder's approach is that, instead of studying what goes wrong and why, they studied what works and how it works. So, NLP studies «not only what effective people do but also **how** they go about doing it» (Churches & Terry, 2007, p. 1): the visible external behaviours/language and the internal mental processes that effective people use and the way in which they think. That is why NLP is sometimes described as the study of human excellence.

As Linder-Pelz and Hall (2007) explain NLP is a communication model; it is about the internal representation of experience and how people communicate with themselves as well as others. It focuses on peoples' subjective experience and constructed reality (Tosey, Mathison and Michelli, 2005) and how it relates to external behaviour:

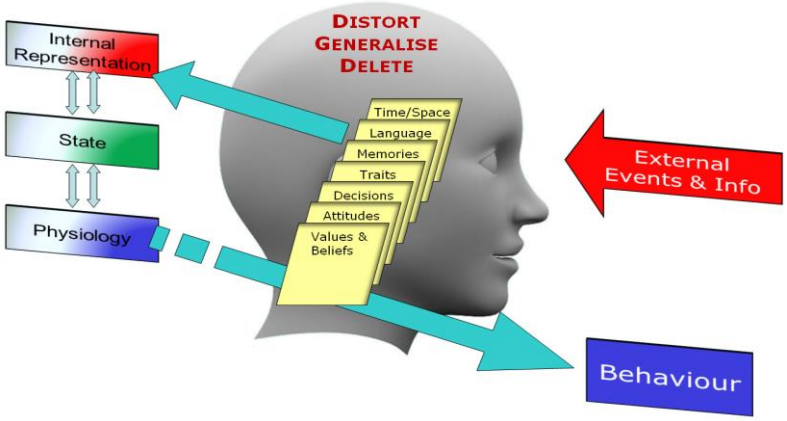

Figure 7. NLP communication model[29]

«'Neuro' refers to the way humans experience the world through their senses and translate sensory experiences into thought processes, both conscious and unconscious, which in turn

[29] Retrieved from http://www.scoop.it/t/the-ethos-of-neuro-linguistic-programming.

activate the neurological system; ´Linguistic' refers to the way we use language to make sense of the world, capture and conceptualize experience and then communicate that experience to others; 'Programming' addresses the way people code (mentally represent) their experience and adopt regular and systematic patterns of response» (Hall & Belnap, 1999; Corsetty & Pearson, 2000)[30].
NLP is related to education since its origins, as one of its founders Bandler stated NLP explores «the subjective experience of the processes by which people learn things» (1985, p. 117). Therefore, NLP is «an educational process. Basically, we're developing ways to teach people how to use their own brains» (Bandler, 1985, p. 7).

How can NLP increase teachers' effectiveness? Teaching requires mastery over interpersonal and intrapersonal skills. In fact, «effective teaching begins and ends with our capacity to manage our internal responses and external behaviours» (Churches & Terry, 2007, vii). So, being NLP about personal effectiveness, it offers teachers a range of tools and techniques to develop interpersonal and intrapersonal capacity, manage emotions and communicate more effectively. Bandler noticed that «people who teach a subject may be very good at it, and know a lot about that particular area. However, they usually know very little about how they learned it, and even less about how to teach it to someone else» (1985, p.117). Churches and Terry (2007) notice that teachers who achieve excellence have four main characteristics:
Know what they want – identify precise and achievable outcomes; know what the purpose and direction of communication and action is;
Know if they are getting what they want – develop sensory acuity to notice responses from pupils in order to provide feedback to ensure progress towards outcomes;
Have the flexibility to change – adapt behaviour, language and internal feeling, to a wide range of possibilities, in order to involve others in the outcome;
Take action – using their senses to notice if they are achieving what they want in order to adapt quickly and respond effectively,

What does evidence reveals about NLP impact on education? A good example is the Durham Project devised to provide groups of teachers with NLP training. «Schools benefit from using NLP by improving the quality of teaching and learning for students. Teachers share many of the techniques they learned, such as engaging and motivating students, supremely effective communication, improved tutoring, lively learning and much more. All of this is designed to raise standards of achievement and crucially to help schools raise levels of wellbeing in staff and pupils»[31].
Preparing this project, Benson and Carey (2006) made a «Summary Report» which reviews 111 studies/articles about NLP application in schools. The studies/articles represent a wide variety: academic articles, conferences, quantitative and qualitative studies, case studies, different strategies and techniques of NLP applied individually or combined, impact on students, teachers, parents, environment school... studies provide evidence on which they base their conclusions in favor of applying NLP in schools, address the following areas:
Communication in the classroom – language and learning; non-verbal communication and interpersonal skills; study skills;
Emotional and behavioural difficulties – specific learning difficulties; educational psychology;
Emotions and learning – learning and anxiety; self-expression; emotional states management; self-esteem; self-concept; motivation and relationships in the classroom; learning mindfulness; approach to learning, information processing and serotonin levels;

[30] Cited in Linder-Pelz and Hall (2007, p. 2).
[31] Retrieved from http://meta4education.co.uk/the-durham-project/.

Adapting the teaching style – combining the teaching style to the various sensory learning preferences and behaviour; specific strategies and approaches (spelling strategy, creative strategy, well-formed outcomes); modeling; meta programs; e-learning; professional identity;
School community – peer counseling; building positive relationships with parents; parental behaviour and home environment.
The majority of studies draw positive conclusions from the use of NLP in the classroom practice (the few articles which give negative opinion do not provide evidence), with a strong emphasis on the use of influence language patterns, awareness of all the sensory modalities and the use of anchors; there are still references to intervention in social and behavioural difficulties.
The Durham Project consisted on giving NLP training to teachers from 12 schools on NLP definition, presuppositions, well formulated outcomes, eyes access cues, modalities and sub modalities, anchors, rapport, metamodel, Milton model, emotional states management. Then there was an intervention phase, from individual to groups or classes. One NLP technique or strategy or a combination of several were used. Students' ages vary from 3 to 17 years. Schools' dimension were from small rural school to big secondary town school. This resulted on 24 case studies (Carey, Churches, Hutchinson, Jones & Tosey, p. 2009), which revealed that teachers: optimized their professional skills; shared these approaches with their colleagues; used influential language, being able to motivate students to learn more; can understand students in a completely different level; achieved significant change in students' individual and group behaviour; there was improvement in their feelings about their own abilities to handle difficult situations in the classroom; there was significant improvement in levels of self-confidence of students; students were more motivated; learning in the classroom was improved. Therefore, evidence indicates that NLP can enhance teachers' effectiveness[32].

Which teachers' effectiveness factors can NLP improve? Evidence indicates that NLP can help teachers on areas than enhance teachers' effectiveness, such as:

- factors above .50 (except "students' prior cognitive ability"), from Hattie's (2003) table of effect-sizes of school factors on students' achievement (see Table 1);
- teachers' sense of self-efficacy;
- teachers' beliefs and expectations;
- classroom climate management;

For instance, "Feedback". NLP can improve teachers' accepting/giving feedback, applying:

- using "*sensory acuity*" teacher is more aware of what's going in the classroom being able to capture 'signs' from the pupils, that's allows him to adapt his performance;
- through "*emotional states management*" teachers can deal with pressure and face school challenges in a positive state;
- improving "communication skills" and awareness of "learning styles", teachers can reach all learners applying "submodalities";
- by "setting clear goals" (since feedback must be related to outcomes);
- using "peripheral praise", "power look", "embedded naming", and, using the psychological concept of "strokes" [33] creating a "positive reward management framework".
- using "sandwich feedback" strategy:

[32] There are more recent researches and articles about NLP applied in educational context but, due to space limits, we decided to refer 'only' the above.
[33] «people need and seek the attention of other people whether that attention is positive or negative» Eric Berne 1964, cit. in Churches and Terry, 2007).

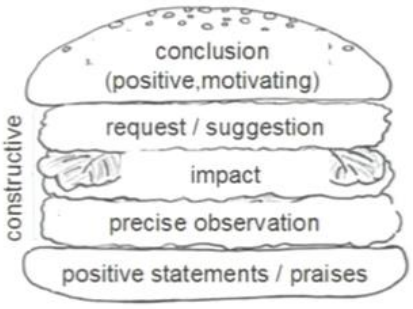

Figure 8. *Sandwich Feedback*[34]

Another example: teachers' beliefs. Beliefs have a determinant role in teachers' efficiency. Gage (1977) talks about 'implicit theory' as a hierarchically organized set of beliefs about the adequate purposes and means of teaching, student characteristics, modes of learning and how this interact to influence teachers' behaviour and their decision making. It's what allows teachers to handle the abundance of problematic situations they face daily.

There is a great variety of teachers' beliefs, attitudes and practices: «The postulated relations of these constructs of the perceived quality of the learning environment and teachers' job satisfaction are by and large found across countries, confirming their relevance for teachers and schooling. An important policy issue is therefore, how to further facilitate these aspects of teachers' effectiveness» (OECD, 2009, p.120).

According to Korthagen (2003) any attempt to describe the essential qualities of a good teacher should take into account that various levels are involved that fundamentally differ from each other, being the level of teacher competencies just one of these. This author introduces a model clarifying the various levels and offering a framework for reflecting about teacher effectiveness. He points as reasons for this approach: (1) changes in the aims and methods of teacher education taking place worldwide; (2) there is considerable emphasis on promoting reflection in teachers, but at the same time, it is not always clear exactly what teachers are supposed to reflect on when wishing to become better teachers; (3) the pedagogy of teacher education strongly builds on insights from other disciplines, so it must take into account new developments have taken place.

Korthagen proposes a framework based on Bateson's learning levels and Dilts' neurological levels:

[34] Image retrieved from https://www.tele-task.de/archive/podcast/8663.

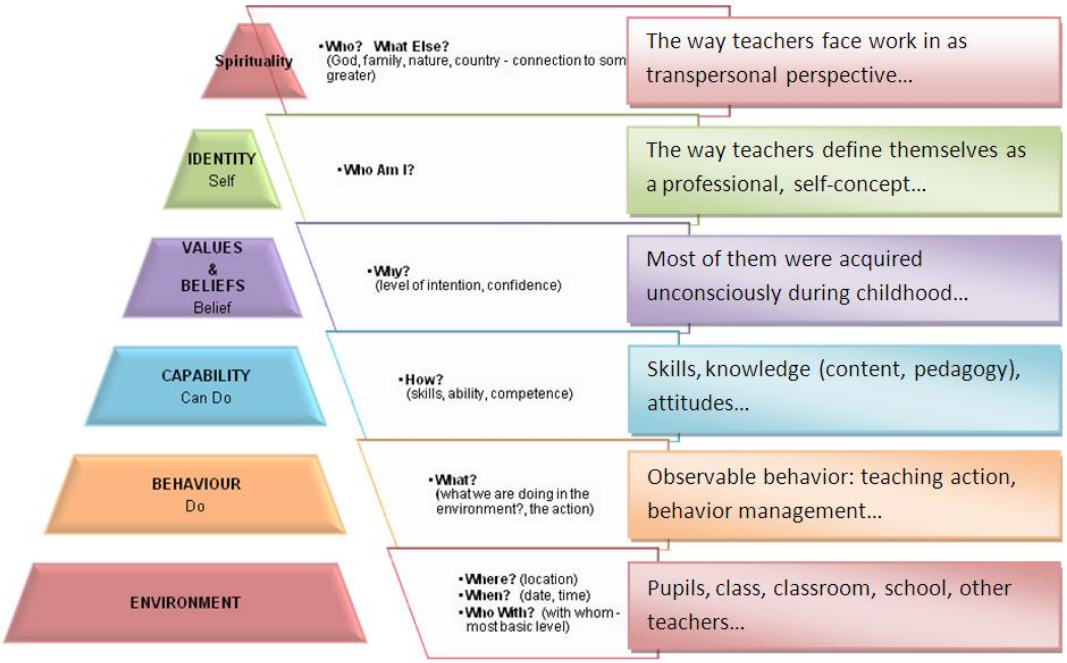

Figure 9. *Neurological levels of change applied to educational context*[35]

Often, for instance, when a teacher faces a dilemma, it arises from a mismatch between different levels, for example, a mismatch between belief and behaviour, which can be addressed by the technique of "neurological levels alignment.

This holistic approach allows an integrative perspective of what being a good teacher is, in harmony with the different levels. Only the levels of 'environment' and 'behaviour' can be seen by others, but they all inter influence each other, sometimes the problem is that there are incongruities between levels. The awareness of the existence of these levels can help to have a notion of our limitations and 'open' the way for transformative, consistent and durable change.

How teachers' NLP training effect on teachers' effectiveness be measured? We are planning a 50 hours continuous education course, selecting NLP strategies and techniques that can enhance teachers' effectiveness: well-formed outcomes, internal representations, anchoring, internal states management, sensory acuity, *rapport*, circle of excellence, perceptual positions, Milton model, reframing… (Churches & Terry, 2007; Churches, 2010; Dommet et al., 2011; Hogdson, 2009; Lopez & Alcazár, 2009; Spohrer, 2007; Terry & Churches, 2009). Three teacher groups (without formation; with 'our' NLP formation; with 50 hours formation on another theme - to control Hawthorn effect) will be pre and post tested on auto-efficacy and well-being, and assessment of the impact on students' achievement.

NLP is growing and developing. «Recent advances in neuroscience and cognitive linguistics have provided an ideal opportunity for NLP to demonstrate the effectiveness of its approach with researchers (…) beginning to demonstrate some of what NLP has had as a fundamental theory for over 30 years» (Wake, 2010, p.195). Therefore, NLP it's a path to promote teachers' effectiveness, it surely isn't the only one but we believe that training teachers in NLP techniques and strategies can be a major contribute.

«Consciously, we teach what we know; unconsciously, we teach who we are» (Hamachek, 1999, 209, cited in Korthagen, 2003, p. 77).

[35] Adapted from an image retrieved from http://www.psychologyafrica.com/2009/12/at-what-level-does-the-journey-begin-a-quick-look-at-nlp/. Korthagen presents levels as concentric circles, we have chosen Dilts' original pyramid shaped.

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BEYOND THE PALE: CONSTRUCTIONS OF NORWEGIANS AND FOREIGNERS IN A MULTICULTURAL SCHOOL

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Abstract
The paper addresses how respect is enacted, and how boundaries between "we" and "others" are constructed in a Norwegian multicultural school. While the Norwegian national curriculum for primary and secondary education (LK06) is used as a point of departure, the main analysis is based on material constructed through fieldwork at a primary school in spring 2009. Theoretically the paper is situated within critical cultural studies, leaning on the analytical concepts of intersectionality (Crenshaw, 1989) and positioning (Davies & Harré, 1990).
The material for this paper shows how students enact and discuss respect according to the categories "Norwegians" and "foreigners." However, Norwegians and foreigners are not totally distinct categories. Rather, boundaries between the two groups are constructed as a mix of ethnicity, Norwegian language skills, color, religion, interests and peer relations. I argue that LK06's outline of respect for "the others" does not mirror the pupils' practices. I also argue that these pupils' practices carry possibilities for new and interesting discussions of respect and otherness in the curriculum and in school.

Introduction

A curriculum reform for primary and secondary education took place in Norway in 2006. In the new revised curriculum, which is common and mandatory for all primary and secondary schools in Norway, learning to respect the others' cultures is launched as one purpose of education. However, what respect is and who the others are is neither questioned nor defined in LK06.
In this paper I will discuss respect and otherness aiming at answering the research question: *How is respect for "the others" enacted at East Primary, and who are these "others"?* East Primary refers to a Norwegian multicultural school, and I will shortly comment on this before turning to the paper's main issues of respect and otherness.
East Primary is situated in a small town in the eastern part of Norway. I define East Primary as multicultural due to how the school is profiled on the home page. Schools are often defined as multicultural in a descriptive way based on the amount of students with non-Norwegian background. In such a descriptive understanding of a multicultural school, differences between students according to their cultural background are implicitly emphasized. However, "multicultural" is a problematic concept because, at the risk of stereotyping, it highlights certain differences, while hiding others. The concept of multiculturalism has therefore been extended to include groups linked to gender, sexuality, and ability. New understandings of multicultural pedagogy include the rights of these different groups (Vedøy, 2008, p.28)[36]. Nevertheless, schools usually make descriptive definitions of themselves as multicultural according to the

[36] Hovdelien (2011) does not take cultural and group rights into account in his definition of a multicultural school. Rather, he defines the whole Norwegian state school as multicultural. Because the school system is part of the Norwegian multicultural society, the schools do not have the option of defining multiculturalism away. This view is pedagogically founded.

amount of students with minority background. So does East Primary. The main reason for selecting such a multicultural school for the inquiry was to look into possible conflicts between multicultural ideals of respect for the others in the curriculum and in pupils' practices.
In the Norwegian national curriculum for primary and secondary education (LK06) the aim of learning to respect is in most cases attached to the concept of others. The students are supposed to learn respect for food traditions in other cultures, for different music traditions, for the Sami's and other indigenous people's knowledge of nature and for other cultures in general (LK06). To respect and to have knowledge about these traditions and cultures are presented as two sides of the same coin. Hence, the tool for gaining respect is knowledge, and respect appears mainly as an epistemic virtue. Knowledge and understanding are cognitive skills which will promote respect towards the others, LK06 implicitly states.

Respect
Respect is a central concept in numerous theories of ethics. Some theories treat respect as the very essence of morality and the foundation of all other moral duties and obligations (Dillon, 2003). Axel Honneth (2007), situated in German critical tradition, has made a comprehensive theory of respect (recognition) with the aim of describing the present western society as well as contributing to a better one. Honneth divides respect into three different realms or categories which he finds essential for healthy subject development; respect for individuals, respect for rights and rules, and respect for groups.[37] In this paper the last category of respect which Honneth (2007) names loyalty and solidarity is emphasized. This is a communitarian form for respect which highlights minority groups' rights to be recognized for their practices and ideas when differing from the majority. A communitarian understanding of respect is mirrored in LK06's aims of learning to respect other cultures.
In post-colonial theory "the other" is identified by their difference from the center, marginalized through an imperial discourse (Ashcroft et al., 1998, p.170; Kameniar, 2005). When there are others to respect there is also a "we." In LK06 the other is explicit, though not defined, while the "we" is implicit. A problematic aspect of a communitarian form of respect exemplified with the implicit differentiation between "we" and "other" in LK06, is that group boundaries might be considered as more fixed and obvious than they are, and that the emphasis on differences between groups lead to neglect the differences within groups. Hence, a relevant question to ask is who the central we is, and who fits into the peripheral other? Addressing LK06 as a starting point for this discussion about respect and otherness, the analytical approach is critical culture studies with the concepts "intersectionality" and "positioning" as analytical tools. These concepts are founded in empirical studies and augment the communitarian concept of respect opening up for a more ambiguous discussion.

Intersectionality and positioning
Intersectionality, and positioning are used as two different lenses, with adjacent but slightly different perspectives. "Intersectionality" is the main concept structuring the empirical material, making categories as religion, color, language, gender, and youth visible. Criticizing feministic research for its narrow focus on gender, Crenshaw (1989) introduced "intersectionality" to highlight the mutual constructions and hierarchies of social categories; the social position of a woman depends also on color, sexuality, nationality, and ability (Crenshaw, 1989, Svalfors 2008, p.14, de los Reyes & Mulinari, 2005, p.27). Crenshaw (1989) emphasized the difference that

[37] Honneth (2007) uses the concept recognition as an overarching category. Respect is limited to respect for rules and rights, and placed as a sub-category to recognition. Love and solidarity present the two other sub-categories of recognition. At East Primary, however, they use the concept respect covering Honneth's different understandings of recognition. Hence, I prefer to use respect.

differences make for a person. However, she warns against the use of "intersectionality" as an additive model, where different categories are added to one another, leading to hierarchies of oppression. Different categorizations intersect, and the boundaries between different groups are not fixed. What difference is, and who the others are, will change according to situations.
Nevertheless, "intersectionality," as an analytical tool, might favor structures and group-relations before human agency. To avoid a simplistic image of these students driven by pre-existing structures in terms of group affiliations, and rather emphasize their agency, I lean on Davies and Harré's (1990) concept "positioning". Davies and Harré (1990) introduced positioning as an alternative to the use of roles. Positioning highlights the dynamic aspects of encounters in contrast to the more static and formal aspects of roles (Davies & Harré, 1990, p.43). Arnot and Mac anGaill (2006) claim that research conducted in schools often, implicitly, leans on simple categorizations of gender. A similar uncritical view on other broad categories, such as minority students, might be a part of common-sense explanations. In contrast positioning opens up such categories, and highlight pupils' agency.

Norwegians and foreigners at East primary

The material which will be presented was constructed through ethnographic fieldwork in a Norwegian multicultural school in the eastern part of Norway between January and June 2009. I followed 6th and 7th grade at East Primary in lectures and in the school yard. I also made group interviews with the pupils. In the following part I use examples from talks and interviews with the pupils[38].
At East Primary the pupils use "Norwegians" and "foreigners" to categorize eachother. These categories might correspond with "we" and "others" in LK06. The others are the ones from other cultures, implicitly making a boundary to Norwegian culture – the true "we" of LK06[39]. But even though the pupils divide eachother in two main groups, their definitions show how blurred the boundaries are, and question a simple center – periphery-distinction related to Norwegians and foreigners. I asked the students to define the difference between these two categories in the group interviews. Luigi explains that foreigners are those who are from another country.[40] This seems to be a simple and good answer, but when Luigi is pushed a bit further he starts to be insecure about his definition. Madeleine, for instance, is born in Poland and has a father from Denmark. Luigi says that he is not sure about her nationality: "what would she call herself, Polish or Danish or…" Because of her mixed background Luigi makes it up to Madeleine to decide her own nationality. While Luigi primarily claims that a foreigner is born outside of Norway, he finds that it is not that simple.
Aishwaryaa and Lisa from 6th grade start to define foreigner in a similar mode as Luigi: "Foreigners are those who come from another country." But when Aishwaryaa makes herself to an example of a foreigner, I ask her where she was born. She laughs and tells me that she was born in Horten, a small city in Norway. Nevertheless she defines herself as a foreigner, and explains it with the parents' country of origin, and the traditions she therefore is grown up with. These traditions are, according to Aishwaryaa, grounded in religion (Islam), and in the fact that foreigners have stricter rules than Norwegians.

[38] The material was constructed for my PhD.-thesis about social practices of respect in a multicultural school (see Author 2011). In this paper I make use of small parts of this material.
[39] For a wider discussion of the concept of culture and Norwegian-ness in the core curriculum of LK06 see Eriksen (2010).
[40] The anonymous names are picked by the students. Therefore some of them have got names from TV-shows, artists and in Luigi's case a computer/playstatiogame.

Stricter rules

The foreigners' rules are different and stricter than the Norwegian's ones, according to Aishwaryaa. Some of these rules are rules concerning Muslim practices as the rules of what to eat, and to a certain extent how to behave. Aishwaryaa has many discussions and conflicts about rules with her parents. She claims that the Albanian rules are much stricter than the Norwegian rules, especially when it comes to relations with boys. Aishwaryaa is not adapting to her parents rules. She constantly gets new boyfriends, and she is worried about what her father will do if he finds out. From Aishwaryaa's point of view, the varied group of foreigners has similar rules, even if they practice these rules differently. It might seem like the similarity in their rules are more an opposition to Norwegian rules, than agreement in this very varied group of non-Norwegians. While several students claim that Norwegian pupils can do whatever they like, the foreigners are restricted by their parents and are not free to attend parties or to hang out in the street in the evenings. Aishwaryaa discusses and reflects on the differences of rules. She positions herself as partly Norwegian in opposition to her parents' rules, partly as foreigner differing from her Norwegians friends experiencing a tighter family relation than the Norwegians. Aishwaryaa points to what immigrant youth can experience as a pressure to follow their parents' traditions. However, this is not just described as negative experiences. Several students talk about close family relations, and put this up against what they find as less tighter relations to family among the Norwegians. The pupils do not assimilate to what they describe as Norwegians rules (or lack of rules), neither to their parents'. Even though they section rules in two main categories, most of the foreigners position themselves in between.[41]

A small little accent

The pupils at East emphasize the ability to speak fluent Norwegian as a sign of Norwegianness, while speaking un-perfect Norwegian is a marker of foreignness. What a perfect language is, is questionable, and while Lisa regards Aishwaryaa's Norwegian as perfect, June can hear a small little accent. Carridee, on the other hand, speaks perfect, according to June. Carridee was born in Kongo but to June she is a Norwegian. Carridee has lived some years in the northern part of Norway and this seems to neutralize her place of birth. "When you come from northern Norway, you are totally Norwegian," June states.

While Carridee is Norwegian when she speaks, Natalia is more Norwegian when she keeps quiet. June states that they almost forget that Natalia, born in Poland, is a foreigner. But when she speaks, they remember it. Speaking as a foreigner is not just about grammar or phonetics, it is also about the content of the conversation. June regards Vanessa as a foreigner because she always talks about her cousins in Germany. The foreigners chat with their cousins and they visit relatives in their holidays. A close connection to the extended family is reflected by most students as a marker of foreignness.

In the discussions of foreignness, June takes a very strong position. It seems natural for her to be the one deciding and defining her classmates Norwegianness and foreignness. She possesses what Ghassan Hage (1998) calls spatial power; power to set boundaries for insiders and outsiders.

Religious practices

The students are well aware of the different religions present at their school, and do usually address religion in a positive way. Religion as a belief system is not explicitly mentioned as a marker for foreignness. However, Aishwaryaa emphasizes the difference between foreigners and Norwegians when it comes to the rules they follow. Some of these rules are about how to

[41] Hence they practice the role of bricoleurs, or cultural navigators (see Jacobsen 2002, p.32, Runfors 2003, Prieur, 2004).

dress, and what to eat, referring to Muslim practices of dress codes and halal food. Arne mentions that Buddhists are "nothing." When I try to find out what he means by this "nothing" it seems that he points to the practices of different religions. "In Buddhism you do not have to do things," Arne states. There are few Buddhists at East, and they do not claim special rights. Hence, they are invisible as a religious minority. Muslims, on the other hand, represent a big religious minority group at the school, and there is an increasing awareness of Muslim practices. In the subject "Food and health" pork is usually replaced with chicken (even though it is not halal-prepared). The Muslim girls in 6th and 7th grade highlight practices of how to dress, and when to pray when they talk about their religion. Some of them wear a hijab, others do not. Muslims are quite visible in the Norwegian media context, where Islam is depicted as the other, and often as a source of conflict (Eide & Simonsen, 2009; Eriksen, 2010; von der Lippe, 2010). This national discourse may contribute to making the religion of Islam as practice to a marker of foreignness to another extent than Buddhist practices.

To be perfect

To be perfect is an ideal for the girls at East. Perfectness is a combination of looks, clothes, and different skills. Religious practices might conflict with such an ideal of being perfect. Nelly, for instance, gets comments for using hijab. These comments do not concern religious reason or question the obligation from her parents. Rather the other girls think it is a shame that she hides her beautiful looking hair. Similarly, Miley is asked to take her long skirt off because she looks so good in the tight jeans she wears underneath.

In these examples certain looks appears as better than others. To hide a beautiful-looking hair, or to refuse to show long, thin legs, is not understandable in the image of perfectness. Paris formulates how respect is seen in relations to big categories as ethnicity, but at the same time to personal characteristics: "Respect is also not to judge others due to their skin color, look, whether they use glasses or not, and that one doesn't call others a dwarf." To respect different looks is not just about skin color, but about respecting variations from "the perfect." Konrafael also includes looks into what respect is: "Respect is to have a good reputation. How you look, I also find valuable in gangs. Well I am not the most respected in class but I think I will manage well. I am also a little bit disappointed about my look." Konrafael portrays respect as a possession owned by those who have a good reputation. It may seem that a good reputation has to do with looking good. Konrafael is not respected, and he is not satisfied with his appearance. Another boy in 6th grade states that "respect is not to judge anyone according to sexuality, body appearance, gender, looks, religion, and culture." In his statement sociological categories intersect with personal characteristics.

She is not that brown

One of the markers of foreignness is, according to Aishwaryaa, the color of their skin. She states that she is darker than Norwegians, and that her skin color is a sign of her foreignness. Lisa on the other side questions Aishwaryaa's self-perception of being brown. She states that Aishwaryaa is not very brown, and that she can at least be regarded as half Norwegian. Aishwaryaa laughs about this, concluding that she is a quarter or maybe a third Norwegian. This is not according to her light brown color, but because she hangs out with Norwegian friends.

To be blonde is a sign of being Norwegian, while brown is a marker for foreignness. Nevertheless, being blonde can also have the subtext of stupidity. In Norway there exist plenty of jokes about dumb blonde women. Such jokes are gendered; jokes about stupid blond men are, to my knowledge, non-existent. Jokes about stupid, blond girls are often connected to sexuality. A dumb blonde girl might be seen as an "easy" girl, lacking the ability to set limits concerning her body and sexuality, or being too naive. Hence, dumbness and sexual availability are connected in the stereotyped image of blondeness. Such stereotypes leads to phrases like "being blonde"

to describe the non-intelligent. For instance does June describe Beyonce as "inside blonde" when she failed to understand a joke June told. June also uses the category of wanna-be-blonde. This might refer to a wish for concrete blondness, and a Norwegian-looking appearance, but it may also mean to make oneself stupid or sexually available. Lisa states that: "I am not that blonde" in a discussion about the risks of publishing photos where they are naked. Hence, blondness is used to describe stupidity, especially connected to body and sexuality. June and Lisa would probably never have used the expression "inside blond" about a boy. Blondness is linked to girls, and especially to the Norwegian girls.

To be small down there

To have the right look is a topic for boys and for girls, but the focus on heterosexuality is much more apparent in boys' conversations than in girls.' A story several pupils tells is about the day a teacher pointed out Ali as a possible homosexual. Ali felt this as an insult. It did not matter to him that the teacher probably tried to teach respect for different forms of sexuality. "Homo" is one of the insulting words most used in Norwegian schools today, especially among boys, according to a research report on sexual bullying (Helseth, 2007, p.15). Heterosexuality as a norm makes borders for the category of "man."

Heterosexuality is clearly the norm at East. In the spring 2009 most of the boys in 6th grade participated in the "homo-test." The "homo-test" followed a certain pattern: The participant took an eraser and rubbed the upper part of their hand very hard. If the participant was able to continue until he started to bleed, without screaming or crying, he had passed the test. He would then be defined as heterosexual. None of the girls took the test. Some of the boys found the test to be childish, and did not want to participate. Such an explanation made their lack of involvement mature rather than "girlish." Although homonegativity is often conceptualized as an immigrant attitude, Staunæs (2004, p.228) describes that in her empirical material, white ethnic Danish youths are also taking part in homo-phobic discourse in school (see also Thorne 1993; Eliasson, 2007). My material reflects the same tendency, and the Norwegians and the foreigners participated to the same degree in the homo-test.

Among the adult Norwegian middle class, respecting different sexualities is highly valued, and can be considered as taking part in limiting the tolerant we from the intolerant other. The intolerant other is, in this context, often identified as the Muslims, and Muslim homophobia is one of the ongoing debates of moral panic in the Norwegian mass media. Røthing and Svendsen (2008:32) claim that gender equality as a Norwegian value has got its little sister in homopositivity. Homopositivity seems to take part in the constitution of a Norwegian we. That makes homotolerance a test of how well migrant minorities are integrated. The teacher's reaction against Ali can be read with such debates in mind. To be homotolerant is a positive value, something to be learned in school, and part of being integrated. Even though homopositivity becomes a marker of Norwegianness, Norwegianness remains firmly heteronormative (Gressgård & Jacobsen, 2008, Eriksen, 2010:55). Røthing and Svendsen ask whether homotolerance is just a part of Norwegian heterosexuality (i.e., that it is good to be homotolerant, but not to live as a homosexual).

After one of the gymnastic classes Batista and Peter refused to go into the boys' dressing room to shower. They say that the other boys make fun of them for being "small down there," pointing towards the penis. To get ridiculed for the size or the shape of the penis is connected to the ideal of masculinity; being a real man. The boys fight for the girls' attention, and the girls sometimes complain about harassment from boys trying to touch them and run after them. Sometimes the girls join the game; other times they seek refuge. According to Mac anGhaill (1994, p.9) learning to act like men consists of contradictory forms of compulsory heterosexuality, misogyny, and homophobia. Being "small" and not masculine is something you can be teased about to the extent that these two boys refuse to take a shower.

The foreign boys

The issue of ethnocentricity and racism is an explicit topic at East Primary. It seems to be a common understanding among the students that boys with African background are the ones who usually get the blame when rules are broken. Ethnic background, color and gender intersect making these boys hypervisible in the school context. Cornelia underpins that the boys with black skin get most of the reprimands, and are frequently punished. She adds that they do a lot of stupid things, but even when they are innocent they are still blamed. To illustrate how teachers treat these boys unfair, Ali tells me a story. At East they have a special refrigerator room to store milk. One day some boxes of chocolate milk had been stolen. One of the teachers said that some pupils were seen in the room, and they were all "niggers" (*svartinger*). Ali uses the word "svartinger" when he quotes the teacher. This is a racist word, similarly to the American word "niggers." Jonas was there as well, Ali states, and he is white. Jonas disrupts Ali saying that the teacher did not say "svartinger" but "Africans," and he confirms that he had been there as well. I ask the rest of the class if they agree that the boys usually get the blame for broken rules. Mie nods her head and says: "especially the foreign boys."

Ali and Jonas do not agree upon which word was used when the teacher referred to the rule-breakers. In a school context, the importance of truth is often pointed out as essential. Ali's story risks being disqualified because he uses the very strong word "svartinger," which is a word that the teacher probably did not use. If we rather listen to the underlying story, Ali, as one of the "Africans" explains his experienced racism with the chosen word.

In the pupils' talks about racist and ethnocentric actions they usually delimit their stories to that of teachers. The pupils seldom describe racism among themselves. Zarah, however, states that it is different at other schools and that she changed schools to East some years ago. There are more of "her people" at East compared to her former school. She states: "when I was at the other school there was only one Muslim; not all showed respect to me. If you are the only one, it is difficult but where there are others, it feels better." In this case "her people" refers to Muslims. Zarah experiences more respect for her religion because there are more Muslim students at East.

Cornelia's parents are from Somalia, and Cornelia talks about how happy she became the day Dina, also with Somali background, arrived at East. It was important for Cornelia because there was suddenly someone who could understand her. Before Dina came there were just other Somali boys at East, and that is not the same, Cornelia claims. Meeting a person with the same background, meaning a combination of ethnicity, religion and gender, was important. Cornelia appreciates having good friends with different backgrounds, but there is something special with Dina. In Dina she found someone with whom she could share ideas and thoughts about culture and religion. Klara joins the discussion telling about her experience moving to East from the north of Norway. She felt as an outsider when she came to East, but it helped her to have one friend who had also lived in the north of Norway. Klara explains the difference between how popularity works in the north and at East. In the north everyone was friends. Popularity, insiders and outsiders seem to be categories operating differently in different contexts.

The Norwegians own

Being Norwegian or being a foreigner is part of how these students position themselves and others. The first time I became aware of this dichotomist categorization was when I heard Aishwaryaa use: "The Norwegians 'own'" (*eier*). The Norwegian word *eier/eid* is equivalent to the English own/owned. Traditionally *eier* cannot be used without an object. Among the youth, the words *eier /eid* (without an object) are used in the meaning of having control / be admired. "Jeg eier" is used in the meaning of I own the situation; I am in power. One of the students explained to me that the word eier is taken from the game World of Warcraft (WoW). In the

English version the words “owned” or “pwned” are used. It basically means “to own” or to be dominated by an opponent or situation, especially by some god-like or computer-like force. WoW is the favorite game of many of the boys, especially in 6th grade. It is an online game and they play together in the evenings. Almost a year later the game is still very popular although some of the boys have stopped playing it. The girls do not seem to have interest in this game and when I ask the boys, they state that none of the girls ever play it. However a couple of mothers play WoW and Arne first started to play it with his mother.

I ask Aishwaryaa later about what she meant by her statement “the Norwegians ‘eier’.” She explains that she used to think bad about Norwegians, but now she thinks that they “eier,” that they are cool. Zarah confirms Aishwaryaa’s changed position toward Norwegians. Zarah tells that Aishwaryaa thought there were differences between the foreigners and the Norwegians: “she used to talk bad about the Norwegians a lot, and then I said to her that I might color my hair blonde, and then she got really crazy and said then I don’t want to be with you and I said that the blondes are really kind, beautiful, not all of them are like they don’t like foreigners and such.” Aishwaryaa and Zarah are both girls with strong positions in this class. How they define their relation to the Norwegians will probably be significant for the other girls. It seems like Zarah interprets Aishwaryaa’s opposition to Norwegians as feelings built on experiences of stigmatization. Zarah emphasizes the existence of different attitudes among Norwegians. While Zara characterized being blonde as something nice, in thinking about bleaching her hair, Aishwaryaa had quite different connotations of blondness. Blondness is sign of being Norwegian and because of Aishwaryaa’s negative attitude toward Norwegians at that time, a blonde Zarah would possibly have been interpreted as a kind of betrayal.

The girls positioning is in transition. Aishwaryaa explains dating a Norwegian boy as the reason for her changed feelings toward Norwegians. Both Zarah and Aishwaryaa highlight relationships when they talk about respect. Zarah writes: “respect cute boys, respect teachers, children, parents and the people close to you” while Aishwaryaa underpins that respect means not to “date your former boyfriends.” At this time Zarah and Aishwaryaa are talking a lot about their different boyfriends. A year later, Zarah has taken another position and is staying away from the discos and parties the other girls attend. After one of these discos, Zarah comments that “it is just for the ones that know they have fun all the time, and who likes to date many boys” (det er bare for de som har det gøy hele tiden og som liker å være sammen med mange gutter). Zarah continues, lifting her eyebrows: “and we know how they will be when they become adults” (vi vet hvordan de blir når de blir voksne) (fieldnotes 2010-06-08). At this point in time Zarah seems to have gotten some distance from the girls who attend parties and have many boyfriends. She also comments on how nice it is to go on holiday to visit the family in Kosovo. In Kosovo they are surrounded by family; they eat dinner together and they laugh a lot.

An ideal for the pupils at East is to make one’s one decision, not caring too much about what parents, teachers, and other students say. Before going to a school camp, Aishwaryaa said that no one could stop her from using mascara at the camp, even if using make-up was not allowed: “I am me, and if they want to send me home, they can do it.” Another girl comments that the boys do not like girls with mascara. Aishwaryaa says with disgust in her voice: “I am not making myself pretty for boys, especially not these boys.” Aishwaryaa takes part in a discourse of “being oneself.” She wants to choose. No one else is doing it for her; not the boys and not the rules. In another conversation, Aishwaryaa and Vanessa, both with Albanian backgrounds, are talking about how much make-up the girls use in Albania. They explain to me, and show how the Albanian girls exaggerate the use of make-up, in their point of view. There seems to be a limit as to how much make-up they can wear. In Albania they use too much. Ambjörnsson (2004, p.290) discusses the topic of being unique in a study among high school girls. She finds how being unique and being the same are part of fitting in. Paradoxically, individual freedom fits into the norm (Ambjörnsson, 2004, p.290).

A part of the youth culture for the pupils at East is to hang around in the town after school, which some do without their parents' permission. This life in the town includes dating, dissing and shopping. In the words of Aishwaryaa those who do not take part in this activity "are not part of this age; they are more back in 1787 or so." This characteristic is first and foremost aimed at some of the Norwegian boys who like mathematics and stay at home in front of the computer more than out in the street. "Who would ever like maths?" Aishwaryaa asks rhetorically. The boys who like maths and spend much of their time in front of the computer are the nerds. Arne, one of them complains about this label the girls give them. To be a nerd is not positive, but at least it means that you know something. To be described as a looser is worse. Janne defines a looser as someone that does not take part in any group, and always refuses invitations to parties. To be a loser it's the losers own fault. Janne finishes the description of a loser stating that they should try, but not too hard. The loosers trying too hard to fit in will be called a "wannabe." In this conversation my comment is that it must be very difficult to know whether one tries enough, or too much. Janne does not comment back.
Country of origin, language, color, and religion are markers of foreignness at East. However, these markers seem to be neutralized when the students talk about their friends. Carridee states that the definition of being a foreigner has to do with whom you hang out with. Carridee hangs out with both Norwegians and foreigners. Hence, she is a mix.

Overskrift
Norwegianness is not a fixed category. Eriksen (2010) introduced viscosity as a metaphor in discussing how the group boundaries of Muslims and Norwegians change. Viscosity is a technical term referring to a fluid's resistance to flow. Whereas water is "thin" and has low viscosity, honey is "thick" and has high viscosity. Using viscosity as a metaphor emphasizes how the solidity of a group with identity claims varies with different circumstances (Eriksen, 2010, p.104). Playing further with the viscosity metaphor, we can see the borders as being permeable. Characteristics with high viscosity (thick) will not enter, while characteristics with low viscosity (thin) can enter into the category of Norwegians. The more foreign the accent is, the higher viscosity and so on. Some characteristics (brown) are made thinner because of other characteristics (living a certain years in northern Norway). Some are in it by birth, while others can strive to become members, defining themselves as half or quarter Norwegian, sometimes considered more Norwegian by their Norwegian friends than by themselves. An interesting point to mention is that the girls seem to cross the borders between foreignness and Norwegianness to a greater extent than the boys. What this has to do with is difficult to determine. It could be a coincidence. On the other hand, it may reveal that the combination of a non-Norwegian background and male gender is a combination of high viscosity. A third possibility is that the girls to a greater extent, uses their ability to position others, and that they are more concerned about positioning the other girls than are the boys.
The popular girls with non-Norwegian backgrounds are included into the group of Norwegians to a greater extent than are the not-so-popular, and the arguments for inclusions varies. The Norwegians seem to possess spatial power in order to set up boundaries and define insiders and outsiders.[42] Some ("Norwegians") have the power to discuss the Norwegianness of their peers. When Lisa writes about respect, she writes: "the Somalis can't show their hair and we must respect that. We can't take off the scarf." Lisa, with a Norwegian background, uses the personal "we" (vi) here in contrast to the Somalis. Lisa shows how she sees herself taking part in a "we" that is in the position to respect (or not respect) the others (here the Somalis). The same can be found in Dina's statement where she describes how she respects someone from Somalia: "…I respect where he or she comes from, what her belief is, which skin color and which kind of

[42] For a discussion of the concept of spatial power see Hage (1998).

clothes he or she wears." Both Lisa's and Dina's statements can be interpreted as expressions of spatial power. They find themselves in a position to include or exclude others, and to hand out respect.

Conclusion

To answer the research question: *How is respect for "the others" enacted at East, and who are these "others"?* I started by referring to how LK06 attaches the aim of respect to otherness, mainly in a cultural and religious perspective; learning to respect other cultures and religions. Such an understanding of respect is linked to the communitarian form of respect for groups with identity claims. The pupils at East Primary use "Norwegians" and "foreigners" to categorize each other. While students initially draw on an explanation founded in ethnic background to explain the boundaries between Norwegians and foreigners, they challenge their own explanation when questioned. The findings show that boundaries between Norwegians and foreigners exist but are not fixed; the boundaries are rather blurred and permeable. Some students with non-Norwegian backgrounds can be defined as partly Norwegian because they share interests which are defined as Norwegian interests.

In the discussions of foreigners and Norwegians at East, it becomes distinct how different categories intersect, i.e., overlap and strengthen eachother. To be a boy, to speak broken Norwegian, to have a dark skin color, to wear a hijab and eat halal food, intersect with ethnicity and increase foreignness, while being friends with Norwegians, hanging out in the street in the evenings, decrease foreignness. Categories as half or a quarter Norwegian emerge from such intersections.

Respect and popularity are sometimes used interchangeably. The division between the popular students and the unpopular is not the same as the division between foreigners and Norwegians. Popularity is a mixed genre. At East the most popular students seem to be the ones crossing borders between Norwegians and foreigners. Their interests and friendships are of more importance than color or country of origin. The students with religious and cultural backgrounds from countries other than Norway are sometimes treated as "the other," while other times they are not. Who the others are depends on situations and relationships between the students, and about the students possessing the power to define. Hence, the others at East can be the old-fashioned, the ones who are obedient to teachers, the ones that follow the religious rules of their parents, and the losers. LK06 does probably not refer to the culture of nerds and losers when respect is the aim. Challenges regarding respect at East seem to be found in how students position themselves and how they are positioned by others. It can be argued that the others at East are those furthers away from the center of popularity. Different practices, looks and friendships are of more importance than belief systems and parents cultural background. Hence, I find an implicit critique of the curriculum's use of otherness in the students' practices, and a possible new start in defining what respect for differences in in these students thoughts and actions.

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TEACHERS AND CITIZENSHIP: WHAT KNOWLEDGE FOR WHAT ROLE?

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Abstract
Literature review on teacher education reveals several studies that have addressed teachers' knowledge dimensions; however, none of them analyze teachers' knowledge regarding Citizenship Education or non-disciplinary curriculum areas (non formal disciplines). This paper focusses on the presentation of a framework proposal for Citizenship Education Teachers' Knowledge. Research supporting this framework was carried out in close collaboration with in-service teachers and is based on the conceptions, practices and contexts of teachers responsible for the development of Civic Education, a non-disciplinary curriculum area in lower secondary Portuguese schools. The interpretive analysis of the teachers' "voices" and the analysis of other documents resulted in the proposal of a teachers' knowledge framework, based on Grossman's model (1990), as well as on the *input* from other recent studies. We believe that this framework can help teachers' educators and contribute towards the definition of guidelines for the design, implementation and evaluation of teacher training programs in the scope of the non-disciplinary curriculum area of Civic Education and towards the debate on teacher education policies in the field of Citizenship education.

Keywords: civic education, teachers' knowledge, teacher training, citizenship

Introduction

Teaching is an extremely complex activity which relies on different types of knowledge and is mainly a multifaceted cognitive skill occurring in an ill-structured and dynamic environment (Spiro et al., 1988). Given the current historical and social context, teachers can no longer limit their actions to the transmission of knowledge and values; they need to assume a flexible and responsive approach so that they can contribute towards the development of their students as critical and active citizens, with full rights and responsibilities.

In recent decades, different countries have developed multiple curriculum approaches for the promotion of Citizenship Education. In Portugal, since 2001, Citizenship Education has been expected to be provided from a trans-disciplinary point of view but also in a specific time of the curriculum. Our attention will focus on this "subject" approach, to the extent that its nature (compulsory and non-disciplinary) raises important issues in terms of pedagogical approach and teacher training. We advocate that the implementation of Citizenship Education as a non-disciplinary curriculum area (in Portugal called Civic Education) requires a conceptual clarification and a renewed focus on teacher training, taking into account the inefficiency of the strategies adopted by the teachers so far (Nogueira, Moreira and Pedro, 2010), mainly administrative issues and students' behavior problems.

Additionally, recent studies (Bettencourt, 2009; Fonseca, 2009; Nogueira, et al., 2010) point out that most Civic Education teachers do not have any specific training in this field of knowledge. Considering that teaching depends on the teachers' knowledge about a particular curriculum domain, we then consider that teachers should be trained or provided with specific knowledge and skills necessary for an effective teaching of Civic Education. Taking this into account, what

should be the nature of teacher training for Civic Education? In other words, how can we, as teacher educators, conceptualize Civic Education teachers' knowledge and promote their professional development?
This paper is divided into three major sections: the first reflects the theoretical framework behind this study, concerning important issues about Civic Education and also about teacher knowledge; then we present the methodological options and research design that support this study; and finally we present and discuss our results. Further conclusions and study limitations are also put forward.

Theoretical framework

Post modern societies and the emergence of Citizenship Education

Contemporary societies are characterized by the presence of significant changes that affect the way people communicate, interact and relate with themselves and others, and also how they face their own life project. These transformations represent continued challenges for social, political and cultural development of democratic societies, and Education becomes closely implied in the processes that are designed to address these challenges.
The awareness that the act of choosing does not necessarily involve the ability to know how to make the right choice became one of the major threats of democratic regimes (Beltrão and Nascimento, 2000). The lack of political and civic engagement as well as unawareness or uncritical participation in political and social life, undermine the legitimacy of the current model of social and political organization, regarded by many as the only model truly capable of promoting human dignity, justice and social welfare.
Technical progress, social movements and mass communication contribute largely to this societal scenario, not because they represent *"per se"* negative contributions, but because, among other factors, the civilization rapid pace of change that we have been experiencing has not allowed the necessary and timely appropriation of knowledge by institutions and persons, dissipating important ethical and cultural references. It is undeniable that the mutability of our times causes many pressures and constraints on the structure of our societies, demanding solutions and concerted decision making among several instances. Therefore, Citizenship principles linked with Education emerges often in philosophical and political discussions worldwide, as a panacea to social cohesion crisis and as essential tools for the development of a more sustainable world (Delors, 1996).
There is a propensity for enlargement of the concept of Citizenship Education as new problems arise in society, with new requirements and responsibilities for the school (Bettencourt & Pinto, 2007). This trend is due to the belief that education is a means of promoting the integral development of human beings and with it, to strengthen democracy. It is argued that schools should prepare all individuals to exercise their rights and responsibilities as citizens, by providing a solid education that enables them to choose wisely and to contribute to social justice. For many years, the "family" was an important point of axiological unification; however, nowadays, it is often seen as powerless and frail to perform this mission (Dias, 2009). The family structure has changed; the relationship between generations became more rare; there is a proliferation of single parent families; the number of siblings is reduced, thereby transferring to the State, and in particular to the school, more responsibility on the integration and socialization of individuals.
In this changing context, the role of education is undeniable: the nations and the world need to ensure that all citizens acquire a set of fundamental Citizenship knowledge and skills in order to achieve the desired economical progress and a sustained social and cultural development. Is the school prepared and teachers trained for this challenge? Are teacher educators aware of the importance of teacher training in this domain? According to Cabral (2000) education presents itself as one of the factors directly associated with active Citizenship, because the more

educated a person is, the greater the propensity for the assumption and exercising of Citizenship. It is Education, as a driver of personal and social development of individuals, that has the task of promoting innovative and critical thinking, reflective capacity and the return to the idea of community, in order to enable a sustainable world growth grounded on a logic of human solidarity and social equity.

Teacher development and knowledge

A teacher was secularly someone who "professed" a knowledge (Roldão, 2004); someone who knows something and whose function is to "transmit" knowledge to others (Tardif, 2002) or, especially in an era where information is no longer the prerogative, someone that makes others take ownership of knowledge (Roldão, 2007). These more or less simplistic definitions cause an immediate set of questions to emerge regarding teacher knowledge and their training, that education specialists and practitioners have endeavored to answer: what knowledge and skills are necessary for the act of teaching? How do teachers learn to teach? (Montero, 2005).

The diminishing importance of the teacher as a key element in the transmission of knowledge could lead to the idea that its existence would become dispensable. However, there has been a recognition of the teacher's role in the teaching-learning processes, and over the past decades several studies have been addressing this issue and sought to highlight the characteristics and skills of a good teacher as well as the training methods best suited to the professional development of both future-teachers and in-service teachers.

The literature review shows us a consensus among nations regarding the impact that teachers have on students' learning and the general effectiveness of schools (Cochran-Smith and Fries, 2005). Nevertheless, critical to existing teacher training models swell. According to Pessoa (2002), the literature review on teacher education indicates, among other aspects, too much theory, disciplinary and fragmented nature of the strategies used and the lack of contact with schools' reality.

Teachers' knowledge depends on numerous factors, from those relating to education, personality, life experiences, teaching experiences, type of training they had received and ongoing education. According to Sacristán (2002) it includes a set of behaviours, knowledge, skills, attitudes and values. Being aware of several issues linked with a contextual dimension is also a relevant aspect for teachers knowledge and know-how (Zeichner and Gore, 1990). The awareness of this complexity in teaching profession, made teacher training even more important, which shall be addressed in the light of numerous components of the teaching and learning process: goals, actors, content, strategies, evaluation, but also contexts, beliefs and values (Garcia, 1999, 2009; Korthagen, 2004, 2010; Sá-Chaves, 2007; Shulman, 1986; Tavares, 1997). Therefore, the need to promote teachers' professional knowledge is recognized as an holistic process and of a lifelong learning nature.

In Portugal, the Decree-Law no. 43/2007 advocates that: "the challenge of the qualification of Portuguese people demands a quality body of teachers, ever more qualified and guarantee of stability, since the quality of teaching and learning outcomes are closely articulated with the quality of the training of educators and teachers". In recent years, several measures were taken in order to promote teachers' professional development and towards the implementation of an integrated model of teacher education. These measures seek to contribute for the improvement of quality of education, by correcting the adverse effects of the massive recruitment of teachers without teaching qualifications that occurred in the past due to the democratization of education (Formosinho & Machado, 2009).

Civic education teachers' role and demands

Given the historical and social context described above we recognize that Citizenship teachers of the twenty-first century cannot be reduced to the more or less static transmission of

knowledge and values, but does have to take a flexible and responsive approach to changes and challenges of society, and contribute towards the development of their students as critical and active citizens, with full rights and responsibilities.

In Portugal, since 2001, Citizenship Education has been expected to be provided from a trans-disciplinary point of view (a component running throughout all subjects of the curriculum, contents, methodologies and attitudes), but also in a specific time of the curriculum taught by the class teacher, called Civic Education. Underlying the curriculum autonomy principles teachers have the main responsibility for this curricular time and it is up to them to outline the projects and activities that will construct meaningful learning and foster the development of Citizenship skills in students.

Even though we acknowledge curriculum autonomy this compulsory area raises important issues in terms of pedagogical approach and teacher training because: i) civic education is an ill-defined "area", i.e., it is a compulsory time in students' and teachers' timetables (45 minutes per week) but is not a subject; ii) civic education teachers are expected to promote Citizenship competences even though such competences are not clear in the curriculum; iii) civic education teachers accumulate the functions of teaching with those of class director responsibilities (to manage students' behavior; to support academic success and playing an important liaison role between the school and the families); iv) civic education teachers are also expected to promote debate and teach several controversial issues not linked with their own subject domain and for which they did not have any scientific or pedagogical training.

Considering that teaching depends on the teachers' knowledge about a particular curriculum domain, we then consider that teachers responsible for Civic Education should be trained or provided with specific knowledge and skills necessary for an effective teaching of Citizenship education. Therefore our research focuses on two main questions: What should be the nature of teacher training for Civic Education? How can we conceptualize Civic Education teachers' knowledge?

Methodology

Interested in following a holistic and systematic research to pursue our goals we developed different cycles of research, reflection, training, data collection and analysis. This paper relies on data from an exploratory study that can inform us (as external researchers) about conceptions (what are teachers beliefs and concerns about Civic Education?), training (do teachers have any training in the Citizenship Education domain?), practices (what teachers do in Civic Education classes?; what are the teachers' main difficulties?) and contexts (how are teachers collaborating in this field?; what are the influences of social and familiar contexts on Civic Education?). In order to conduct this exploratory study we chose a qualitative approach, supported by different techniques of data collection (document analysis, interviews with teachers and classroom observation), whose results we triangulated to chart a contextualized and reliable picture of our object of study.

Data of the exploratory study were collected from 10 of the 12 teachers who taught in the school selected to participate in the study, in the academic year of 2008/2009. All teachers were class directors, teaching in lower secondary education, seven (70%) female and three (30%) male. The interviewees were experienced teachers – with more than 10 years of teaching experience, 3 of whom with more than twenty years of teaching experience. Interpretative analysis of teachers' "voices", school project documents, class curricula projects and class observation protocols (only 4 teachers accepted class observation) were carried out. We will present a summary of these results in section 4.1, which can be found in more detail in previous publications (Nogueira, et al., 2010). Analysis dimensions include 3 major approaches: structural, procedural and conjectural, as we can see in Figure 1.

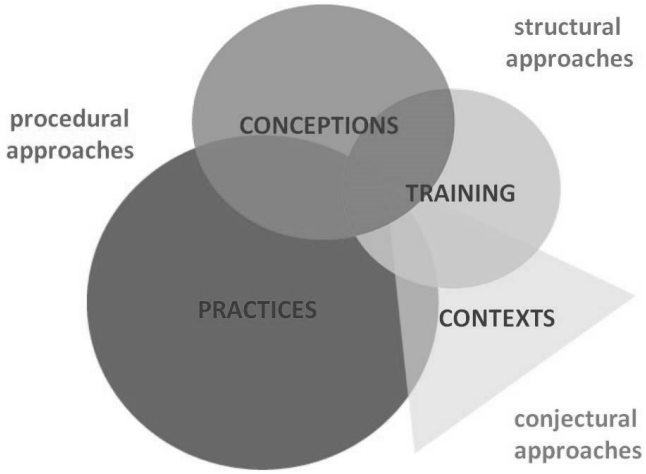

Figure 1. *Analysis dimensions*

Based on our descriptive research findings and on the confrontation of these data with teachers' knowledge models (Grossman, 1990; Hashweh, 2005; Magnusson, Krajcik, and Borko, 2002; Park and Oliver, 2008), we put forward a first draft of our proposal framework for Civic Education teachers' knowledge (section 4.2.). Our goal was to provide and list the dimensions we consider to be the foundational teaching knowledge for Civic Education and put forward some recommendations for future proposals for teacher training in this domain.

Results and discussion

Exploratory study results

The analysis of teachers' conceptions and beliefs, basic training, pedagogical practices and contexts directly related to Civic Education gave us a deeper view of reality, which we now summarize.

Structural approach: Conceptions

In general, teachers do not have a clear idea about the purpose and goals of Citizenship Education and commonly do not distinguish Civic Education from Citizenship Education. Teachers' conceptions concerning the objectives of Civic Education are mainly focused on the promotion of attitudes and values – a traditional and conservative point of view – minimizing the importance of other dimensions. The Civic Education main goal is to promote the existence of "good people" and improve the students' behavior in and out of school. Only one interviewee mentioned the importance of alerting students to the dimensions of political knowledge and participation. Related with teachers' implicit conceptions we observe that teachers' speech often reveals they perceive Civic Education as a minor discipline in comparison with other curricular areas.

Furthermore teachers recognized that the majority of Civic Education curriculum time (45 minutes for week) is spent with administrative issues and behavioural problems/conflicts. Considering the impact of Civic Education in students some interviewees argued that it depended directly on the teachers responsible for the subject – "(…) it also depends very much on who is leading, that is, the teacher!" (Teacher D4).

Structural approach: Training

Teachers lack the scientific and pedagogical preparation to teach Civic Education and recognize training needs in this area. None of the respondents had any specific formal training in Civic Education. Lack of training and preparation made them rather reluctant in developing this

curricular area. About their training interests, interviewees are mainly concerned with methodological strategies, clarification of the subject's main themes, appropriate practical activities and development of materials and pedagogical tools.

Procedural approach: Practices

The absence of Civic Education guidelines from the Ministry of Education unveils a conflict between the benefits of curricular autonomy and the lack of curriculum orientations in this domain. Even though teachers appreciate the freedom to approach topics centered on students' interests, some reveal difficulties in managing that autonomy, and feel lost without a strategic plan.

The school in this study, due to the lack of curriculum guidelines, developed an internal program. However, none of the interviewees ever finished the program completely, and some revealed that they never followed that program. Class curricula projects did not favor Civic Education as an opportunity for the development of cross-class projects and in most cases articulations of the curriculum ignored this area;

Planning assumes a reactive and informal nature in most cases – *"There is such planning if I tell that every week I think what is important (...) it may not be that traditional planning A4 (.)* (Teacher P2) – limited in time – especially at the beginning of the year and circumstantial – embedded in everyday school life with the focus on students' everyday behavior. Class observation and teachers' interviews made us conclude that activities in Civic Education classes are mainly focused on administrative matters, resolving conflicts from everyday school life and, to a lesser extent, on the development of contents and projects under the scope of Citizenship. In general, teachers reveal difficulties in managing time, addressing the more controversial or sensitive issues (e.g. sexuality, values) and manifest lack of scientific and pedagogical knowledge for the promotion of Citizenship. Teachers also reveal difficulties in the selection of materials and resources suitable for Civic Education classes, taking a slightly positive opinion concerning the use of commercial manuals.

Conjectural approach: Contexts

Mostly all teachers identify social and family problems that affect school performance and the performance of students and consequently the operability of Civic Education. Some teachers regret the lack of more effective coordination structures and the underlying lack of collaboration between teachers and class directors. According to those the absence of a collaborative environment makes the development of projects articulated around education for Citizenship impossible to achieve in most cases.

Civic Education teachers' knowledge framework – a proposal

In our theoretical framework we argue that the teachers play a key role on academic success and also on the personal and social development of students. We also acknowledge that the teachers' ability to work as professionals involves thinking creatively, making decisions, solving problems, predicting, analyzing, and learning from each individual case (Moreira, 1996). Therefore being a teacher includes the development of a set of skills that go far beyond the scientific and pedagogical knowledge needed for teaching a specific content unit. Being responsible for an ill-defined domain such as a non-disciplinary curriculum area like Civic Education whose purposes are confused with the school's mission and for which teachers never had a scientific training is a challenge even more difficult to quantify.

In order to reflect on data collected in the exploratory study and answer our research question: **How can we conceptualize Civic Education teachers' knowledge**? We used the model proposed by Grossman (1990) with inputs from more recent investigations (Hashweh, 2005; Magnusson, et al., 2002; Park & Oliver, 2008; Sá-Chaves & Alarcão, 2007) and present below our framework

proposal for Civic Education teachers' knowledge (Figure 2). The models presented by the authors above are conceptualizations of teacher's knowledge base and made us reflect on the different dimensions that are part of the teaching-learning process and which are decisive for its effectiveness. The diagram in Figure 2 represents an adaptation of those models to the dimensions and dynamics linked to Civic Education identified in our exploratory study

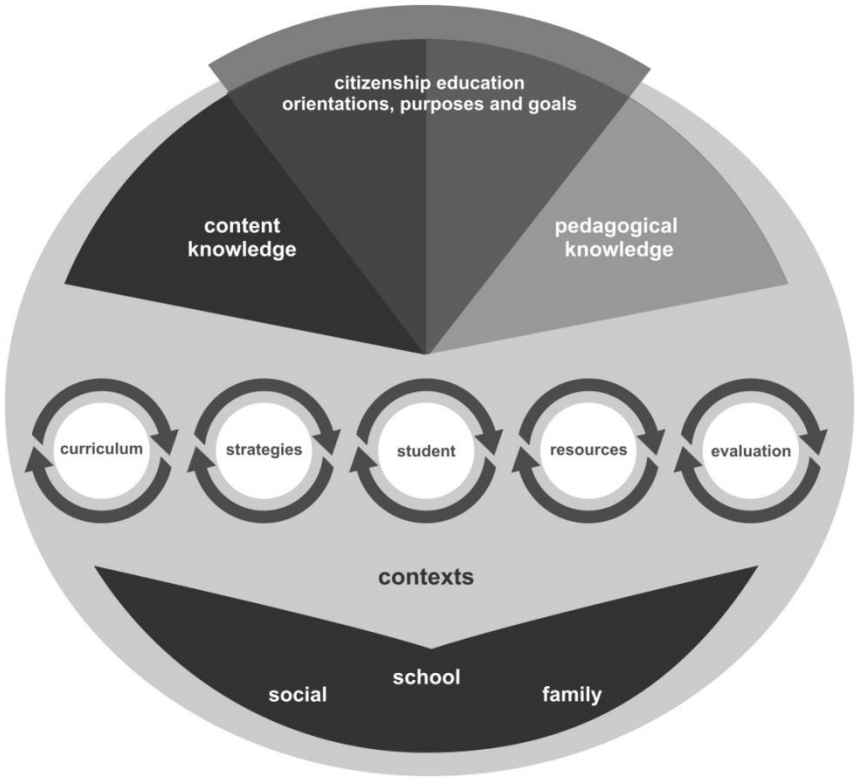

Figure 2. *Civic Education teachers' knowledge – framework proposal*.

On top of the diagram are Citizenship Education orientations, purposes and goals, to the extent that we conclude that conceptions that teachers have about the main goals of this non-curricular area for which they are responsible, influence the remaining dimensions and, above all, determine and/or constrain all decision making in the class context. Citizenship is mainly a multidimensional, dynamic and social construction. Therefore, the absence of a clear and unique definition of Citizenship influences not only the content and pedagogical knowledge but also the remaining dimensions.

Despite being a non-disciplinary area, Civic Education has relevant subject matter that teachers need to be aware of. Being aware of the content knowledge dimension is of great importance not only because of the absence of a national program or clearer guidelines for Civic Education, but also because of the lack of scientific training and preparation for teaching Citizenship Education issues and contents, that all teachers interviewed revealed. Teachers' absence of a solid scientific base of knowledge grounded in their curriculum area makes any teaching and learning process unfeasible. Lack of training was also one of the most significant occurrences in explaining the problems experienced by teachers in the implementation of Civic Education, suggesting difficulties not only in content but also in terms of pedagogical approach.

Huddleston (2005) had already alerted to the problems in implementing Citizenship Education, claiming that the lack of clarification of issues regarding this domain made it open to a range of interpretations and often at odds on the part of teachers who should teach it. Seeking to

minimize the negative impact of this awareness, Huddleston (2005) called attention to the need to encourage specialization in this field, enabling the creation of a group of specialists capable of spreading the importance and understanding of the concept, and ensuring mechanisms for professional development in this area through credited courses, guaranteeing at the same time the quality of these training proposals.

Like in Grossman's model (1990), we consider that content knowledge associated with general pedagogical knowledge influences the dimensions listed in our scheme (curriculum, strategies, student, resources, evaluation) that are envisaged in a more particular area: in the context of the classroom.

In the case of Civic Education it is the very absence of a national curriculum (respecting the curricular reorganization principles of autonomy and flexibility) and the lack of explicitness and consistency of curriculum guidelines that stresses the fragility and unsustainability of this curriculum area. Given the absence of a guiding document that will steer, identify and sustain the role of Civic Education, teachers' knowledge about the curriculum is necessarily incomplete and sustained in their beliefs and personal experiences. Curriculum knowledge is also very important from a trans-disciplinary perspective because Civic Education teachers are expected to integrate different knowledge domains in their lessons or activities (political, social, economic and cultural dimensions).

The widespread tendency to use Civic Education for school administrative and bureaucratic issues related to the Class Director's role and the status of "minor discipline" unveiled in teachers' speeches can be explained in the light of the curricular problems explained above, although ultimately, following the assumptions of curricular reorganization (curriculum autonomy and flexibility), it is the teachers' responsibility to build their own curriculum adapted to the needs of students, school and social contexts. In this sense we must understand that part of the curricular problem of Civic Education must be attributed to the teachers and their low involvement in curriculum construction, caused by a lack of scientific and pedagogical training and/or the assumption of other priorities in the course of their duties (including the tasks inherent to their subject areas and/or duties as Class Directors).

Knowledge of teaching strategies and their application in the field of the Civic Education curriculum underpins another dimension of teachers' knowledge. Considering that a pedagogical approach reflects a set of guiding principles oriented towards a set of goals and purposes, Civic Education teachers are required to promote Citizenship skills – cognitive, social and actional – through a pedagogical approach that makes the content comprehensible to students and allow them significant and consistent learning. Civic Education principles lead us to an area that is more informal and less structured in terms of the curriculum, allowing teachers greater autonomy in the strategies to adopt, without, however, withdrawing its accuracy and importance.

Furthermore, the fact that Civic Education represents a domain closely related to the personal and social experiences of students should represent a pedagogical opportunity, urging teachers to innovate and transform students' real contexts (local, national and international facts and events) into learning experiences, potentiating the ability for critical reflection and active intervention in society. Our exploratory study unveils that in contrast to prior expectations, teachers show little or no innovation in the teaching strategies used, as well as a diminished relationship with the outside world (the local community, for example). Although some of them manifest an interest in triggering different activities and recognize its relevance, other priorities take over (class management, conflict resolution), resulting in the lack of time for the development of integrated projects in and out of the school walls.

Our scheme intentionally puts the student at the center, thus seeking to reinforce the importance of student-centered learning that is, based on their interests and previous knowledge to create bridges between prior knowledge and new learning. Teachers' conceptions

also revealed that students' opinion about Civic Education embraced several factors, with the pedagogical approach and the teacher role among the most critical and reflective opinions. Another important conclusion from our exploratory study concerns the axiological dimension of Civic Education, which leads us to state that the personal characteristics, cultural and family of students should be respected and taken into account in the teaching-learning process. These conceptions allow us to reinforce the importance of promoting the pedagogical content knowledge of teachers by providing them with the necessary skills to analyze students' characteristics, as well as the ability to mobilize and involve them in educational activities.

Promoting Citizenship competences also encompasses the need to know different resources available in this domain and their applicability in the classroom. In this dimension we emphasize the importance of using diverse and current resources that allow critical and reflective discussion of contents, as well as tools and mechanisms that enable the development of cognitive, social and ethical competences. Teachers are mainly searching information on the internet to support their pedagogical practices. Taking this into consideration we reiterate the importance of teachers to get to know the available resources (most relevant databases and appropriate search engines) in order to carry out resources assessment concerning their relevance and scientific validity, as well as their suitability to learning goals and students' age.

In another dimension, we place the importance of knowledge concerning the evaluation of students, not only regarding the parameters but also how these are approached. We found in our exploratory study that students' evaluation on Civic Education is carried out mostly in accordance with the aims and purposes the teacher assigns to this non disciplinary curriculum area. Therefore, a tendency to adopt a transversal approach grounded in attitudes and value (in the school and in the other subjects) prevails, not considering other cognitive or social competences.

Evaluation is an essential mechanism in the processes of teaching and learning, enabling teachers to check students' progress, to highlight difficulties as well as to guide future work. In this sense, teachers should be aware of the relevance of their action as regards students' assessment, not only concerning the methods but also the focus of evaluation.

On the basis of our scheme we find context knowledge. To know and understand the dynamics that underlie the processes of teaching and learning is essential to ensure student success. Civic Education contexts are of particular importance, not only because they can and should be involved in teaching and learning, but also because they bring in an axiological dimension that teachers must take into account. Furthermore, our study has confirmed that school contexts are deeply involved with Civic Education, because most of the time of Civic Education classes is used for the resolution of behavioral problems in the context of other classes or within the school. This trend is directly linked once more with the purposes and goals set out by teachers for Civic Education and needs to be changed in order to promote an active and critical Citizenship in our schools.

Also related with the context is the school ethos and the collaborative work between teachers. Absence of collaborative work largely determines the lack of trans-disciplinary projects in the field of Citizenship that could find in Civic Education an ideal area for knowledge integration.

To conclude, from our point of view, Civic Education (or any other subject in the scope of Citizenship Education) needs a solid framework to guide teacher-training programs. Following the line of thought of several authors who over the past decades have focused their attention on this area of research, we argue that Civic Education teachers' knowledge is a dimension endowed with heuristic value structured on a combination of knowledge sources of internal origin (personal reflection, analysis of practices and feelings) and external origin (content to be taught, social context, politics and curriculum, working conditions) (Hashweh, 2005). The integration of the above dimensions of knowledge occurs in a constructive process based on reflection in and on action (Schön, 1983).

According to Park and Oliver (2008), knowledge instructional strategies – or pedagogical approach, as we labeled them above –, concern subject specific strategies and also topic specific strategies. Taking into account that Civic Education may be linked with three major objectives – knowledge and understanding; skills and aptitudes; values and attitudes (Audigier, 2000) –, the pedagogical approach must be suited to the subject-matter (Citizenship themes) and engaging activities or projects in the scope of critical and participatory Citizenship.
Ultimately this knowledge framework and their various interconnections requires the development of teachers' cognitive flexibility, representing a challenge both to individual teachers and to those responsible for their training – teacher educators.

Final considerations

Throughout this article we identified and analyzed the main problems involved in Civic Education implementation in Portugal. Our research allows us to recognize that these difficulties are associated with multiple constraints: i) lack of curriculum guidelines; ii) overlapping functions of Class Directors; iii) absence of scientific and pedagogical training of teachers. Considering those constraints, how can teacher training and Teacher Educators responsible for it contribute to the operationalization of Civic Education, in the scope of a more critical and active Citizenship?
Recognizing that what a *"teacher thinks about teaching determines what the teacher does when teaching"* (Showers, Joyce, & Bennett, 1987) and taking as reliable the results of the exploratory study concerning Civic Education conceptions, we consider that a teacher training proposal has to be based on the understanding of goals and purposes of Civic Education and its role in the scope of Citizenship Education.
Additionally, to the extent that the act of teaching involves a set of knowledge and skills and recognizing the lack of teacher training in the field of Civic Education, teacher training should focus on the development of pedagogical content knowledge in order to help teachers innovate their practices and minimize the administrative and bureaucratic use of Civic Education classes.
Given the relevance that sharing experiences and knowledge among professionals has for professional development (Zeichner, 2008), and since we identified a lack of collaboration between teachers, our teacher training proposal also involves the development of a community of learning around Citizenship and Civic Education.
Further research is being conducted with a group of teachers in continuous training (throughout a school year) in order to collect more data to validate the framework presented in this paper.

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EDUCATION SCIENCES' GRADUATION ON NATIONAL INSTITUTE FOR DEAF EDUCATION - INES: TEACHER EDUCATION

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Abstract
The Education Sciences' Graduation that works within the National Institute for Deaf Education (INES), recognized as the National Reference Center on Deafness, appears in 2005 in a context of recognition of the rights of the deaf person and therefore a process of change in enrollment of subjects. In this sense, the program seeks to contemplate the deafness, a socio-anthropological perspective, in which bilingual education is conceived as the most appropriate way to educate deaf (Pedreira, 2008). This curriculum has as its salient feature, the abandonment, in part, a concept of sequential organization of contents, or disciplines. We decided to form a curriculum that provides the licensing capabilities to establish networks of meanings and relationships between subject content. The course graduated its first class in December 2009 and now realize, after their internships, the importance of teacher education for the education of deaf children, mainly in the inclusion model disseminated in basic education schools Brazil. Thus, we propose to discuss the teachers' education for the inclusion of the deaf from the experience that has been developed within the course the graduation of INES.

Keywords: education sciences, teacher education, education of the deaf-inclusion

Introduction

The literature has pointed out, in the case of special education for disabilities children, more generally, in this type of education "is excluded, systematically, largely of its students on the grounds that, by nature, has no conditions to receive the same level of schooling that children who have no disabilities" (Bueno, 2001, p. 4). On the other hand, the inclusion of pupils in the mainstream schools, occur without any support or assistance to professionals who work there, has resulted in the failure of these school education children.

Introduced in Brazil in the 1990s, the inclusion policies emerging from the important Salamanca Statement, arises in the context of deaf education and bilingual education has been developed in an incipient way, from the introduction of interpreters the sign language, responsible for mediating between deaf and listener (Pedreira, 2008). In fact, the inclusion of teachers which work in deaf education has been given in a confrontational and this is due mainly to lack of preparation of teachers to deal with differences in school (Bueno, 2001).

However, some studies have found many difficulties by teachers working in special education or in inclusive of the deaf as communication difficulties, the need for knowledge of sign language, the absence or lack of knowledge about deafness, little or no participation of the deaf in class, lack of interaction between the deaf, the class and the teacher, teachers and students' difficulty in understanding the role of interpreter, doubts and uncertainty about the practice carried out by teachers, difficulty in teaching Portuguese as a second language and difficulties of students in the classes.

In addition, teachers still complain, according to research, lack of institutional support for professional development and the difficulty of establishing a job effectively bilingual in school subjects. The difficulty for teachers to understand conceptually what it means to bilingual education for the deaf and the fact of not having a representation of deafness as a difference have negative effects on school inclusion of the deaf (Pedreira, 2008; Antunes & Nascimento, 2011). However, we know that the exclusion does not only affect special education students, but also those who are in regular education.

In fact, the fear of exclusion within the proposed inclusion led us to believe that a bilingual intercultural perspective for teacher education is needed and so far the most appropriate for teachers education to work in deaf education. As can be seen, according to the aforementioned studies, the inclusion of deaf students in a bilingual perspective has not included dialogue between the differences and still did not enable the empowerment of deaf and dissemination of culture in the school environment as to consider their specific cultural and identity within the school, in addition to sign language, which keeps them, unfortunately, excluded the inclusion (Walsh, 2009b; Pedreira, 2006).

Thus, we propose in this paper to report the experience of Education Sciences' Graduation has been structured for inclusion in the education for deaf, an intercultural perspective, so that the educational scenario of exclusion of deaf people should be transformed and that the teachers in educated can offer exercise practical teaching and learning sensitive to the educational needs of each student in their diversity.

The experiences and institution innovative education are given the urgency of the movement of teachers for the reinvention of the school and the classroom as well as the possibility of a critical reflection on teaching practices produced collectively by teachers, in dialogue with the school reality. "As the paths of liberty - that unfold and recombine - this pedagogic collectives, systematizes and intensifies lanes and paths for education" (Linhares, 2003, p.15).

The literature has also pointed to the lack of a policy of teacher education, whether for work in regular schools, whether for special education. If, on the one hand, we know that most regular teachers do not have minimum preparation for working with disabilities children. However, noted that the teacher education for special education is centered on minimizing the effects of specific various deficiencies (Bueno, 2001). Thus, it is essential to think like the teachers education programs have been organizing to meet the main demands for the formation of a teacher who is able to see, analyze and criticize the educational process.

The choice the field for this research was conducted, not only because of the need for teachers but also as a result of recent moves that were made within the government to implement a policy for special education in Brazil. It is the text of the National Policy on Special Education in the Perspective of Inclusive Education (2008) that the teachers education for work in the form of special education must be obtained in graduate and postgraduate education, following the National Guidelines for Education Sciences' Graduation in the definition of higher education institutions that provide in your resume the teachers education for attention to the knowledge of the diversity contemplating about the specifics of pupils with special educational needs.

In the context of deaf education stands out in our country's recent publication of "Law of LIBRAS (Brazilian Sign Language)" and the Decree of the Presidency of the Republic No. 5626 of December 22, 2005, in its Article 5, states that "the teachers education for the teaching of LIBRAS in early childhood education and early years of elementary school should be held on Education sciences' Graduation and Superior Normal Course, where Brazilian Sign Language (LIBRAS) and Portuguese have established languages of instruction, enabling the bilingual education."

While the prospect bilingual education of deaf people is guaranteed by Decree No. 5626 of 2005, the representation of "deafness as different political and cultural produced historically and socially through practices of signification and representations shared and experienced in social

conflicts between listeners and deaf" (Pedreira, 2006, p.71), is not yet a reality among the majority of teachers who work in education and inclusion of the deaf.
The bilingual education of deaf people as it is put into law, providing for the functional inclusion of sign language in educational settings, has enhanced the deaf people in their linguistic and cultural differences and even the representation of teachers on deafness. The mere inclusion of sign language in the classroom, through interpreters, is not the only change necessary for the education of the deaf to become a reality potentiator of learning these subjects in their specific historical, cultural, political and linguistic, and also needed a change regarding the representations of deaf people and deafness (Walsh, 2009a; Pedreira, 2006).
Certainly, to raise awareness of the teacher and the construction of the practice, in the education of the deaf who have suffered the influence of various pedagogical tendencies, changing representations of deaf people appear to be fundamental for the realization of a perspective of intercultural bilingual education.
The construction of new social, political and cultural thought go far beyond a pedagogical approach limited the transmission of knowledge. The bilingual education as a proposal that addresses the specifics of deaf students require visual resources, use of sign language, teaching strategies of Portuguese as a second language, plus a host of other formulations that require a teacher's sensitivity to acknowledge of educational needs of individuals.
It is within this context of new social demands and complexity of teaching today, among them the inclusion and education of the deaf, who have had major implications in the processes of education and employment of teachers who present the experience of the first course of Education Sciences' Graduation that has an innovative proposal for teacher education in relation to the knowledge needed to meet the specific needs of the deaf in the face of new social demands made by the school inclusion policies that emerged from the 1990s in Brazil. The course, in addition to its innovative aspect, since it is the first bilingual course for Teacher Education in Latin America, carries on his resume a differentiated education proposal aimed at teachers education to work in the education of the deaf, the object of our study.

The Education Sciences' Graduation of INES

Present below the teachers education initial program offered by the Education Sciences' Graduation of INES. This course comes in the context of recognizing the rights of deaf contemplating the perspective socio-anthropological as well as the difference following bilingual perspective and therefore a process of change in the schooling of these subjects.
The Education Sciences' Graduation operates within the National Institute for Deaf Education (INES), recognized as the National Reference Center on Deafness. Founded in 1857, the INES was formed, over the years, a space for experimentation and validation of various methods of teaching. The education of the deaf, institutionalized a little over 150 years in Brazil, suffered the influence of different conceptions of the subject and deafness that, directly or indirectly, affected the school education. It is important to put into perspective this process, with the notion that decisions about the teaching methods were performed at particular historical, social and cultural contexts. So, much as some initiatives may seem bizarre or absurd in light current education professionals believed they were doing the best for the success of deaf students' learning.
Until 1880 there was a systematic discussion or research on the best teaching method for the education of the deaf. In 1880, the oral method was considered the more adequate by representatives of institutes of different countries participating in the Congress of Milan. The oralism, or oral method, is the process by which seeks to empower the deaf in the understanding and production of oral language. Since then, the classes for the deaf were taught in the oral language, more engaged in the acquisition of speech than the instruction itself.

This teaching method began to be implemented more systematically in INES in the 1950s. In relation to oralism, the studies indicated that the educational work has improved in some aspects, not in power of communication the deaf. However, evaluative analysis second, they still had serious difficulties in expressing feelings and ideas and to make themselves understood in contexts outside the school.

In the 1960s, studies began to emerge out of the country, about the sign languages used by deaf communities, being a representative the research conducted by William C. Stokoe (1960). Despite the ban on oralism, the use of gestures and signs, rarely was a school or institution for the deaf that had not developed on the banks of the system, its own way of communicating through signs.

In the 1970s, dissatisfaction with oralism and research on sign languages have led to new pedagogical and educational proposals in relation to education of the deaf person. The Total Communication - teaching method that uses all forms of communication, including sign language, manual alphabet, reading, speech, lip reading, drawing and writing - emerges as an alternative method, although in practice, some teachers use it still incipient with their students. One of the criticisms of the total communication dates back to the fact that you can not make the transliteration of a spoken language in the way, word by word, or phrase by phrase, the structures are essentially different. Thus it is impossible to maintain the structure of the two languages together.

In Brazil emerges in the 1990s, another educational approach as a result of research on deaf education, on the sign language and about deaf communities. The bilingual education considers the sign language of the deaf as natural, as a language of visual-motor nature, channel greater understanding of these subjects, learned spontaneously in contact with other deaf people in a short time and, because through it that deaf people can express themselves clearly (Pedreira, 2008)

In this model the proposal is that the deaf students learn two languages, it is considered a sign language as their first language and majority language of the listeners, as a second language, developed through reading and writing, understood as an instrumental language. A central issue for the strengthening of bilingualism has been the recognition by law of Brazilian Sign Language (Libras) in 2002, which culminated in the publication of the Decree of the Presidency of the Republic No. 5626 of December 22, 2005, as presented above.

Thus, from this decree was possible the creation of the Bilingual Teachers Education Course of the INES. On October 21, 2004, the National Institute for Deaf Education - INES - presented to the Ministry of Education to request an authorization for Bilingual Education Degree in Degree mode. That Course was part of the Institutional Development Plan - PDI's INES then presented for the 2004-2008 quadrennium.

In 2005 was published in Official Gazette No. Ordinance. 2830 of August 17, 2005, authorizing the operation of the Superior Normal Course - Bachelor - with skills for the Teaching of Early Childhood Education and Early Years of Elementary Education. It was thus that the first entrance exam for admission took place between 12 and 19 March 2006, and to fill vacancies still idle, another vestibular happened between 23 and 28 April of that year, and already 08 May 2006 began to effectively run the Normal Course of Higher Bilingual INES who graduated its first class in December 2009.

Depending on approval, on 15 May 2006, the CNE 03/2006 and then the CNE / CP no. 01/2006 which provide for the National Guidelines for Courses of Education, the INES decided to transform the Normal Course in Higher Education Course.

Among the key provisions of this new course, the following demonstrate the bilingual aspect of the course and also the efforts made for the inclusion actually happens:

- Already regulated adequately, the Brazilian Sign Language - LIBRAS - is in the very language of instruction of the course;

- LIBRAS, bilingualism and education of the deaf are thematic depth entitled Forming Activity in Advanced topics in field bilingual, this curriculum over seven of the eight periods of the course;
- The Portuguese language is also prevalent during seven periods of the course in the written form, with activities and improvement of teaching and learning as a second language;
- Through their own selection process for entry into Higher Education and in strict accordance with the foregoing, in the same proportion of candidates are admitted deaf and deaf necessarily fluency in LIBRAS;
- The course has the constant presence of trained interpreters in LIBRAS / Portuguese language translated in the classroom;
- Lectures and other course activities are the responsibility of teachers education with enough information about linguistic features peculiar to the field of deafness;
- There is flexibility in correcting assessments and / or papers written by deaf students when they are considered the semantics and linguistic uniqueness manifests the formal level of his writing;
- Assessments of learning can be performed in LIBRAS and recorded on video, both for listeners and by deaf students who so desire.

The Course curriculum Bilingual Education as a major issue is a form of pedagogical work that excels in interdisciplinary and feeds its objectives in the most central principles of integration, work, autonomy, cooperation and solidarity.

This curriculum has as its salient feature, the abandonment, in short, a concept of sequential organization of content, or disciplines. We decided to form a curriculum that takes care of licensing capabilities available to establish networks of meanings and relationships between subject content.

In reviewing the curriculum of the Course Bilingual of INES, we realize that the number of subjects in the area of teaching is the same disciplines focused on the area of deafness, when the analysis is done from the name of the disciplines. Yet when we look at the references provided for each discipline, we find that for the disciplines, which we classified as the pedagogical area, there is evidence of a more pedagogical and securities to studies into the field of deafness. However, the references of the disciplines that comprise the area of deafness are unique to this area.

This time, we understand that the graduates of this course have includes more specific area of deafness than the teaching area as a whole. Although the course has the goal of contemplating the formation of a generalist teacher, so he actually teachers experts in the field of deafness. However, for us to realize the specifics involving the education of the deaf, we must first of all, as teachers, understand how to develop the pedagogical processes more broadly, this aspect that has been developed through the internships supervised, but still needs to be enhanced within the academic knowledge of that course (Tardif, 2002).

Internships supervised and construction of professional identity

The internships have a supervised hours of observation and performance in regular classrooms and special or inclusive with deaf people, because the specifics of the course and its goal of teachers education to act also in the inclusive education of the deaf.

The experience of curricular the Education Sciences' Graduation of INES confirms the importance of the stage for the formation of professional identity. Students have, across the stage, the opportunity to analyze the space of teaching practice, develop projects, activities, report in which they present a dialogue between practice and theory.

The place where the stage is developed and the involvement of teachers in the host school also are important for the critical educators. The locus of the main stage of our students the Teachers Education' Course is implementing in the own Application School the INES. This space, also bilingual, contributes to development the professional identity that values teaching and

also provides future teachers learn about other relevant aspects of education of the deaf. As the area of academic and internship belong to the same institution, we promote a collective reflection on these areas of education and contribute to the constant transformation of teaching practices in order to promote autonomy and the collective work of future educators.

The internship supervisors seek to balance the placements in regular institutions and special education institutions of and / or inclusive with deaf students to experience these environments with which they might encounter when the teaching work. The course is grounded in a perspective of bilingual education for deaf, very well received by the community and the movement deaf by providing the recognition of sign language as the language of communication and expression of the deaf. However, over the four periods of internships students are guided to experience other realities beyond the School of Application of INES, and other ways to make education of the deaf so they can perform critical reflection, recognizing that there are several models of deaf education and inclusion.

According Nóvoa (1995), there are three pillars for teachers education, teacher and personal development, professional development and school with their operation, organization and projects. The teacher's personal development is also stimulated by the formation process: "Being on teacher education involves a personal investment, a free and creative work on the pathways and the projects themselves, in order to construct an identity, which is also a professional identity" (Nóvoa, 1995, p. 25). It is the teacher appropriating their formative processes, involving not only knowledge but also their experiences in the production of knowledge.

This dimension covers your personal identity and enables the construction and signification of his own life story, it is necessary for a constant exercise of critical reflexivity, which both feeds the production of knowledge, as well as influences different dimensions of life of the teacher. The in-service teachers and their experiential knowledge should be valued by educational institutions, mainly through the stages, to affirm the identity of the teacher as having specialized knowledge involving dose of reflexivity in the uses of expertise in everyday life, characteristic of professions who work with humans. (Tardif, 2000; Lüdke, 2008).

Student teachers, including discussions about the school and the classroom, need to be immersed in these professional contexts or have more contact with teachers in their work and experiential knowledge and then develop skills of reflection and knowledge construction (Lüdke, 2001, Roldão, 2007; Tardif, 2000).

We reaffirm, the relevance of the stages for the education of teachers and the need to recognize the legitimacy of the work of teachers of basic education, as much as the experts of the university because, as assert Lüdke (2008, p.11), "the basic education teachers are able to detect problems and gaps in education the future teachers, but still no place in university to discuss these issues."

The INES can, having the college in their field, enable experience in teaching across the stage, changing the concept and reality of the teacher education bringing it to the teaching-learning process and inviting them to share their knowledge with teachers and students. In addition, the course constantly with regard to visits by teachers INES much interested in sharing their knowledge with students interested in the course and participate in lectures, seminars and other educational activities with the students of this course.

The Education Sciences' Graduation as a privileged space for education and exchange of knowledge between teachers and students allowed between 2008 and 2010 a research was developed in this institution, financed by FAPERJ (Foundation for Research Support of Rio de Janeiro), where members of the Aplication School and Education Sciences' Graduation of INES conducted research on "Challenges of the teaching profession in contemporary society and their implications in the teachers education." This research had as its object the teachers of the early

years of elementary education at two bilingual schools for the Deaf in Rio de Janeiro and mobilized in the course of discussions about the challenge we promote bilingual education.
Teachers who have developed their initial education in reflective capabilities, either by education or experience in issues raised by the readings, on entering school can exercise autonomy through reflection in and on action, contributing to their professional identity affirmation and within the institution. (Roldão, 2007)
Indeed, this course, a pioneer in Brazil aims to provide education to consider deafness as a political and linguistic differences that need to be recognized in educational settings to improvements in the education of the deaf. Thus, in a very early work, the course aims to spread a form of recognition of the Other and a dialogical perspective, through bilingual education, to achieve an ongoing process to promote the transformation of representations of deaf people and deafness as a limitation or disability to a that recognizes, in a socio-anthropological vision, the capability of the subject.

To conclude: challenges and prospects
Recognizing our limitations, we confront on a daily basis with several challenges, such as the difficulty of reading materials for deaf students in academic language, the interaction between deaf and hearing students and effective learning of sign language teachers. In fact, the big question of course is the language used by all for the construction of learning, whether individual or collective. This course has a project to create a core of academic material in the production in Brazilian Sign Language - LIBRAS (who started this project a pilot in December 2011). Moreover, is being structured to offering a LIBRAS course for all teachers taking this course with the concern to meet the needs of the teaching practice academic communication in sign language. There is also a research group working on a “manuário” (glossary plus dictionary) of academic terms in LIBRAS. All these projects and others that are still in preparation, has been thought in the short time of existence of the course, to account for a teachers education that actually for prepare these professionals to work in education of the deaf in this mode special or inclusive.
Another challenge is the existence in this course is the tripod's: teaching, research and extension. The Bilingual Course the Teachers Education is part of a secular institution of basic education and therefore did not have in their culture the intertwining of research, teaching and extension. Education institutions, like any other social institution, develops and reproduces its own specific culture with its values, expectations and beliefs. (Roldão, 2007; Gatti and Barreto, 2009). Institutional development is closely linked to human development and employment of people living institution. Sharing the space of INES, the course of Education Sciences’ Graduation, ends developing a school culture that is more than academic. However, the group of teachers has gained a space for dialogue and construction of the academic environment, fundamental to the development reflexive the teacher education.
The concept of reflective practitioner is structured element in studies on the topic of teachers education, in works of Schön (2000) and Zeichner (2000), when they say that the function and in teachers education should be immanent criticism of the exercise, which promotes naive curiosity to the level of epistemological curiosity. This quantum leap in school life is enriched through the dialogic relationship between teacher and student. The attitude of reflection of the teacher implies their involvement, leading them in the realm of practice for a position to relate all their experiences, values, ideologies and social commitments with which it shares and which assimilates meanings. These practices are more present when education can have the integration of research, teaching and extension.
As we know inclusion is not only a matter of grouping, but to recast / transformation of existing social paradigms, toward the overcoming of prejudice and stigma (Skliar, 2003). We still have plenty to explore questions about how to promote this inclusion on the various constraints we

have in public schools, the lack of resource rooms, the lack of bilingual professionals, lack of trained teachers to include and instruct students to participate inclusion, the lack of ethical and competent interpreters to work in school, the difficulty of teaching Portuguese as a second language, among many other issues peculiar to classroom situation.

Indeed, talking to the works of Pedreira (2006; 2008) and Antunes and Nascimento (2011) can we say that the politics of inclusion, as well as policies for teacher education, do not account the reality of schools and Brazilian in the case of inclusive education of the deaf, bilingual perspective, it is necessary to provide education that will enable teachers to understand with greater depth, the needs of deaf pupils, including developing language skills - making them bilingual - as well as theoretical perspectives and methodological approaches that can support a pedagogical practice focused on effective learning the Portuguese like second language as well as other contents. Teachers and deaf competent professionals should also be within the school providing contact deaf and deaf, the construction of deaf identity references, and promote activities in the school where deaf and listeners participate together, beyond the mere teaching of sign language to listeners where you can really establish intercultural dialogue. As stated Candau (2011, p. 26) "What I think is important in view is to stimulate intercultural dialogue, mutual respect and build bridges and common knowledge at school, in the teaching-learning developed in the classroom."

We conclude by reaffirming the need to transform not only teachers but also the schools in an effort to ethical, political and committed to valuing diversity in education. Teacher education is inseparable from change and intervention in school, on the other hand, it is necessary to the school, as well as the university, engage in the process of transformation of ownership and production of knowledge (Tardif, 2000). The dialectic is possible in the dynamics of teacher education provided there is an awareness of the formation team to build a resume together, to meet the needs of both the school as an organization, the teachers in charge of the education process in human beings.

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Teacher education and ICT

THE RULES OF THE GAME FOR SOCIAL MEDIA LEARNING ENVIRONMENTS: HOW AND WHERE ARE THEY CONSTRUCTED?

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Abstract
Social media deviates from traditional learning environments by their administrative characteristics. The learning environments in schools are usually part of the ICT services of the institution with official security measures, while in social media the teacher has to make sure that the service is safe to use. This leads to the challenge of social media usage in school contexts: the teacher has to become acquainted carefully with the terms of operation to know which contracts are concerned in the school usage of social media.
The present research was carried out at the Oulu University of Applied Science, in the School of Vocational Teacher Education. The research material was collected from the student teachers who participated in the course of social media usage. The research findings show that: 1) no employer had given instructions concerning social media in teaching, 2) The self-image of the future teacher will be constructed in the net, 3) In social media the focus will be moved from technology to social action, and 4) The participants were attracted by the unexpected nature of social media, although it was also criticized. The added value from using social media comes from the possibility of shared processes.

Keywords: blended-learning, learning environments, social media, social media rules

Introduction

Social media is a common name for all virtual services, functions and phenomena with which the contents are created and dealt with in the Internet. It is often understood to cover various cultural activities connected to people whose active participation is the prerequisite of contents and virtual services in the net (Lietsala & Sirkkunen, 2008; Kaplan & Haenlein, 2010.)
The use of social media applications outside formal educational virtual and network environments has risen in Europe and the high take up of social media environments provides new opportunities for education. The use of Internet for online courses is still low across EU member countries between 1 to 8%, except in Finland 13% and in Belgium 18% (Redecker et al., 2010). As we are one of the leading countries in this respect in Europe, shouldn't we take a leading role also in developing rules and procedures in this area?
Social media deviates from traditional learning environments by their administrative characteristics. The learning environments used in school contexts are usually part of the ICT services of the institution with official security measures, while in social media the teacher has to make sure that the service is safe to use. This leads to the challenge which appears in the usage of social media in school contexts: the teacher has to acquaint her-/ himself carefully with the user terms and conditions of the specific social media environment, in order to know which contract statements concern school usage of social media.
Communication in social media is not from teacher to student only, but it is multi-sided. It means that the interaction between all participants is essential in vocational as well as in teacher education. Virtual and network based learning and teaching environments, including social

media, have enriched interaction between students. (Matikainen, 2001; Kurhila et al., 2007). Social media tools actually include learner-originated and participant-based interaction. If interaction and communication are not realized, the usage of social media doesn't bring much benefit (Ihanainen, 2010; Kalliala et al., 2009).

Theory

Social media includes web pages and mobile technologies. It is defined as a group of internet-based applications. It allows the creation and user-generated contents and turns communication into interactive dialogue. On the other hand, tools which make the dialogue possible are required. (Van Gelder, 2003). In social media the users are both producers and users, which has in turn changed the social communication of students and teachers (Myllylä & Teräs, 2010). In social media, contents is produced or at least shared together cooperatively, e.g. in Facebook, Wikipedia or blogs (Matikainen, 2008). In school practices, it does not always seem to be realized, and within communications the traditional teacher role seems to prevail. This aspect requires further study.

Some students seem to think that a teacher´s role in the social media is a superior to the role of the user, but that image is a fallacy. The teacher cannot delete the students´ material from social media environments. All users are equal there. People are prosumers (producer+consumer). They are also proams (professional+amateur) who produce professional material to the net as their hobbies. (About the terms see Kalliala & Toikkanen, 2012).

Each social media environment has its own user terms and conditions. Teachers have to know the terms and conditions when using social media in education. Special attention must be paid to who owns the rights to the produced material – this concerns both the teacher and the students. When students participate in a course, their data is preserved in the personal register. The data is made up of student ID, GSM number, addresses etc. According to the Finnish law it is not allowed to show these profiles to other participants. (Finlex, Act on the Protection of Privacy in Electronic Communications).

It is important to know that the home countries of service providers have different regulations concerning personal data protection. For instance many social media companies are registered in California, USA, and their personal data protection law concerns only the US citizens. Due to this the companies are allowed to sell or distribute the personal data of foreigners without any consequences (Kalliala & Toikkanen, 2012; Solove, 2006). It is not enough to explain the home country of the service providers because of the personal data law only, but also because in conflict cases it is important to know in which country they will be settled.

The third aspect is to find out what are the age limits of the service users. Further on, the rights for the material the users have produced vary in different social media services. It is notable that in Finland the Law of contract defines the age limits of the persons who can make contracts with service providers for instance in educational contexts. In Finland, adults are considered 18 years and over. Most students in the secondary education are under that age. Moreover, for the publication of the products of under 18-year-old students, Finnish law demands the permission of the parents or the guardians and the student him/herself (Ministry of Education and Culture, 2010).

In the evaluation of learning, the teacher must know the identity of the students; without making sure of the person intended, the evaluation is not valid. This, again, is due to the assessment criteria which must be public: the teachers have to inform the students beforehand about the points of assessment. For that reason the persons to be assessed must be identified.

It is the employer´s duty to create rules for the social media usage in the work place. It is important to express what is allowed and what is not allowed to do in the work place with the social media. Still, 73 % of organizations lack the rule relating to social media usage (Warma,

2010). Educational organizations do not very often have devised shared rules for social media usage, but it is single teachers who try to define the rules within their contexts.
In the universities of applied sciences (UAS) material production network has begun a discussion about the social media services that different UAS organizations have chosen for educational purposes (Suomen VirtuaaliAMK-verkosto, 2012). It seems that technical services come first in the selection, and pedagogical issues follow after. It means that pedagogical usage of the new media is still considered a skill to use technology only, although it is a question about a new type of learning environment and a new culture of actions (Tozer et al., 2011).
In a previous study the students experienced the usage of social media to be trendy, and they felt that they had to seize to the chance offered. Many participants admitted that being visible in the social media was necessary not to become stigmatized out-of-date. Many of them did not reflect on the philosophies, meaningfulness or weaknesses of the social media deeply, but they considered the social media in itself the most important. They regarded it as their tool only and a place where to be seen (Paaso, 2011).

Research
The present research was carried out in Oulu University of Applied Sciences, in the School of Vocational Teacher Education. The research material was collected from the student teachers in two different courses. The target persons (N=178) participated in the 7-credit course called "The usage of social media in adult education and tutoring studies virtually" which was run four times and in the 5-credit course called "Social media in vocational teaching" which was run three times. The research material was collected from net discussions and supervision contacts with the participants as well as from emails addressed to the guiding teacher. The data that was analyzed concentrated on the issues that caused problems for the student teachers both in practice and in principle. Most of the target group was already teachers in vocational secondary or tertiary levels. The data were analyzed through qualitative content analysis.

The research questions were:
Have the rules of social media usage been created by employers for the work contexts and what are the rules like?
What kind of experiences do student teachers have about the teacher´s role in the social media environment?
What added value does the social media usage bring to the learning environments?

Findings
Rules
The student teachers explained that they were well informed about the copyright and data security issues. None of them mentioned that his/ her school organization had regulations of how to use social media in education. On the other hand, they did not even understand to ask for them. Their social media conceptions and critical awareness were formed during the course when they got personal experiences of the teacher´s role in the social media environments.
The participants adopted new social media environments uncritically, not considering the consequences of the tool usage. When they met with problems associated with user names and contents protection, their image of usability was ruined. For instance, when the Ning environment became chargeable, they could not any more use the material they had created on it during the course. The same concerns all the teacher education courses in general. It is not easy to find a payer for the environment after the course is finished. A teacher can create a new course into another social media environment, but the material stays unusable in the earlier environment and often without any copies of it. How can the users know that tomorrow some other social media environment will be chargeable as well?

Privacy does not necessarily mean the same in different cultures. It can also be interpreted in various ways in the social media environments. Shared rules of the game are difficult to devise, since social media including education crosses cultural borders. The age limits of social media vary from application to application, e.g. 13 years in the Facebook. They are not the same as the age limits in the teaching usage. According to the Finnish law the person who makes a contract about the adoption of a social media tool has to be 18 years of age. This causes confusions and is seen in the discussions of legal restrictions. The teacher thinks that since the young person is already in the Facebook, why *couldn´t the teacher use the FB for sharing information.* It is allowed in private connections, but in official contexts the law should be followed (see Kalliala & Toikkanen, 2012). This leads to the problem of age limits again (Google 18 years, FB 13 years), as a teacher student remarked:
*If the students are willing to use services provided outside the organization, it is no problem. The problem will arise, if a student is not willing to use the services suggested. That is not, however, the real problem: the core of the problem is the age of the student (*male, non-employed as a teacher)

Another student replied:
More and more complicated to the teacher, if he/she teaches the young. There does not seem to be any advantage in the use of social media services. (male, an employed vocational teacher).
Since there are so many aspects to be paid attention to, many teachers leave social media services unapplied and retain to school provided services. Teacher students will prefer school provided service nets.
None of the student teachers raises the question of the rights of the service provider who is not responsible for protecting the social media users and their documents. Moreover, it is not always easy to find out where the service provider has been registered. The user terms and conditions are like a jungle: different social media services have different rights. The user will find it sometimes impossible to find the right information. A participant remarked:
I think it is unfair to demand the student to register in the Facebook under his/her own name. (male, an employed teacher)
What aspects can be noticed in this feature? On one hand, assessing learning outcomes demands the right name also in the social media. On the other, the providers demand registration under one´s name, which is not adopted by everyone. This is a vicious circle.
A student teacher summarized the discussion in the following way:
This discussion gives a splendid image of the copyright jungle and creates an image of huge problems to be faced in the future of the social media environment (male, an employed teacher.
He received the following comments:
If I add something to these social media environments I have to do it consciously, aware of the fact that my material will be used in any way imaginable. Common sense to these affairs! (Several male and female teacher students)
It seems that some student teachers understood, however, that if you want to get something, you can get it by sharing with others. Some student teachers were also willing to move in the grey area, even though this intention was not voiced. It is the mental image that was created by reading their comments. In some cases it seemed that they tended to find the right measures of acting, when they compared these new ways of acting to the ones in the previous decades when they copied books for classroom usage:
The copyrights were already broken in the 1980´s. When I was in the lower classes, the teachers copied the books without any hesitation. Copying is thus not a new invention. The copying has only changed into that of the electronic material (male, an employed teacher).
The discussion dealt also with the YouTube material and its usage in teaching. Many male and female students participated in the discussion. Vocational teachers, male and female discussed:

You are right, H…i, I have not come to think of it in that way. Signature: Criminal
writes a student teacher, who wanted to make sure that the material was available during the lessons and had downloaded material into his own computer.
It would seemingly have been worth while reading the study material properly before confessing one´s crimes. It is lightening to read M´s comment telling that there is no jail waiting for me. I will continue using YouTube in the same way.
This is a really interesting discussion about the social media rules. It is like reading a detective story. As soon as the matter is nearly finished there will be a new turn. For instance, about the usage of YouTube there are opposite opinions of even experts.
As a matter of fact YouTube cannot be loaded to your own computer. Instead, you have to show it directly from YouTube. If the net is not usable or the link is not available any more, the teachers copy the contents unaware of the copyrights.
What did the students reflect on the usage of the social media? There are restricting rules, but for instance in the USA there is a conception of `fair use` according to which the usage of e-material in teaching is considerably loose, as a student teacher said:
Yankees don´t even think of any licenses of the social media in education (female, an employed teacher).

Experiences
The self-image of the future teacher will be constructed in the net (see also Koponen, 2011; Solove, 2006; Paaso & Tenno, 2011). Digital identities have, as a matter of fact, already started to appear without people noticing it. In addition to sheltering one´s own identity, the teacher should pay attention to the privacy of students when they publish their pictures and productions in the net. These fragmentary pieces of data can be interpreted in what kind of orders and connected to what kind of contexts. Modern people´s lives are saved in social media even in the cases in which it is not opted. In the digital world privacy can be changed to publicity, and the past into the future in one moment.
A student reflected in her portfolio in the following way:
Some people want to share their lives in the internet and the others try to keep their privacy hidden as carefully as possible. A teacher can´t decide about the use of the internet public services according to his/ her personal opinion, likes or values. (Female employed teacher).
Most of the teachers come to think about their identities only when they create their first environment in the social media. He/ she can construct his/ her identity as a private person or an expert, but the teacher´s role is connected to them automatically as the next quotation tells:
I participated in a social media course a year ago. I am now in another social media education and bumped into my old wiki texts … I can´t say that I was delighted, because I don´t want to be readable when the course is over. I thought that they would be deleted … (Female employed teacher).
Many employed teachers who participated in the course had strong social media identities from other contexts, e.g. from the FB, before they came to the course. This is connected to the question, if the teacher´s professional identity and social media identity should be supported or kept apart. There is not any answer to that at the moment. Anyhow, if the teacher is met in professional net contexts and later in social media, the latter will inevitably be connected to the former. It means that social media identity is connected the professional identity.
Shared interaction of the student teachers was one of the aims of the course, but this purpose did not become quite realized. The student teachers expected the guiding teacher to participate in the discussions and answer the questions addressed directly to him/ her as the following situations express:
An email to a guiding teacher: *A fellow student teacher seems to have a mistake in the facts given in the discussion*, *could you please correct it*.

After each group of tasks the student teacher had to document the findings in his/ her blog. The guiding teacher then accepted the tasks including the blog. One student teacher wrote that *it is no use going on with the course, since the teacher does not give comments on the tasks and the blog.* Still, the intention was that student teachers should comment actively each other´s blogs and the guiding teacher only read and followed the documentation. The guiding teacher's focus was not on the substance, but on the pedagogical aspects and focused on the subject in general. The student teachers were informed about this policy in the beginning, but some respondents did not obviously accept it.

Some students expected the guiding teacher to delete the discussions and materials that the student teachers had made during the course, as one of the quotations above told. However the guiding teacher had not the right to destroy the products of other people. The aim of using social media in the above mentioned courses, and also widely thinking, was to support the exchange of knowledge and material among learners and teachers, not just performing a course. Some student teachers seemed to think that guiding teacher´s role was superior to the role of the student – was this a traditional way of teaching? "Embedding social media tools in education demands a change in the role of teachers, who have to act as guides and mentors, enabling and facilitating self-regulated learning processes" (Redeker et al., 2010).

Added values

Social media usage in vocational education has not been documented in Finland statistically. During the last few years, vocational teachers have, however, have begun to further use social media environments and networked with the SoMeTu (Social Media in Vocational Education) group. (See also SoMeTu, 2011.) Four studies altogether on the impact of social computing on formal education and informal education have been carried out in European Union (see Ala-Mutka et al., Policy Brief 1, 2 and 4). In Australia the social media is confessed to be a learning environment and the use of the social media in vocational education has a central role. The possibilities and the use of the social media in vocational education are heavily developed in Australia. (Life-based learning, 2006; Networks, connections and community: learning with social software, 2007.)

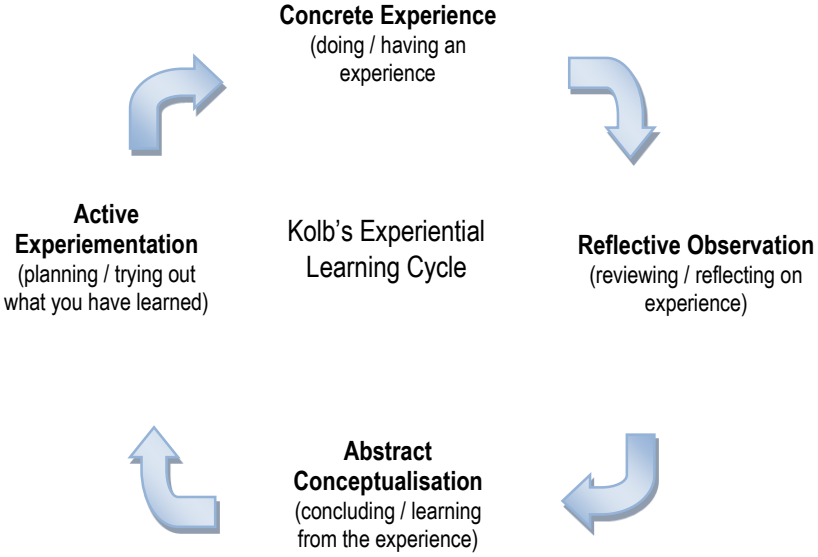
In the usage of social media the focus will be moved from technology to social action. The question is about new learning environments and action cultures in them. The researchers have emphasized the blended-learning approach in which various environments complement each other (Tozer et al., 2011).

There is a threat that traditional teaching models are imported directly to the virtual learning and teaching contexts as well as to the social media. Pedagogical approaches are not available and they are not taken advantage of in the pedagogical meaning. If the technologies are used only to support e-learning, the learning design will be correspondingly conservative; if they are used to support technology-driven learning, the learning itself may be secondary to technology (Kukulska-Hulme & Traxler, 2007). In this case the full potential of the virtual teaching is not utilized, and the use of technologies does not bring sufficient added value to education and learning experiences. The idea that technology helps learning and teaching raises a question: how should technology be used meaningfully?

Nevertheless, teacher students participating in the courses kept asking the teacher to name the social media tools and their range of usage. This need to know the tools is constantly appearing also in the Figure 3. Kolb's Experiential Learning Cycle (Kolb, 1984).

virtual UAS environment. The course data showed that the educational guidance of social media usage is like that of the ice hockey coach. He can of course teach only one aspect of the game,

but he should proceed to -teaching the whole game. It can be seen as a part of experiential learning (Kolb, 1984) and be illustrated in the following figure.
The ice-hockey player hits the puck strongly (1). He gets the feeling of success (2). He observes the event with the coach who says that the player has to skate when hitting, not stand with the



stick (3). They proceed together to study the rules of the game. After that the player has got more information of the game. (4) The process is not yet finished, but the "circle" goes on towards the real conceptualization of the game with the details mastered.
In the social media there is the same question as in the ice hockey rink: What is my position as a player? Am I a player or a goal-keeper? In the social media I have to understand the goal of my teaching. If I teach technical solutions, I will teach technical details. If I teach health sciences, my purpose with the social media in teaching is different. Social media is like the ice hockey rink, you need it for playing, but it is not the game!
The greatest challenge according to the participants was to step outside one´s "comfort area". Social media challenges the teacher to learn new things, in a new environment with new methods. There is a great variation concerning the previously acquired skills: some are almost professionals in using the social media, but most of the participants' did not have any experiences of social media at all. Further, this research shows that understanding the possibilities, logics and reliability of social media instruments and services may easily remain as suppositions and hearsay. The participants experienced that it was very important to see different models and examples to be able to find the targets of development in the course contents in their own work as teachers.
The vision of the Ministry of Education and Culture (2010)) assumes that all people working in the educational field will have by 2020 sufficient knowledge and skills to use technology, including the social media software, in a pedagogically meaningful way in education. The Finnish Vocational teacher education is in a central role in providing the needed technical skills for the teachers. Consequently, all vocational teachers in Finland are obliged, not only to acquire the necessary qualifications and competences in pedagogy but to gain the skills in virtual and network teaching including the social media.

Conclusion

The problem of the usage of social media in education is many-sided. The promotion of information and communication technology in education has long been concentrated on

infrastructures and the availability of the equipment as well as teachers´ in-service and continuing education. The emphasis should be moved to the development and publication of virtual learning and teaching material. Teachers need tools for that as well.

The approaches of the student teachers varied greatly. Although the rules of the social media have been devised for more and more vocational education institutions, the student teachers did not recognize them. They rushed into the social media without any hesitation. Not until there appeared a conflict, did everybody begin to clear the situation out individually. The consciousness and the criticalness of using the social media in education just took shape when the teacher students got experiences of a teacher´s role in the social media. Many teacher students thought that they had to be visible in the social media, but they could not find added value or new learning theoretical reasons for using the social media in education. Still, the question is about the common rules and policies.

Over the last few years social media environments have been emerging in education. Embedding social media tools in education demands a change in the teachers' and students' roles, but it demands also cultural change in the entire educational sector. If the rules are formed at the administrative level of a school or university, without a proper discussion with experienced social media teachers/users, will the solutions be innovative and user-oriented? When choosing single social media environments for education, the technology tends to come first, which is not the aim. The risk of leaving teachers alone with these challenges or setting too restricting rules will make public education fall behind inevitable development. Positive prospects are made equally possible by these innovative tools.

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TEACHERS ON THE WEB AND "DIGITAL SATURDAY": DIALOGUES UNDER INVESTIGATION

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Abstract
Continued education plays a central role in today's personal and professional development. In this sense, investigating education strategies where education takes place also means learning which strategies are applied to acquire this education. This article has the purpose of bringing an experience report about the "Digital Saturday" [Sábado Digital] seminar, hosted by Networking Youth Research Directory (JER) [Diretório de Pesquisa Jovens em Rede] at PUC-Rio, celebrating the end of the institutional investigation called "Teachers on the Web: representation and meaning of the internet for High School teachers" [Mestres na Web: representação e significação da internet por professores de Ensino Médio] (2008-2011). The survey results were presented; workshops and discussion groups were formed among teachers to talk about the current controversy in regards to the use of the internet as an educational tool and in everyday life. This seminar is one of the actions that can be undertaken and reinforced by Universities with the purpose of meeting the needs of educational professionals and contributing to the initial and continued education of these professionals, since this contribution is such an important investment in the teaching profession.

***Keywords*:** research, teacher education, internet

For those in the teaching profession, continued education has become both a necessity and a requirement for the market world nowadays. Such authors as Libâneo (2004), Nóvoa (1999), Gatti (2003), Freitas (2009), among others, have brought up the subject from several different perspectives, but come to an agreement when it comes to the pressing discussion of the topic.
In Brazil, besides being part of current debates, continued education has been placed as one of the prerogatives of Higher Education, according to what is stated in the "Lei de Diretrizes e Bases da Educação Nacional" 9394/96 [Law of Directives and Bases of National Education (in Brazil)], item 43:
The role of Higher Education is to: I – encourage cultural creation and the development of both scientific spirit and reflective thinking; II – **grant diplomas to graduates in different fields of knowledge**, so that they are able to be introduced within professional segments and to take part in the development of Brazilian society, **as well as to contribute to their continued education**; [...] V – **bring about the permanent desire for cultural and professional improvement** and to make it possible for this to happen by integrating skills that will be acquired within a systematizing intellectual structure of knowledge of each generation; [...] (bolded emphasis added).
By noting what the law states, continued education – both personal and professional – is closely linked to socio-cultural education of individuals, which puts the university in a decisive position throughout the academic path of teachers, those who are taking a teaching degree and students in general.

On the other hand, when it comes to policies for continued education that have been implemented in Brazil (Gatti, Barreto & André, 2011), studies carried out on the status of the art of academic education in Brazil pointed out to the fact that, although it is still possible to find education practices ruled by a conception that is merely fragmented and knowledge transmitter in which teachers think very little about such practices and also intervene very little with them, having their local reality as basis, there is already a movement to include them in the discussions regarding education and its ramifications within the educational practice at schools and classrooms in a way that their students are able to succeed in learning.

What can be highlighted in such initiatives is a significant concern with the execution of programs that meet the demand of continued education for teachers, and that are linked to the practice, to the "how-to-teach" (professional knowledge), and, at the same time, an increasing attention to consider aspects of subjectivity by valuing self-esteem through the exercise of listening, sharing of opinions and active intervention with aspects that are intrinsic to academic learning.

Taking the previously exposed background into account, the broadest theme of this article encompasses the processes of continued education, and, more specifically, the presentation and analysis of a seminar that was carried out in October 2009, and had as one of its main goals to be a space to provide continued education for teachers.

In a recent survey carried out by Costa and his team (2007), besides other strategies, seminars, congresses, studies and speeches about education were pointed out as an important strategy for continued education, and given that such events are often hosted by university institutions, this confirms the highlighted position of this type of education.

In this sense, the seminar in question is one of the actions that can be undertaken and reinforced by the university in a way to meet the expectations of education professionals and also to contribute, more precisely, as a privileged education *arena* for the initial and continued education of those professionals.

In the core of this discussion there is also a strong appeal that goes along with the legal regulation in the maintenance of the triad that characterizes a university: research, teaching and extension courses, as it is recommended by the Brazilian Federal Constitution in its item 207: "universities hold didactic-scientific autonomy, [...] and they will follow the **principle of inseparableness among teaching, research and extension**." (bolded emphasis added).

From the point of view of teachers, continued education has a strong appeal in the broadcast of wide conceptions on this subject that are currently part of the scenario in which we are actors and subjects.

Continued education plays a central role in today's personal and professional development. According to Libâneo (2004, p. 227) "continued education is a prerequisite for permanent learning and for the personal, cultural and professional development of teachers and experts". In this sense, investigating education strategies where education takes place also means learning which strategies are applied to acquire this education. The outcome of this investigation might then reinforce and/or create other ways to increase the development of education.

It is still the same author (*id., ib*.) who substantiates the concepts of both continued and initial education:

The term *continued education* is followed by another one, the *initial education*. Initial education refers to the teaching of theoretical and practical knowledge aimed for the professional education that is complemented by internships. Continued education is the extension of initial education aiming for theoretical and practical professional improvement in the very job context, and for the development of a general, wider culture, beyond the professional exercise. (emphasis added by the author).

Libâneo's definitions support the academic and social importance of the "Sábado Digital" [Digital Saturday] event, to the extent that the investigation thinks the university as a space for initial

and also continued education under the triad research-teaching-extension, recommended by the legislature and updated by practices undertaken within the campus.
The strategies of continued education are also undergoing changes, given that students' profiles change according to the assimilation of new values, to the impacts of media and communication, to urbanization, advertisement, the growth of social problems and violence, which have clear repercussions in the classroom (Libâneo, 2004, p.228).
Thus, thinking as a group in the situation of an event such as "Sábado Digital", may represent an attempt to comprehend the daily battles fought so that the university is able to broaden, as much as possible, its range of options for initial and continued education and, we could say, for academic education concurrently.
Gatti (2003, 202), in her research carried out within a program of continued education for teachers, describes that "the majority of teachers-students did not just finish the course, **but the course was intertwined with their lives and professional experiences**. The effectiveness and the possibility of an impact that lasts through the future of these professionals are derived from this intertwinement" (bolded emphasis added).
This way, the processes for continued education are reinforced when they involve the teachers themselves and the threads of their experiences by articulating individual knowledge that has been lived and experienced in the school context with professional and technical-formal knowledge that is related to the didactic-pedagogical practice (Carvalho & Rangel, 2009).
When providing mechanisms for this education to happen, it is also necessary to note what this education establishes as a basis for efficient and responsible professional life, given that the effects of initial education leave personal imprints that affect the everyday life of each individual.
According to Nóvoa (1999, p. 13), continued education is an international prerogative: "one of the domains to which international experts give more attention include both the initial and **continued** education of teachers" (bolded emphasis added). In this sense, the author points out the need to build professional models of academic education that are based on the articulation among universities and schools that aim for the valuing of practical actions and the reflection upon these actions, in a way that teachers' critical awareness and qualified intervention are both fomented (Nóvoa, 1991).
Nóvoa's words point out the importance of the present debate in the search for innovative efforts within the scope of academic education that cover education-action and education-investigation practices, and they also restate the need of a constant update of university research according to the more encompassing social demands from contemporaneity.

"Sábado Digital" – Finding a continued academic education experience

The "Sábado Digital" event was the culmination of the institutional investigation called "Mestres na Web: representação e significação da internet por professors de Ensino Médio" [Teachers on the Web: representation and meaning of the internet for High School teachers] that started in the first semester of 2008, hosted by "Diretório de Pesquisa Jovens em Rede (JER)" [Networking Youth Research Directory] at PUC-Rio [Pontifical Catholic University of Rio de Janeiro] in Brazil. The central aims of this survey were: (a) to investigate how High School teachers are part of the digital world and (b) to identify their representations and what they make out of the media culture.
As a ramification of the research "Jovens em Rede: representação e significação da Internet pelo olhar de jovens universitários" (2005-2007) [Networking Youth: representation and meaning of the Internet through the eyes of young graduates], which investigated the interactions, handling and representations of the Internet and its meanings in the media culture through the eyes of

young graduates, the aim of the Mestres na Web[43] survey was to study the relationship of High School teachers with the digital media by relating the profiles of the teachers with the profile of their young students at this educational level.

The study of the representation of the internet through the eyes of the teachers of the youth from the survey that was previously carried out by the JER team brings us to consider that an investigation always offers us multiple understandings and meanings. And in this sense, having the aforementioned goals as basis, the "Mestres na Web" investigation developed its theoretical studies and traveled a methodological path that was specially marked by "Sábado Digital", an event organized with an aim to promote a meeting between two complementary realms: academic research and education.

We opened up the possibility for teachers that were either taking part in the survey or not to be present on the "Sábado Digital" event, given that the event was aimed to include and contribute to academic continued education regardless of the survey being carried out by JER.

Hence, there were approximately 70 teachers in our event, most of them were teachers that at that very moment were actually working in the classroom, and among them, many hold a master's or a doctorate degree. Some of them were quite experienced in the use of the tools offered by the computer and the internet while others were beginners in the use of such tools.

Besides, as a point in common, these teachers were concerned about being updated and about continued education as many of them were studying and expressed their desire to go back to studying. Some of them were part of research groups or were interested in taking part of the event.

As we could gather, all of them showed some level of interest in regards to the theme proposed, as one of the participants pointed out: "because in this seminar, due to the theme proposed, those who show up are already somewhat interested. Those with any restrictions maybe wouldn't show up or wouldn't feel encouraged to show up, but it seems like it's something more normal, more common that we educators try to break such preconceptions in the university" (Teacher that took part in the Seminar).

The agenda of the event

The event was held at PUC-Rio [Pontifical Catholic University of Rio de Janeiro] and had the following agenda:

9am – Introduction / Welcome / Handing out of credentials
9.30am – Discussion groups
10:45am – Coffee break
11am – Presentation of the results of the research
12:15am – Socializing snack
12:50am – "Degustação Tecnológica" [Technological tasting]: workshops
14am - Closing

At the reception, a folder was handed out with a notepad and a pen to be used during the event. Each participant also received a sticker with a specific color whose purpose was to point out the discussion group that each person belonged to.

The participants were then taken to three different rooms in which mediators were waiting for them in order to start the debate. Because the entire event was being filmed, at the beginning of each discussion it was explained that participants should sign a term authorizing the use of their image and that their image would be used for academic purposes only. This type of

[43] We do not intend to explain the details of the institutional investigation "Mestres na Web: representação e significação da internet por professors de Ensino Médio", because it escapes from the scope of this text, but we aim to insert the "Sabádo Digital" event within the context of the survey carried out by JER.

document ensures a higher accuracy of what each person says and quality maintenance and integrity, as well as it ensures that what participants say will not be misrepresented.
One of the stages of the "Sábado Digital" event was the use of the Focus Group technique with discussion groups. By considering this technique as relevant to the goals of the developed survey and taking its characteristics into account, the Focus Group was one of the main data collection tools used to find out the perceptions, social representations, values, beliefs, habits, prejudice and symbology that are prevalent around a given question by the teachers exposed to a group situation.
The concept of the Focus Group adopted was proposed by Morgan (1997), in other words, a research technique that collects data through group interactions, having as background the discussion of a special topic suggested by a researcher who is at an intermediate position between the participant observation and the in-depth interviews. Besides, we took up the mode *Focus Group of experiences*, proposed by Fern (2001), in which the very internal processes of the group are a target of analysis whose emphasis is, therefore, intragroup, articulating with Morgan's representation called "focus groups using qualitative multi-methods", which favored the evaluation of the confrontation of opinions among the teachers that participated in the experience, as well as the integration of the findings found through the questionnaire delivered in the first stage of the survey.
We carried out the focus group by taking the following principles of framework into account:
The duration of the field experience: around one and a half hour;
Location: classrooms of the department of Communications at PUC-Rio;
Procedures taken up for the execution of the focus group: the group of teachers participating was subdivided into three groups according to the color of the name tag they received during the credentials stage and there were two researchers in each group. After a short presentation of the researchers and the groups the following question was proposed as a debate trigger: "why is the internet controversial"?
After a round of answers from the teachers participating, several challenges were proposed in order to deepen the debate: (a) which are the positive and negative points of the internet?; (b) what does Pierre Levy's statement (1999, p.26), "technology isn't good, it isn't bad and neither is it neutral" have to do with our debate?; (c) what about the job of the teacher with the use of the internet?; (d) is it possible to think of a pedagogical use for the internet tools the youth are using?
The focus groups were recorded in video, analyzed and divided, which also ensured the accuracy of the opinions given by the teachers who participated, as well as the transcription of the main speeches that are relevant to the central theme of the survey, together with the output resulting from this experience.
We believe that the discussions brought up by the focus groups were very relevant, because they were supported in projective processes mainly when it comes to representation areas. In other words, in the focus groups carried out, when we associate the speeches with other ways by which the participants expressed themselves, we found the advantage to gather the narrative (whose theme is "why is internet controversial?" as a trigger), with the introduction of strategies that focused on objects (the Internet in this case) and that sparked a certain action on the part of the individual, by finally asking the members of the group to always justify the side they were on and their interpretations about the theme that was the target of the discussion.
Besides, when we promote and encourage the debate among teachers in the discussion groups, we create the opportunity for this moment to become a space of education based on the sharing of ideas and perspectives regarding the theme proposed and the active and critical reflection on the teaching practice when it comes to the use of the Internet in the scope of formal education. This way, focus groups become thinking sessions of group dialog, in which teachers take up the protagonist role of their learning and education.

Workshops of "Degustação Tecnológica" [Technological Tasting]

Once the discussion groups had ended after approximately one and a half hour, the participants had a quick snack and were invited to the presentation of the JER Coordinator Profª Apparecida Mamede, who discussed the results found in the analysis of the questionnaires.

The snack moment also played a role in the schedule, because it was thought up as a moment of relaxation for the participants to meet. After that, teachers were taken to the workshops where they had contact with some technological resources and were able to interact with them by creating mini-educational projects in programs that create and edit images.

The workshops were thought up by taking into account the interests and concerns of the teachers that participated in the "Mestres na Web" survey, in what concerned the use of resources offered by computer in network; this way, we developed the workshop to create documents using power point, which was called "Degustação Tecnológica".

The pedagogical workshops are a didactic resource largely used in permanent education processes. Most of the time, they are proposed as a support for the teacher, with an aim to provide moments for them to have their "hands on", in other words, moments in which the participant can experiment with the materials and resources by handling them and creating (new) alternatives of activities and tasks.

Having Novoa's proposition (2001) as basis, it is relevant for us the adoption of professional models that are based on the assembly of organizational means of articulation between universities and schools that encompass the dimensions of initial and continued education. Nowadays, it is necessary to rethink and restructure the path to be taken when it comes to the education of teachers in the global scenario, by building professional models that cover action-education and investigation-education and joining the experimenting point of view with the theoretical, conceptual one. It was with all that in mind that we developed the pedagogical workshops of "Sábado Digital".

As for the "Sábado Digital" seminar, this choice was made because the workshops were considered a resource, mostly as a proposal to think about how teachers have been dealing with their educational reality given the new technologies, by searching for an approximation between the media tools offered by a computer in network and the pedagogical work within the different contexts of High School classrooms.

Two teachers who participated in the workshop expressed the same concern when they spoke to the others; the first one said *"[it is also important] for the teacher to also know how to deal with, how to be the intermediate and to know what the computer can offer. I see more difficulties when it comes to this. And even the generation itself, because they (the students) know more than we do."* This teacher was complemented by another teacher who said *"[I notice] an underuse, a bad use, the fear, the resistance on the part of teachers of those generations that weren't raised with a computer. The very matter of education; many faculties that educate educators are not educating these teachers. There are exceptions, but most of them fall short in many aspects. Even the educators of educators – who are professors, doctors – also need an education in order to be able to use this technology".*

From what both teachers said, we are able to notice that choosing the workshops as one of the activities offered by the seminar was a right decision, which provided, as we expected, a space for the exchange of experiences, knowledge construction and, above all, a reflection about what is being developed.

The integration of Tecnologias de Informação e Comunicação (TIC) [Communication and Information Technologies] to the educational processes through the exploration of its potential in academic continued education workshops is a resourceful alternative for teachers to handle, on one hand, digital context critically, as active citizens, intervening in the virtual world and, on

the other hand, for them to use them pedagogically given that the pedagogical approach is what specifically characterizes this virtual learning community.
This pedagogical use of the computer enables the teacher to incorporate technology as a useful tool in their everyday at school, which helps them think and create alternative educational means of exploring information and knowledge in network, in order to favor the construction, organization and production of new knowledge – theirs and their students'.
This way, the computer and the internet start to be recognized by their real potential so that they are included as learning tools that are able to influence the practice of the learner in a direct, effective, way.
In order for this to happen, it is providential that teaching education events are developed and carried out and that they represent spaces of transparency on the use of computers and network for the teacher to be able to pedagogically master this technological innovation in terms of valuing and awareness of its use, that is, why and how to use them in the educational process, as well as in terms of technical knowledge, that is, how to use them according to reality.
In accordance with the ideas mentioned above, the JER team tried to offer an effective opportunity for the continued education of the teachers present on the "Sábado Digital" event, in the workshop whose target theme was: The youth, the internet and the role of school.
The workshops were structured according to the following stages:
1 – Some slides were shown that explained the function of the Power Point program (PPT) and its possible use by the teachers within didactic contexts;
2 – Each participant received a range of printed material in order to help them understand the topic and also when performing the proposed task;
3 – It was required that each one created a "class" by using the presented resources, including by making use of images and sounds that helped them in the class. It was up to each teacher the choice of available resources for the creation of this presentation;
4 – The computer lab offered one computer per participant, but it was suggested that the work be carried out in pairs, which would favor the exchange among the participants.
We were able to note that the integration happened and the workshop went on within a friendly atmosphere, in which everyone seemed to be very comfortable with the proposed challenge. For some, it was a completely new moment: the first steps were taken in a way to handle a tool that could help them in their daily educational practice. For those who already had some knowledge on the matter, it was a moment to deepen their knowledge and find out unknown and not yet investigated resources.

Some final considerations

How to effectively use the technology that is being renewed every day? Therefore, participants were offered a reflection about the results and the opportunity to experience part of what was discussed in the survey.
As it has been mentioned before, one of the aims of the "Sábado Digital" seminar was to present to teachers the results of the "Mestres na Web" survey, which was carried out from 2008 to 2009 by Diretório de Pesquisa Jovens em Rede (JER) [Networking Youth Research Directory] at PUC-Rio.
Within informal accounts, as researchers we constantly hear that schools participate in surveys, but generally have no access to their results. With the seminar we aim to have reached a closer approximation between the school and the university by pointing out feasible routes for this closeness to be constantly and effectively established, which will strengthen the conversations between the two parts.
Another goal we hope to have reached was also to offer teachers with a space for permanent education by establishing spaces where knowledge could be exchanged and cemented in

Communication and Information Technology, which was the broadest theme of the Seminar in question.

We found out through what some participants said that the "Sábado Digital" event met the expectations of many of those who took part in it: *"After having worked for almost twenty years in public and private schools, I'm here getting retrained and I'm also taking a specialization course at PUC. In the future, I want to work with the continued education of teachers"*. (Teacher who participated in the Seminar).

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PROMOTING INNOVATION THROUGH TECHNOLOGY-ENHANCED LEARNING

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Abstract
The discussion generated by various teachers' ICT competence frameworks creates a need to move beyond the training of teacher and evaluate the competences of teacher educators (TEs) related to technology-mediated teaching and learning scenarios. As first order practitioners TEs have to be ICT competent and deploy ICT according to sound teaching principles. As second order practitioners they have to model the teaching-learning process and promote innovative approaches inspired by proposed teacher competence frameworks that emphasize the incorporation of a wider base of 21st century skills in the teaching-learning process. This makes the professional development of teacher educators a more complex matter that demands immediate consideration.
This urgency arises from the need to identify these (new) competences and endorse them with a clear vision of what teaching and learning in a knowledge society should be and what supporting role technology can play. At the same time the expanded ICT component in Initial Teacher Education programmes and the increased naturalisation of incoming students with digital technologies demand an analysis of how much TEs from different areas of specialisation are ready for technology-enhanced teaching and learning, and what type of professional development may be required.
Responding to the paucity of literature and research about the practical implementation of ICT competence frameworks for TEs, an instrument for evaluating the readiness of TEs for TEL has been developed and is being tested. After reviewing models used to evaluate eLearning, five fundamental dimensions for assessing readiness for TEL were identified. These are Cultural, Environmental, ICT, Pedagogical and psychological readiness. These dimensions will be discussed in conjunction with the development of a survey comprising statements exploring different aspects of these identified dimensions of TEL. After piloting and refinement, this instrument will be used, together with other qualitative means, to collect data for designing and developing initiatives in professional development of TEs in TEL.

Keywords: professional readiness; digital literacies; teacher professional development, initial teacher education, technology-enhanced learning (TEL), educational innovation, pedagogy.

Introduction – A fundamentally different job

It is quite paradoxical to speak of readiness in a rapidly evolving society, characterised by an exponential rate of change and by the lack of persistent patterns of behaviour and identification models! In a knowledge economy, where the main thrust is the creation of new, highly specialised, technology-intensive jobs, traditional professions are compelled to change drastically. Within this context, the teaching profession is passing through a radical transformation in which the challenges being faced by both teachers and teacher educators are of an unprecedented magnitude and which according to Levine (2006) arise from 'a fundamentally different job than that of past generations of teachers as today's teachers need

to know and be able to do things their predecessors did not. They have to be prepared to *educate all* of their students to achieve *the highest learning outcomes* in history' (p.12).
Levine also claims that this demands a different learning culture in which schools shift focus from teaching to learning, from skills and knowledge teachers must teach to the skills and knowledge students must master. Consequently education orients itself to assure common outcomes for all students instead of assuring common processes for all schools. This is a very challenging situation considering that such common outcomes have to be achieved at a time in which the student body has changed economically, racially, geographically, linguistically, technologically and academically. UNESCO's ICT-CFT (Hine, 2011) acknowledges this challenging situation and emphasizes that 'it is not enough for teachers to have ICT competencies and be able to teach them to their students. Teachers need to be able to help the students become collaborative, problem solving, creative learners through the use of ICT so they will be effective citizens and members of the workforce' (p.7).

ICT competence frameworks

The recent discussion generated by various teachers' ICT competence frameworks, as reviewed in Bonanno 2011, creates a need to move beyond the training of teachers and evaluate the pedagogical portfolio of TEs considering innovative technology-mediated teaching and learning scenarios. The 'medium is the message' and 'HOW TEs interact with their students, IS the message'. The relation with technology and its adoption in one's personal and professional life is determined by the attitude one develops regarding technology. A positive cognitive-affective evaluation of technology opens the way for its integration in one's professional practice and its promulgation with others. As first order practitioners TEs have to be ICT competent and deploy ICT according to sound teaching principles ensuring policy coherence regarding ICT in curriculum development, teacher competences, assessment frameworks and practices. As second order practitioners they have to model the teaching-learning process and promote innovative practice inspired by recent teacher competence frameworks that emphasize the incorporation of a wider set of 21st century skills in addition to digital competencies.

UNESCO's ICT-CFT (Hine, 2011) states that 'skills of the future will include the ability to develop innovative ways of using technology to enhance the learning environment, and to encourage technology literacy, knowledge deepening and knowledge creation. Teacher professional learning will be a crucial component of this educational improvement. However, professional learning has an impact only if it is focused on specific changes in teaching' (p.12). Teacher educators have to redefine their leadership and professional role within the parameters of this framework. Yet most of our current teachers are unprepared for these changes (Bonanno, 2012) and existing teacher education programs are largely ill equipped to prepare current and future teachers for these new realities, (Levine, 2006, p.2). Consequently a radical change in teacher education is needed urgently – one that promotes differentiated, technology-intensive, student-centred learning and knowledge building in contrast to teacher-centred instructional methodologies.

Epistemological orientation

The use of new technologies in education implies new teacher roles, new pedagogies and assessment procedures. More fundamentally these technologies create the need for new approaches to teacher education. Law (2010) outlines this epistemological orientation claiming that teacher learning should be oriented to realize the enabling potential of ICI in Education, to foster students' information-literacy skills, to prepare students for the twenty-first century, and to promote teacher learning beyond knowledge, thus considering ICT integration as a level for innovation and transformation. UNESCO's ICT-CFT (Hine, 2011) organizes this transformative

process on a continuum of education innovation, from the basic 'Technology literacy' level, through a 'Knowledge deepening' approach to the highest level of 'Knowledge creation'. The successful integration of ICT into the classroom will depend on the ability of teachers to structure the learning environment in new ways, to merge emerging technologies with new pedagogies that develop socially active classrooms and encourage co-operative interaction, collaborative learning and group work. This requires a different mindset both in teachers and teacher educators, together with a redefined portfolio of teaching and learning management competences.

Institutional environment

Such an epistemological and cultural orientation flourishes in an institutional environment equipped with enabling policies that promote pedagogical practices inspired by the acknowledged epistemological principles. These policies provide the administrative and logistical frameworks that address teacher training challenges of the 21st century by guiding personal and collective professional development, and promote innovative pedagogical practice and assessment procedures. Such policy frameworks also determine the organisation of technology-intensive learning environments according to process-oriented pedagogies that promote 21st century competences as an extrapolation of subject-content knowledge (Dede, 2010). 21st century competences include autonomous learning; oral, written and digital communication; multilingualism; multi-disciplinarity; team and networking skills. Digital technologies have both a catalytic and a mediating role in the development of these skills; hence a range of digital competences are an integral component in the professional development of teachers and TEs.

ICT-skills

Most teacher educators are by default leaders in their area of specialisation and thus they have to lead and inspire pre and in-service teachers by sharing a strong vision for the integration of ICT in their institution and in schools, together with the assimilation of digital technologies in their professional and personal life. Institutional policies should be oriented to develop 'engaging and fast-evolving learning environments that blur the boundaries between formal and informal education and prompts teachers to develop new ways of teaching and enabling students to learn skills and competencies needed to become active citizens and members of the workforce in a knowledge society,' (Hine, 2011, p.4). On the same vein AICTEC (2008) joint ministerial statement (paragraph 5) declares the need to support educators in developing the required ICT competences through which 'Educators will enhance twenty first century student learning outcomes by effectively and ethically incorporating ICT into their teaching and learning programmes and methods, and collaborating in the creation of flexible learning environments.' UNESCO's ICT-CFT framework (Hine, 2011) identifies teachers' (and consequently teacher educators') ICT competences for each of the three educational orientations. At the 'technology literacy' level teachers should be competent at performing basic hardware and software operations including the use of productivity applications software, a web browser, communications software, presentation software and management applications. Within a 'knowledge deepening' orientation teachers must be knowledgeable about a variety of subject-specific tools and applications that should be flexibly used in a variety of problem-based and project-based situations. Teachers should also be able to use network resources to help students collaborate, access information and communicate with external experts in order to analyze and solve their selected problems. Teachers should also be able to use ICT to create and monitor individual and group student project plans. A 'Knowledge creation' approach requires teachers to be competent in using ICT to build professional learning communities working toward

creating knowledge and to support the development of students' knowledge creation skills through reflection.

Pedagogical skills

Digital technologies transform the teaching-learning process by mediating a range of didactical, constructivist, constructionist and connectivist pedagogical scenarios. TEs need to become skilful in designing and managing these different technology-mediated pedagogical scenarios since these demand different conditions and roles from those TE have grown in. UNESCO's ICT-CFT proposes a pedagogical developmental process moving from the integration of technology in the curriculum, to the use of digital tools to solve complex problems and ultimately to an approach focussed on developing self-management competences in students.

TEs need to consider different levels of pedagogical competence with technology. At the basic level TEs need the skills to integrate various digital tools and content as part of different technology-enhanced didactical scenarios - whole class, tutorial groups and individual instructional activities. As a general rule TEs are mostly tuned to this approach and feel comfortable with using various digital tools and content related to their area of specialisation. Through personal initiative and customised professional development, TEs become increasingly competent in implementing ICT in their graduate courses and also in guiding (prospective) teachers how to integrate digital tools and content in the curriculum of their area of specialisation. Consequently TEs must have the technological skills and knowledge of web resources to manage their courses through which they model how their students can integrate technology in their area of specialisation.

But as educational systems change to orient more to knowledge economies, TEs are challenged to naturalise themselves with innovative technology-enhanced pedagogical scenarios. These demand reflection how to integrate more constructivist and constructionist methodologies with the specific objective of promoting 21st century skills as an extrapolation of the acquisition of subject knowledge and domain-specific competence. This is not a straight forward task for TEs as they need to put into practice technology-enhanced approaches that they never experienced or had limited exposure, thus compelling them to move away from their professional comfort zone. They have to move beyond the 'teaching as previously taught' paradigm and consider how to integrate in their courses collaborative, project-based learning experiences focused on real life problems. They have also to promote autonomous learning, 'learning by designing' and 'learning by reflection' in relation to their areas of specialisation. This leads to a further challenging situation, that of familiarising themselves with, and promoting, relevant assessment approaches that assess more LLL competences rather than subject content. Assessment in constructivist and constructionist approaches focuses on complex problem-solving and embeds assessments into the ongoing activities of the class involving self and peer evaluations managed through process-oriented capturing tools such as ePortfolios or learning logs. Consequently TEs need to develop and model a different set of skills to help students create, implement, and monitor simple and complex project plans and solutions; use assessment for learning as a basic principle guiding their practice; use of ICT to guide students through complex problems and manage dynamic learning environments; collaborate with other TEs, and make use of networks to access information, colleagues and outside experts in supporting their own professional learning. The paradigm shift is for institutions of higher education and schools to become learning organisations where the role of teachers and TE are that of knowledge producers 'who are constantly engaged in educational experimentation and innovation to produce new knowledge about learning and teaching practice' (Hines, 2011, p.13).

Considering this range of pedagogical scenarios, the greatest challenge for teacher educators is to familiarise themselves with this unchartered territory comprising pedagogical approaches which they never experienced or practiced. After this acclimatization phase they have to develop

the necessary competences to put them into practice through a continuous process of experimentation, reflection and evaluation. This situation demands rethinking of the content and method for organising continuous professional development, thus considering more collaborative approaches that address the different pedagogical processes. These approaches have to be first practiced and modelled in the institution, and then promoted with students who in turn have to disseminate them in schools.

Psychological dimension

Beyond the external environmental influences and the profession-related variables that make a TE ready for using technology in teaching and learning, the intra-individual psychological dimension is perhaps the strongest determinant of one's readiness to integrate technology in personal and professional practice. This psychological dimension focuses on the personal beliefs and attitudes about technology, and thus how the cognitive and affective evaluation of digital tools determines the use of technology for personal and professional goals. The Technology Acceptance Model (TAM) proposed by Davis (1989) and TAM2 (Venkatesh & Davis, 2000) describes this intra-individual dimension in terms of perceived usefulness and perceived ease of use (or control). Perceived usefulness is defined as the extent to which a TE believes that using a particular digital tool will boost his or her learning. Perceived ease of use is defined as the extent to which one believes using a particular digital tool will be free of cognitive effort. Both perceived usefulness and control determine the affective evaluation of the situation leading to positive or negative feelings to the technology at hand. Positive affective evaluation leads to engagement behaviours while negative affective evaluation leads to resistance or avoidance. Hence psychological readiness for TEL deals with the personal perceptions, beliefs, attitudes, motives and behaviours of teacher educators towards technology and the idiosyncratic way they engage with these tools in their professional practice.

The need for an instrument to assess readiness for technology-enhanced learning

The AICTEC workplan (2008, p.3) strongly recommends that programmes for professional development of Education leaders should be evidence-based and data-driven, customised to the individual needs of participants and that these initiatives recognize emerging technologies and their impact on teaching, learning and research. For this purpose an instrument to collect this empirical data is needed to identify individual and collective needs of TEs along the different dimensions of TEL.

This instrument was developed as a result of the experience gained with a number of instruments developed to assess readiness for TEL of different target groups. A simple version was developed to evaluate readiness for TEL of a sample of secondary school students. Another version of this instrument is also being developed to assess the readiness of undergraduate students for TEL at the end of the course at the Faculty of Education, University of Malta. A detailed version of the five dimension instrument was developed to assess the readiness for TEL of secondary school teachers showing its validity in capturing the different dimensions. This will serve as a learner analysis tool to continually customize the programme for students' needs. Inspired by UNESCO's ICT-CFT model, this research initiative is being extended to develop an updated version of this instrument to assess the readiness of TEs for TEL in their double role as a lecturer / teacher and that of a teacher trainer. A survey is being developed comprising statements exploring different aspects of the identified dimensions. Through specific statements or questions scored on a five point Likert scale, the instrument explores the readiness of TEs for TEL along the five identified dimensions.

For the epistemological dimension the survey includes questions and statements about the learning culture, beliefs of TEs and those upheld by their institution regarding the education system of a country as it continually evolves driven by socio-economic forces. Consequently

statements in the proposed instrument will enquire about the ability of a TE in identifying the educational orientation of their country considering the socio-economic context and how this defines the actual teaching conditions. Statements will also ask TEs to identify the principles and benefits of incorporating ICT in their own teaching-learning environment. Other statements enquire about the role of the TE in creating and implementing a vision of their institution and that of schools as communities based on innovation and continuous learning enriched by ICT. The survey also asks about TEs' abilities to experiment with ICT to support ongoing innovation and improvement especially through the engagement of professional learning communities.

The second section of the survey explores a TE's role in the institutional environment focussing on one's position regarding the policies determining the deployment and organization of resources, policies about the content of programmes of study and supporting structures including the curricular standards, assessment regimes, pedagogical approaches and guidelines regulating continuous professional development. The statements explore policies that promote didactical, constructivist, constructionist and connectivist methodologies underlying the three ICT-CFT approaches. Thus the statements enquire about the competence of TEs to articulate the main national and institutional policies related to the development of ICT-related competences in their area of specialization. It also analyses the teaching-learning context vis-a-vie the quantity and type of technology to be employed according to the curricular orientation. TEs' ability to transform policies and needs analysis to curricular initiatives and to contribute to the discussion of education reform policies through the design and implementation of programmes intended to implement national policies is also surveyed.

The ICT dimension explores the competences in the use of digital tools both for personal and professional purposes. On the professional level this includes communication and networking tools, information acquisition tools, media search and design tools, administrative tools and specialised tools in area/subject of specialization. Thus statements will enquire TE's about their competence in determining the profile of ICT competences needed to promote the three curricular orientations in their area of specialization and determine ICT competences that they need to acquire as part of their continuous professional development plan.

Pedagogical readiness is manifested through a TE's ability to adopt, integrate and promote with student teachers didactical, constructivist, constructionist and connectivist methodologies in the teaching-learning process and use relevant technology-based assessment procedures. This implies competences in designing technology-intensive learning activities in line with different learning conceptions (Associative, Individual / Social Constructivist and Situative) to promote different modes of learning – learning through instruction, exploration, designing, collaboration and learning through reflection. Thus pedagogical readiness is shown through a TE's ability to identify and integrate subject-specific tools and resources, competence in designing TEL for different learning styles, promote different pedagogical strategies through technology - short and long-term project, problem-based learning; collaborative learning (knowledge building and sharing, networking) and autonomous learning (targeting reasoning, planning, self-management, self-assessment and reflective skills). Pedagogical readiness is also assessed through one's familiarity with different modes of assessment including assessment of learning, assessment for learning, self and peer assessment, contribution and design modes of assessment.

Regarding the psychological dimension the survey enquires about the personal beliefs and attitudes about technology, and thus how the cognitive and affective evaluation of digital tools determines the use of technology for personal and professional use. Attitudinal readiness for TEL is determined through statements about perceived use of digital tools, perceived control when using digital tools and environments, affective aspects manifested as positive or negative feelings when confronted or actually using digital tools and typical avoidance or engagement behaviours when confronted with use of technology.

Conclusion - Use of instrument

After piloting and refinement, this instrument will be used, in conjunction with other qualitative approaches, such as interviews or focus groups, to collect data for designing and developing professional development initiatives in TEL for teacher educators. For this purpose an interview guide including key questions and statements from each section of the survey will be developed. Data will be analysed qualitatively and quantitatively to establish training needs or action to be taken along any of the identified dimensions. It is planned that an analysis of the prevalent ideas about TEL will be done, addressing any misconceptions or incomplete understanding. TEs will also be in a position to analyse the situation regarding policies that are adopted or need to be adopted by their institution to promote TEL and bring innovation through TEL in their institutions. Data will be analysed also to establish the training needed by TEs in the use of digital tools and in pedagogical strategies that will help them in integrating ICT in their area of specialisation, the integration of technology in their personal life and professional practice. An important outcome of this investigation will be to create awareness in TEs about their pattern of acclimatisation and naturalisation to new technologies and hence to be in a better position to control their beliefs and feelings about technology and TEL.

This Readiness for TEL instrument will also be used to take snapshots and possibly follow longitudinally individual and collective professional development initiatives that have been customised to take account of TEs' professional knowledge, different learning styles, and different access to technology and different attitudes to technology. It can also be used in comparative analysis of TEL in different institution of TEs or possibly different countries or regions. This will possibly lead to potential joint professional development initiatives in TEL through sharing of experience and resources.

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TRACING THE USE OF COMMUNICATION TECHNOLOGY IN PORTUGUESE HIGHER EDUCATION TOWARDS TEACHERS' PROFESSIONAL DEVELOPMENT

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Abstract
Aiming to characterize how Portuguese public Higher Education Institutions (HEIs) use Communication Technologies (CTs), a study is being developed under the on-going project TRACER, at the University of Aveiro, Portugal. This paper describes and summarizes the work developed within the pilot-survey, to validate the national survey, including a theoretical review outlining the context of CTs use and its impact on teacher training. First results included four HEI, and will be used to present some institutional perspectives about CT use. The responses cannot be generalized as wide-reaching statements, but already reveal that HEIs are making an effort to bring together policies and practices, having a common awareness and concern about teacher training for the use of CTs, although training main topics and modalities seem to vary significantly. Results show there is an institutional investment (currently and foreseen in a near future) on CTs use, namely at the level of teacher training.

Keywords: communication technologies; Higher Education; teacher training; professional development.

Introduction

Over the last decade we have experienced an exponential increase in the use of Communication Technologies (CTs) at different education levels. In Europe, CTs have shifted towards more ubiquitous features, demanding from Higher Education Institutions (HEIs) a variety of technological services (Urry, 2002). Their use also increased as a result of the Bologna recommendations towards a rise in students' autonomous work, processes that tend to be enhanced by the use of CTs. HEIs' rapid evolution regarding access to broadband Internet made it possible to offer the educational community different software, tools and environments (OECD, 2007).

As to evidence of CTs ubiquity in HEIs, research concerning its use in teaching practices embraces different perspectives. Some emphasize that the use of CTs is not potentiating innovation or disruptiveness of more traditional forms of teaching, while others argue that disruptiveness is happening and leading to changes in the way teachers and students work, adopting new roles and using emergent learning environments (Bielaczyc and Blake, 2006). Moreover, research emphasizes strengthening teacher training as a key element for the enhancement of competences regarding CTs use and their effective integration into teacher practices (Conole and Alevizou, 2010; JISC, 2009).

The assumption that "technology alone does nothing to enhance pedagogy" (Georgina and Olson, 2007, 8) justifies the relevance of the present paper, aiming to provide up-to-date knowledge on Portuguese Public Higher Education Institutions (PPHEI) through an analysis of the institutional perspective of CTs use. Understanding the institutional infrastructures available for teaching practices, the mechanism which supports teacher training is crucial for the future of HEIs. The literature review reveals that effectiveness of teacher practices depends on the

quality of the structures and mechanisms designed to support it, as well as of the human and technological resources available to attain its objectives.
This paper focuses on the preliminary results of a pilot survey conducted in the scope of the project "TRACER – Portuguese Public Higher Education Use of Communication Technologies"[44], that is being undertaken at the University of Aveiro. TRACER aims to contribute towards a large-scale and comprehensive study, which will allow characterizing HEIs according to their adoption and use of CTs in formal educational contexts. Data collected will be presented through an online interactive Information Visualization tool.

Theoretical framework

The use of Communication Technologies in Higher Education institutions

CTs are revolutionizing individuals' interaction, creation and knowledge building. CTs are embedded in people's lives, in everyday work of educational institutions both at administrative and educational levels (Conole & Alevizou, 2010; OECD, 2007). In this paper CTs are defined as Internet supported hardware and software that allow and promote communication and information distribution (Armstrong & Franklin, 2008; Grodecka, Wild, & Kieslinger, 2009). Seeking to respond to emerging challenges in these fields, recommendations and strategic plans were developed in the scope of education. The creation of a Common European Area in Higher Education illustrates the European political strategy. The Bologna process compelled HEIs to a set of changes and alerted to the need for a strategic plan, based on the offer and quality of training and research, ensuring a strong presence of HEIs in the global economy. Entities as OECD (2007), UNESCO, and programs as i2010, report that CTs are having an impact in HEIs, that students are increasingly influenced by Web intelligent services that empower users to distribute content and customize Internet applications, mostly using the web to interact, communicate and produce content (OECD, 2007).
The evolution of the web and its technologies from web 1.0 to web 2.0 tools, has given rise to a massive transformation of educational organizations and institutions, driving new web experiences that potentiate connection and collaboration between teachers and students (O'Reilly, 2005).
Concerning the specific use of web 2.0 in HE, research with an international range identifies, both within developed and between developed and developing countries, the disparity of the broadband infrastructure to support web 2.0 tools and environments, and the need to support teacher training (Chinn & Fairlie, 2010; Conole & Alevizou, 2010). Additionally the need for HE teacher training to effectively integrate CTs in teaching practices has been identified (UNESCO, 2004), such as using mobile devices for m-learning (Herrington et al., 2008), and integrating CTs into established and emerging teaching and learning methodologies.
Therefore, the TRACER research project seeks to obtain relevant data and information regarding the use of CTs in teaching and learning practices in PPHEIs. For the goals of the current paper, we will focus on 3 questions: Which CTs are emerging and moving towards a new stage of technology-enhanced learning? Which are the HEIs main concerns and goals for CTs use? Is there any formalized strategic policy concerning CTs use?

Teacher development and training for the use of Communication Technologies

New learners' characteristics and HE strategic policies are clear in stating that effective technology enhanced teaching and learning requires a paradigm shift, which integrates the understanding of how technology relates to pedagogy and content. In this change, students are at the center of the teaching and learning process, and teachers become facilitators, promoting students' responsibility and an effective participation in learning. According to Dede (2007),

[44] For further information visit http://cms.ua.pt/TRACER/

teaching strategies in HE must be set on the basis of co-design, meaning teachers must develop learning experiences that students can personalize according to their needs and preferences, and co-instruction based on learners' participation and knowledge sharing. Social constructivism advocates that knowledge should be actively and socially constructed and therefore is set as a privileged form of teaching and learning, because it stimulates students' cognition, pro-activity and makes their learning more autonomous and authentic. Nevertheless, such changes are not consensual for all HEIs and teachers, because it involves "unconscious beliefs, assumptions, and values about the nature of teaching, learning, and the academy" (Dede, 2007, p.16).

Regarding teaching and learning methodologies it is important to understand that teaching demands holistic and integrative critical analysis of both the theoretical frameworks that support it and the context in which it is developed. The result of this process is the construction of a professional knowledge that integrates a specific knowledge of the teaching profession, composed of multiple dimensions and modes of cognition (Montero, 2005). In the last decades many authors have focused on the knowledge, skills and competences that teachers need to develop towards effective teaching (Shulman, 1987; Cochran-Smith, 2005). At the beginning of the millennium, Perrenoud (2000) had already ranked the 10 new skills for teaching, emphasizing the key role that technology should play in teachers' performance.

Mishra and Koehle (2006), responding to the emerging challenge of CTs integration, adapted Shulman's model (1987) accommodating the technological knowledge necessary for the act of teaching today, proposing the Technological Pedagogical Content Knowledge (TPACK) model, based on the idea that integration of CTs in teaching and learning results from a balanced blend of content knowledge, pedagogical knowledge and technological knowledge.

To promote CT integration into teaching practices, policy makers and teachers must be aware of the fact that access to technology or technological proficiency is not enough – teacher training is crucial to develop teachers' TPACK. Such focus on teacher training is grounded on the results of several studies that unveil the poor use of CTs in terms of their potential for learning, in spite of the large amount of investment in technological infrastructures that has been made (Balanskat, Blamire & Kefala, 2006; Hunt, Davies & Pittard, 2006).

A recent report of an independent Committee in UK focuses on the impact on HE of students' widespread use of Web 2.0 technologies, unveiling different needs and use patterns among teachers: "some are clearly more skilled and adept than others in deploying it creatively and constructively in a learning context" (JISC, 2009, p.27). In Portugal, recent research (mostly in non-Higher education) also point out different levels of technology use, confirming that teachers' low levels of use of technologies are satisfactory, while at an high-level use, the ones who innovate in teaching and learning practices are very few (Costa et al., 2009). Over the last decades, several authors have also focused their research on understanding the barriers towards CT adoption in teaching practices. As Bingimlas (2009) highlights through a literature review, there are different categories to classify those barriers: intrinsic and extrinsic; individual and institutional; micro, meso and macro.

According to Conole and Alevizou (2010), there are important issues to address in order to guarantee that teacher training is effective for the purpose of CT integration such as deploying "mechanisms for giving teachers time to experiment with new technologies, support and guidance to enable them todevelop the new skills needed to embrace these new technologies and the shift in thinking towards more scholarly and reflective approaches to teaching" (Conole & Alevizou, 2010, p.44). Additionally, in order to better understand the world of CTs in which students navigate, teachers need to become part of that world, by experiencing CTs potential and powerfulaffordances, as well as being alert of possible negative impacts.

Georgina and Olson (2008) in a review about the integration of technology in HE revealed that research points out that, for teachers, "the most effective training occurs when it incorporates

peer to peer training, manifesting in shared ideas and practices among faculty" (3). Therefore, teachers' professional development requires high levels of support in addition to mastering the intellectual and technical dimensions involved, mainly through communities of practice that share the same interests but also through strategic training and support structures guaranteed by HEI.

TRACER – Portuguese public Higher Education use of Communication Technologies

The on-going project TRACER, already mentioned in the introduction of this paper, aims to characterize the PPHEIs as to the adoption and use of CTs, understanding which CTs are used, if they are mostly used as support for already existing technological processes and teaching and learning structures, or if their potential is being used for innovation in teaching and learning practices. In order to achieve those goals, one of the first tasks involves an exploratory study, by applying an online questionnaire. The first stage of inquiry addressed key elements of PPHEIs, aiming to gain the overall institutional view of CTs available and their support mechanisms (social, academic, logistic). The survey was followed by a second stage, which resulted in a second survey more focused on the use of CTs by teachers and Information Technology technicians.

Pilot study methodology

In the current HE context within the implementation of Bologna it seems fundamental and simultaneously difficult to understand how and which CTs are being adopted in PPHEIs, and if these institutions are promoting the use of CTs in their teaching practices. Regarding this, it is important to develop national studies focused on the specific use of CTs to support teaching and learning processes, characterizing HEIs as to their use. Although part of a larger study, we shall explain the research design that supports data collection and discussion presented in this paper.
To identify and characterize the use of CTs in PPHEIs, the research team relied on a survey methodology. An online questionnaire was applied at a national level The data collected reports to the first semester (2011/2012). The instrument was composed of 2 sections:
A first section, answered by decision-makers on CTs issues (e.g. rector, vice-rector), consisted of five main topics: 1) General profile; 2) Resources and functionalities of CTs; 3) Infrastructures supporting the implementation and CTs use; 4) Institutional policy regarding CTs; and 5) Areas of concern and future perspectives;
A second section, answered by the leader of CTs services (e.g. coordinator): 6) Training for the use and integration of CTs in educational practice; and 7) Use of CTs.
The development of the survey instrument and methodology was followed by a triple validation process through review by project experts, an external consultant and a pilot-study, leading to final improvements. Globally, the validation process did not compromise the surveys' original content and structure, which consisted mostly in rephrasing questions.
The pilot-study was conducted between December 2011 and February 2012, with 4 PPHEI representing the University and Polytechnic HE systems. These HEIs were selected by convenience, considering the team's access to some of the key-informants. The approach adopted involved identifying specific key-actors in each HEI, considered as the most adequate representative to answer the survey. For the purpose of this paper we will focus more precisely on points 3 to 7 of the survey mentioned above.
The small sample of the pilot-study (n=4) may be considered a limitation of this study, although we think that given the universe of HEI (n=35), four institutions representing HE subsystems (University and Polytechnic) would allow an adequate test and a prediction of possible threats. Some answers to the online survey required further information to be provided by phone or email, mainly regarding: i) the lack of systematic information on the indicators required; ii) the need of resorting to several services within each HEI, since such information is not compiled on

a single service or structure (a problem already foreseen by the project team), extending the time needed for the full submission of the answers. Some additional information contextualizing the data was also provided. Therefore, the major problem concerning the extensive time needed to obtain the information was justified by the respondents because of the nature of the information requested.

Given the nature and number of the sample, data analysis was descriptive, resorting to SPSS 19.0 statistics software, restricted to the points of the survey that are connected with the research problem in the theoretical framework. Considering the submission date of responses to the survey it was not possible at this stage to analyse and relate all the variables of the study or undertake a detailed analysis on the basis of teacher training. Next, we put forth a brief characterization of the participant HEIs, within the academic year of 2011/2012, concerning the number of teachers (full and part-time) and students, number and type of presence or distance education courses offered, and subsystem (Table1):

Table 1. *Characterization of HEIs participants in the pilot survey – an overview.*

Institution	HE Subsystem	Nº of teachers	Nº of students
A	Polytechnic	300	2698
B	University	78	1889
C	University	962	14583
D	Polytechnic	119	1703

The following topics gather results found on indicators related to teachers' professional development, organized around the original questions of the survey.

Findings and discussion

In this section, we present the main results from the pilot survey and discuss their relevance and connection to the theoretical framework of this paper, towards possible scenarios concerning phase 1 of the inquiry.

Formalized strategic policy concerning the use of CT

The literature review shows some evidence regarding the importance of HEIs' clear policy relating to the integration of CTs (Lin and Ha, 2009). In the survey, HEIs were inquired about the existence of a formal strategic orientation or policy concerning the use of CT – Is there a formalized strategic policy concerning the use of CT? HEIs B (University) and D (Polytechnic) (n=2) stated to have a defined strategic policy concerning the use of CTs. Data reveals important assets regarding teacher training, given that the areas marked by both institutions as integrating the formalized strategic policy concerning the use of CT relate with:

- the integration and use of CTs in educational practice;
- the use of open educational resources;
- the management of infrastructures and resources.

Only 1 institution (D, Polytechnic) mentioned to have a formalized approach to training and professional development of teachers, as well as a strategic orientation towards the use of CT devices and resources by staff (teaching and non-teaching). Despite this, there is no indication of specific strategies or policies concerning teaching and learning supported by CTs, both in face-to-face or distance modes, focusing on online approaches of b-learning, m-learning and the use of Web 2.0 tools by staff. Only institution B (University) responded to have an e-learning strategy

and policy. Nevertheless, the HEIs involved state to use several CTs for official purposes, detailed bellow.

CTs used by HEIs

Considering CTs ubiquity and their emergent use in HE worldwide, HEIs were asked to provide information on their official online presence concerning 4 domains: the institution as a whole; courses; departments/faculties; research infra-structures. Analysis of the answers given by the institutions shows that:

- 4 institutions have an official institutional website;
- 3 institutions have official presence on social networks, the second most frequent chosen spaces for web presence, selected by the majority of the institutions; institution B (University) that does not state to have any official presence in social networks;
- 2 institutions have official presence in video sharing channels (such as YouTube, iTunes);
- 2 institutions have official image sharing channels (such as Flickr, Picasa);
- none of the institutions have official presence in virtual worlds (such as Second Life), although institution C (University), states to have a research centre with official presence in Second Life;
- research centres also have institutional websites;
- none of the institutions inquired mentioned using content feed aggregators.

All HEIs reported to have a web presence for their courses of every degree cycle [Table 2].

Table 2. *Institutional Web presence of courses. (*) Not applicable to the polytechnic subsystem.*

Institutional Web presence of Degree Courses	1st Cycle	2nd Cycle	3rd Cycle (*)
a. Institutional website	A.B.C.D	A.B.C.D	B.C
b. Social networks (such as Facebook, Twitter, Linkedin,…)	A.C.D	C.D	C
c. Video sharing channels (such as Youtube, ITunes,…)	A	A	
d. Image sharing channels (such as Flickr, Picasa,…)			
e. Virtual worlds (Second Life,…)			
f. Content/Feed aggregators (Netvibes,…)			

Because phase one of the HEIs inquiry aims to identify the use of CTs from an institutional perspective, one of the questions concerned which and how often CTs were used by the administration and services to communicate with teachers. Results show that email (n=4) and teaching and learning platforms (n=3) are the most used to communicate with teachers. Institution A (University) also marked chat services and social networks as often used. Although video-calls are not frequently used, 3 institutions report their use to communicate with teachers. Concerning the goals of using each of the aforementioned CTs by administration and services, results reveal that HEIs frequently (n=3) resort to CTs to provide dissemination of legal documents and scheduling events. In terms of CTs use to retrieve information, the most marked options were the request for information and to fulfill tasks, as well as to collect suggestions and information (n=3).

HEIs main concerns and goals for the use of CTs

HEIs inquired indicated as their main concerns and goals relating to CTs the ones listed below (Table 3).

Table 3. *Current areas of concern regarding CTs use.*

	HEIs			
CT Use : areas of concern	**A**	**B**	**C**	**D**
a. Financing	A		C	
b. Management of infrastructures and equipment		B		D
c. Making available support infrastructures for teachers and staff	A			D
d. Use of CT in teaching and learning		B	C	D
e. Expansion of distance learning and teaching	A			
f. Institutional use of web 2.0	A			
g. Introduction/widening of mobile technologies		B		
h. Strategic planning				
i. Making Open Educational Resources available				D
j. Cloud computing			C	
k. Online security and privacy		B	C	
l. Interoperability of systems			C	D
m. Sustainability	A	B		
n. Other				

This question elicited varied responses. Institutions have common concerns such as the use of CTs in teaching and learning (n=3) but it is relevant to look at other concerns of each institution. Institution A (polytechnic) solely selected as concerns the expansion of distance learning and teaching, the institutional use of web 2.0, and connecting areas such as making support infrastructures available for teachers and staff and sustainability. Institution B (university) stands out for solely having selected introduction/widening of mobile technologies. Institution C (university), on the other hand, solely marked cloud computing.. Institution D (polytechnic) stands out by solely selecting 'making Open Educational Resources available' as an area of concern, and also making available support infrastructures for teachers and staff.

The survey contains one open question about the main goals of institutions as for CT issues in the next 2 years in which it is possible to see as major priorities (n=2) [table 4]: maintaining/enhancing the use of CT in the support of teaching/learning/research processes; guaranteeing a more sustainable use of CTs (namely as to reducing functioning costs, the migration of non-critical systems to cloud computing solutions and the integration of systems). Only one Institution (D - polytechnic) did not provide any information.

Table 4. *Goals for CT for the next 2 years*.

Goals for CT in the next 2 years	HEIs
Maintaining/Enhancing the use of CT in the support of teaching/learning/research processes	B.C
Sustainability of CT (e.g. reducing CT functioning costs; migration of non-critical systems to cloud computing solutions; integration of systems)	A.C
Maintaining/Enhancing the use of CT in the support of management processes	B
Expansion of CT institutional resources and infrastructures (e.g. data processing)	C
Definition of policies and strategies (e.g. functional model; sustainability strategy)	C

It is interesting to note that Institution C (university) chose the definition of policies and strategies in a holistic perspective in terms of functional model and sustainability strategy as a goal.

Infrastructures to support CTs use in teaching and learning practices

To obtain information about the infrastructures used to support the CTs use in teaching and learning practices, the survey focused on the existence of infrastructures that provide technical support and support online teaching/learning and how they were organized in each institution. Regarding technical support, every HEI reported to have centralized infrastructures, i.e. serving all institutional sectors, schools, faculties and departments. HEI B mentioned, cumulatively, the existence of decentralized services. Regarding the support for online teaching and learning, 3 HEI (A, C, D) confirmed to have such infrastructures centralized. Commonly, the same infrastructures have both technical and online teaching/learning support tasks. Consequently, it may be acceptable to conclude that support might be provided mostly as to CTs technical features/possibilities, rather than at to pedagogical issues. No decentralized infrastructures were identified specifically as to the support to online teaching and learning.

Teacher training

As mentioned above, only one institution mentioned having formal strategic planning for teacher training. Despite this, in the first semester (2011/2012) to which data relates, institutions C and D (University, Polytechnic) reported to provide teacher training to use and integrate CTs in teaching and learning practices. In table 5, the issue of frequency and modality offered for teacher training is also tackled.

Table 5. *Types and modalities of teacher training offer.*

Type and modalities of teacher training offer	1. Never	2. Rarely	3. Sometimes	4. Often
Theoretical courses			C	D
Workshops		D	C	
Conferences		D	C	
Other: Guidelines/video tutorials	D		C	
Face-to-face			C	D
Fully online		D	C	
Blended		D	C	

All types and modalities of training are implemented by both respondent institutions, but with a diverse profile as to the frequency of use: D (Polytechnic) predominantly offers theoretical courses in a face-to-face mode, rarely using online ones; C (University) has a more diverse offer of face-to-face and online courses, standing out in the offer of video tutorials and guidelines for teacher training.
Regarding training topics of teacher training, the most popular are the use of institutional platforms and the use of databases and digital scientific repositories. It is important to highlight that none of the institutions spend time training for hardware use. Institution C (University) marked never to give training to teachers specifically about the use of Web 2.0 tools in educational contexts, although it is a university with an official presence in social networks; nevertheless, it declared to provide training for the use of Office tools, and teaching/learning strategies based on CTs (Table 6).

Table 6. *Teacher training topics for CT use in teaching/learning practices.*

Training topics for CT use	1. Never	2. Rarely	3. Sometimes	4. Often
Use of Web 2.0 tools in educational context	C			D
Use of Office tools (Power point, Excel,…)			C	D
Use of institutional platforms				C.D
Use of databases and digital scientific repositories				C.D
Use of software			C	D
Use of hardware (PC, interactive boards, iPads…)	C	D		
Use of teaching/learning strategies based on CT			C	D

Teacher training is indicated to be delivered by various actors, most commonly by the institutions' own CTs services, teachers or researchers. As complementary resources to this training, they often make manuals available, while materials such as videos or audio resources (videocast/podcast) are rarely or never available.

Conclusions

An estimated scenario of how CTs are used in PPHEI from the data gathered from the pilot study reveals that HEIs are making an effort to bring together policies and practices, in a consensual relation to the research concerning teacher training in this area. Institutions vary in their concern and approach to practices concerning CTs use by teachers. Results show there are no formal political strategies, but there are institutional investments on CTs and teacher training for CTs use. Moreover, HEIs are aware of the need to have an online presence, through a representative institutional website and social networks. Less preferred choices are online video sharing tools, not being explored for institutional communication or presence.
Concerning teacher training and professional development for CTs use, results indicate that the training offer may not be a current practice as an official and formalized strategy in HEIs, which seems to imply a more technical rather than pedagogical approach. Training is mainly provided by internal staff, not resorting to external specialists or enterprises. As the literature shows,

peer-to-peer strategies and communities of practice are most likely the best approach for teacher training and it is important to gather more detailed information about these issues in the next phase of this project. In the second stage of inquiry of teachers, it will be crucial to understand their vision on the current and desired training offer. Topics chosen for teacher training strongly focused on the use of software and web tools and platforms offered by the institution (which are also being used to communicate with teachers), and to the use of digital databases and scientific repositories. These concerns and topics make us foresee impacts on teaching and learning practices into a more effective use of CTs. Validation of the data collection instrument sustains the future results of the national survey that will be further discussed and disseminated. In the national survey, it will be important to relate the dimensions with the size of the institution and to look in more detail at the relationship between the variables concerning policy and practice issues. Although some institutional key-informants do not have a formal strategy for CTs use, all of them seem to be aware of the need to invest in CTs integration in the teaching/learning process. Therefore, when we look at the HEI services and infrastructures through the lens of those key-informants, we acknowledge that the existing infrastructures support technical services and online teaching and learning. The national survey results may reveal more information about this issue. Finally it is important to report that one of the limitations of this research relates to time consuming and detailed data collection by respondent institutional key-informants. This demands an attentive reading of the institutional information available (on and offline), at a national level, as a way of completing information gaps that may occur.

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TRAINING TEACHERS IN USING LMS: A TWO STAGES MODEL

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Abstract
This paper reports a teachers' training course in blended-learning at the Escola Secundária de Carvalhos in Portugal. A total of 33 secondary school teachers participated in the training, during the 2010/2011 school year. We developed a two stages model for teaching training. The first stage uses a blended-learning approach based on the use of a LMS platform. The model of training is based on the combination of two approaches: promoting reflection-in-action and reflection-on-action, and the five-stage Salmon's model and Garrison and Vaughan's approach. The second stage comprises monitoring teachers' practices, during one school year, giving support to teachers in the use of technology. This study is part of the research we are developing about the integration of Learning Management System (LMS) in secondary school education, proposing a model and analysing its implications into teaching practices. It is a longitudinal case study. The large majority of trainees considered that our model of training was helpful to them, and they feel prepared to use the LMS with their students.

Keywords: blended-learning, learning communities, learning management systems, professional development, teachers' training.

Introduction

The educational policies in Portugal prioritized the need for teacher training and development in the Information and Communication Technologies (ICT) area, on publishing a document in 2007, establishing that training should be adapted to the needs of the schools. Research on teacher development suggests that there is a gap between the knowledge acquired in teacher training and development courses and the use of this knowledge by teachers in the classroom, bringing about the necessity of partnership actions (Ponte, 2000; OECD, 2005; Pretto & Pinto, 2006; Nóvoa, 2009). Therefore it is important to think about the paths that teacher training has followed to project new scenarios (Ponte, 2000; Cuban, 2001), in which teachers play a more active role (Nóvoa, 2009), and create conditions that lead to the development of innovative and intervening skills (Leite, 2005).

As Darling-Hammond (2000) refers "As policymakers become more involved in school reform, this question takes on new importance since their many initiatives rely on presumed relationships between various education-related factors and learning outcomes." (p. 2). According to this, OECD (2005) considers as a main challenge [for policy makers] to know "how to sustain teacher quality and ensure all teachers continue to engage in effective on-going professional learning." (p. 10).

OECD (2005) and Ponte (2000) recognise the importance of not only developing teacher profiles in alliance to teacher development, performance and schools' needs but also viewing teacher development as a *continuum*. Therefore, it is crucial "to have clear and concise statements of what teachers are expected to know and be able to do" (idem, 9), which depend on the contexts of personal and institutional needs, and rethink how professional development fits into

education stakeholders (Leite, 2005; Pretto & Pinto, 2006; Nóvoa, 2009; Darling-Hammond, 2010).

Background

Professional development

In order to ensure teachers' professional development, in addition to training offered by universities and teacher education colleges, scientific associations and teachers' associations, local school training centres were set up to identify the training needs of teachers from all member schools. As such, our proposal for training teachers in using LMS was submitted and then was approved by pedagogical council of further education, subordinated to the Ministry of Education.

Our proposal considered the statement in a UNESCO report "Both professional development programs for teachers currently in the classroom and programs for preparing future teachers should provide technology-rich experiences throughout all aspects of the training" (2008, p.3).

Moreover, to take advantage of ICT integration (Cuban, 2001; Carvalho, 2007, 2008; Zhao, 2007) trainees must be confidence, enhanced and comfortable (Costa & Viseu, 2007). This is possible with proper training. Trainees need time, adequate time, to reflect on teaching with other professionals and thus share their experiences, to develop new insights and new ways for teaching and "need to receive intense training that focuses on demonstration of technology integration strategies and application of those strategies in the curriculum" (Zhao, 2007, p.330).

We are conscious that reflection is not always an easy task. The challenge was to find a way in which to engage the trainees in concrete tasks of learning and teaching, and develop the ability to explore and be curious about their own experience and actions (Carvalho, 2007, 2008; Costa & Viseu, 2007; Salmon, 2011). The trainees must reinterpret their understandings and recognise that the reflection is the centre of reflective thought (Schön, 1992; Dewey, 1997) in such a way as to creatively adapt their practice to new situations (Schön, 1992). As Salmon (2011) suggests we must try out reflection-in-action (happens while doing something, i.e., takes place during the practice) and reflection-on-action (after the practice has occurred) in our 'e-tivities' and in a teacher training courses.

All these authors acknowledge the importance of reflective practitioner, "the idea here is that experiences need to be interrogated and perhaps tested and challenged to avoid the unconscious assumptions that may reduce creativity and flexibility in attempting to understand or resolve a problem or explore a scenario" (Salmon, 2011, p.92).

Blended-learning

There are many different concepts about blended-learning supported by a large number of literature review; we consider blended-learning as "the thoughtful fusion of face-to-face and online learning experiences" (Garrison & Vaughan 2008, p.5) perspective. These authors emphasise the need for reflection on traditional environments and redesign learning and teaching in the blended learning approach.

So, we believe that the blended-learning approach can be more efficient, manageable and flexible than the traditional approach and other training environments, as well as facilitate interactive social learning (Carvalho, Lustigova, & Lustig, 2009). Consequently "the use of blended learning practices in establishing communities for professional learning and practice are gradually becoming recognized as effective strategies" (Stacey & Gerbic, 2009, p.14).

For online learning to be successful, Salmon (2011) considers there must be a structured development process. Her model of teaching and learning online through online networking contemplates a five-stage framework and 'e-tivities' with which the trainees can benefit from increasing skill and comfort in learning online. In this model, Salmon (2011) intends that: (1) there be essential prerequisites for online conference participation; (2) each stage requires

participants to master certain technical skills; and (3) each stage call for different e-moderating skills.

Learning environments

It is also worth highlighting that proper use of the ICT may imply substantial changes in student and teacher roles (Ponte, 2000; Pretto & Pinto, 2006) thus its usage "can create a deeper understanding concepts by integrating different disciplines through work on individual and group projects" (Cuban, 2001, p.15). Schools can be transformed into communities - learning communities (Pallof & Pratt, 2007), practice communities (Wenger, 2006) and communities of inquiry (Garrison & Vaughan, 2008). Furthermore, in a study presented in 2011, *the UNESCO ICT Competency Framework for Teachers* project calls attention on how to use ICT in education: "the successful integration of ICT into the classroom will depend on the ability of teachers to structure the learning environment in new ways, to merge new technology with a new pedagogy, to develop socially active classrooms, encouraging co-operative interaction, collaborative learning and group work." (p. 12).

Previously, in 2000, Garrison, Anderson and Archer promote the Community of Inquiry (CoI), which combines f2f workshops with sustainable online environments. In CoI, learning occurs [within the community] when there is interaction between the three key elements: social presence, cognitive presence and teaching presence.

In the scope of this community the trainees should engage in critical reflection and discussion of practice due to the emphasis on critical thinking and collaboration suggested by Garrison and Vaughan (2008).

Indeed, the CoI framework provides a model and a set of guidelines to create effective learning communities in online and blended learning environments (Palloff & Pratt, 2007; Garrison & Vaughan, 2008; Akyol, Garrison, & Ozden, 2009). It also provides us with a theory for understanding the dynamics of learning in both these contexts in order to develop effective learning communities (Palloff & Pratt, 2007; Akyol, Garrison, & Ozden, 2009).

The research

Research questions and Aims

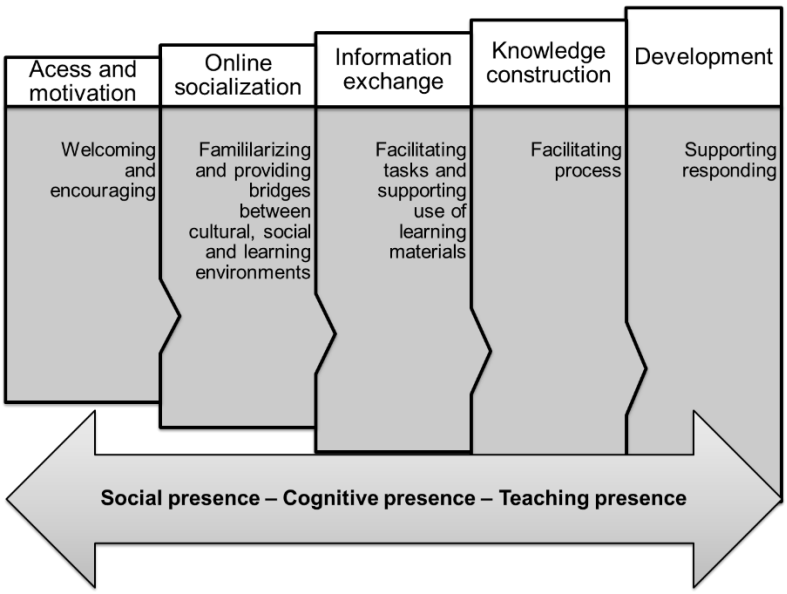
The aim of this research is to investigate the integration of LMS in secondary school education: from training model to teaching practices. The main questions are:

- How did the trainees evaluate the training model?
- What will be the impact of the teachers' training model in the teaching practices?

Context

In our proposal, we developed a teacher training course as part of the research we are developing within the work programme of the doctoral thesis. In accordance with this idea, we applied a blended-learning approach (Carvalho, Lustigova, & Lustig, 2009; Stacey & Gerbic, 2009) to a training course held on LMS Moodle. Our model of training is based on the combination of two approaches: a) promoting "reflection-in-action, and reflection-on-action" (Schön, 1992; Dewey, 1997); and b) the five-stage Salmon's model (2011) and Garrison and Vaughan's (2008) approach. The first approach is constantly present during the training course. Figure 1 shows the second approach which occurs, in the online sessions, using a combination of the both (Salmon's model, and Garrison and Vaughan's approach).

Figure 1. *Model of teaching and learning online used in online sessions (adapted from the five-stage Salmon's model and the Community of Inquiry)*



With the five-stage Salmon's model (see Figure 1) we pretend to motivate online trainees with appropriate 'e-tivities'. Taking this into account, we carefully choose the activities considers the trainees needs to be supported through a structured development process (Salmon, 2011). We pretend that the trainees project their full personality – social presence – and that they see their development as a process of critical thinking – cognitive presence –, intimately linked to the training context. In addition, the trainer must promote building understanding and direct instruction, in a balanced and functional relationship congruent with the intended outcomes, and the needs and capabilities of the trainees – teaching presence (Garrison & Anderson, 2003; Garrison & Vaughan, 2008).

The training course is a two-stage model for teachers' training:

1. The first stage was carried out during the last school year (2010-2011); it employed a blended-learning approach (Carvalho, Lustigova, & Lustig, 2009; Stacey & Gerbic, 2009) based on the use of a LMS.
2. The second stage comprises monitoring teachers' practices, during one school year, giving support to teachers in the use of technology.

Since we agree that "the professional development must be set within the contexts of personal and institutional needs" (Day, 2004, p.132) and for that reason the training course occurred at Escola Secundária de Carvalhos, our own school. Moreover, Leite (2005) considers that professional development has been focused on problems and on others practical situations experienced by teachers deployed – training in real situation.

A total of 33 secondary school teachers participated in the training, during the 2010-2011 school year.

The training course model

Our model of teachers' training has two stages. The first one is the training process (already completed), from the presentation of LMS (access and interface) to the exploration of different dimensions of work, communication emphasis, interaction and collaboration, linked to an increase in interactivity and skills acquisition. The second stage is the monitoring phase (taking place during the school year of 2011/2012) in order to continue providing backup to the training process, by giving specific support and monitoring required in ICT integration (Carvalho, 2007, 2008; Costa & Viseu, 2007; Zhao, 2007).

In the first stage organisation we considered, the official training scheme stipulates that 50-hour workshop sessions be distributed as 25-hour face-to-face (f2f) scheduled sessions and 25-hour homework unscheduled time. However, in this type of situation we decided to set specific tasks to de done between the f2f sessions; thus transforming the unscheduled homework time into continuous predefined work (see Figure 2). The training time comprised of 25-hour f2f and 25-hour online.

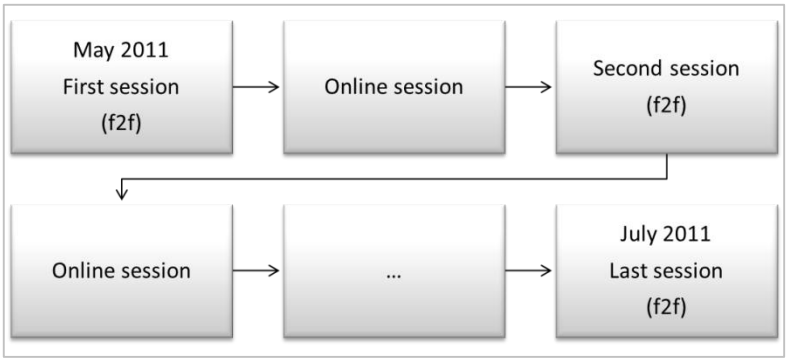


Figure 2. *Training time distribution*

In the f2f introductory session trainees were presented with the learning objectives of the course and provided with an orientation to the online portion of the course which would be an extension of what occurs in the f2f sessions. Trainees were also provided with all the information they would need to know about working online. The convergence of f2f settings are characterised by synchronous and human interaction, as well as ICT based settings. They are asynchronous and text-based when trainees operate independently (Stacey & Gerbic, 2009). Furthermore, f2f discussions can build relationships and cultivate a sense of community in the classroom (Garrison & Vaughan, 2008).

The course had a three-hour f2f session fortnightly (in average) followed by independent or group work, participation in chat and debate in forums. All trainees had access to different kinds of support material, videos, eBooks, case studies, information and guides, as well as screencasts to help them carry out the tasks available in the LMS, Moodle. After each f2f session, a document with all tasks to be accomplished for the next f2f session was posted in the Moodle. Two different kinds of spaces were set up: one to support f2f sessions and another to support online activities. The trainees took the role of students in f2f sessions and the role of teachers in online activities. In the LMS, they created courses to teach their students during 2010-2011 and 2011-2012. All trainees had to complete two tasks:

- individual – which implied the creation of a course in the LMS (with or without interactive applications) for teaching during 2010-2011 and 2011-2012 to their students;
- in group – which developed, in large majority, multidisciplinary teams who conceived and continue conceiving multidisciplinary courses using interactive activities to use with their students during 2011-2012. Here, we stressed the peer coaching process.

Thus, in this training course, we promoted different modes of interaction as describe in the Figure 3.

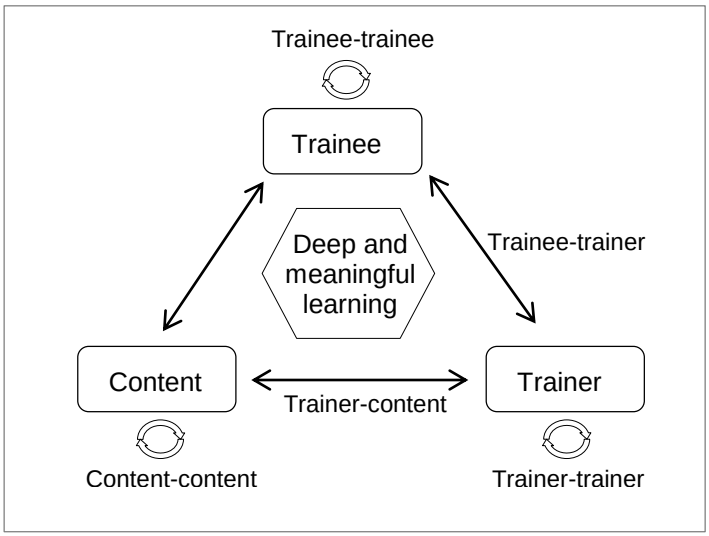


Figure 3. *Modes of interaction (adapted from Garrison & Anderson, 2005, p.43)*

In the second stage, we will hold workshops and non-formal training, to consolidate and deepen skills, contributing to improve self-confidence of teachers; we will monitor the teaching practices and promote the establishing of communities of practice (Wenger, 2006) to accomplish teaching and learning objectives.

Methodology

The research in progress is a longitudinal case study (Bogdan & Biklen, 2003; Merriam, 2009; Yin, 2009). During the first stage data was collected through questionnaires and a researcher diary.

An Identification Questionnaire was filled in by trainees in the first session and included items related to academic, professional and digital literacy characterization.

An Opinion Questionnaire (OQ) was applied at the end of the training to collect the trainees' opinions about the training It has two parts. The first part, evaluated the training model and the use of the LMS Moodle. The second part, evaluated the effort expectancy, performance expectancy, social influence, facilitating conditions and attitude toward using technology. Some of the OQ items were adapted from previous instruments used by authors in studies regarding the application of the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Marchewka, Liu, & Kostiwa, 2007; Verhoeven, Heerwegh, & De Wit, 2010). Furthermore, during the whole course we developed a formative evaluation to improve the quality of the course. We intended to have feedback and comments for the participants. As such, we got to know the participants' needs and expectations. Our aim was to promote new skills and knowledge, and on-going development and continuous improvement.

Participants' characterization

In the training course held during the 2010/2011 school year, two classes were created due to the high number of subscriptions: one group was constituted by 19 secondary school teachers and the other had the remaining 14. However, for the statistical analysis of data we will consider all trainees as a single group. The trainees were 22 female and 11 male; their ages ranged from 29 to 56. The group included different professional situations (76% were school staff) and

different levels of educational achievement – all of them had a degree, except one. One also has a post-graduation course and four have a master's degree.

ICT in teaching practices

All the participants (n=33), except one, use ICT in their classes. These, a large majority (94%), use Internet but only 27% of them use LMS in their teaching practices. With regards to Web tools (see Table 1), 83% use *browsers*; 70% *Google software*; 57% *social software*; 54% *wikis and LMS* (27% for each tool); 23% *software package*; 7% *podcast* and 6% *applets* and *virtual school* (3% for each one). From the result analysis we became aware that the majority uses mainly *browsers* or *software Google* and that LMS are rarely applied by the participants.

Table 1. *Web tools used by participants*

Web tools	Participants (n=33)	
	f	%
Wikis	8	27
Podcast	2	7
Applets	1	3
Software package	7	23
Google software	21	70
Social software	17	57
Browsers	25	83
LMS	8	27
Other: *Escola Virtual*	1	3

With regards to LMS tools, 23% use LMS as *repository*; 20% use *work*; 20% use *forum* and *activity* (10% for each one); *wikis*, *blog*, *survey*, *test* and *lesson* are each used by 7%; 3% use *referendum* and none of the participants use *glossary*. These results make it possible to conclude that the participants are still basic Moodle users since they use it as repository.

Table 2. *LMS tools used by participants*

LMS tools	Participants (n=33)	
	f	%
Repository	7	23
Wikis	2	7
Forum	3	10
Blog	2	7
Glossary	0	0
Survey	2	7
Work	6	20
Test	2	7
Lesson	2	7
Activity	3	10
Referendum	1	3

Training courses

With regards to teachers training courses, 79% of them usually do courses at the local school training centres; 27% go to universities or teacher education colleges and 3% do it at other places (work place). The reasons for seeking training courses were, in majority (79%) for

personal development purposes; 12% due to professional development and another 12% indicated both purposes. As regards to whether training courses contribute to the improvement of teaching performance, 70% answered affirmatively; 27% indicated "not always" and 3% did not reply. In relation to types of a training a large majority (94%) of the trainees prefers 'training workshop' as the formal procedure of teachers training courses; one (3%) prefer 'course' and another one (3%) did not reply. In respect to the approach, 85% prefer blended-learning; 9% face-to-face sessions and 6% e-learning.

Data analysis

In relation to our model training approach [blended-learning], almost all the trainees (97%) considered that their learning had benefited with this approach, only one (3%) answered "not really".

They were asked if they consider that the online sessions promoted their training participation. A large majority of the trainees (85%) agreed and 15% answered "not really". Most of the trainees (83%) felt able to use Moodle with their students, 15% "not really" and only one (3%) indicated incapacity to use it.

The Opinion Questionnaire was composed of 50 items in the format of a five-point Likert scale of agreement (1=Strongly disagree (SD); 2=Disagree (D); 3=Neither agree or disagree (NA/D); 4=Agree (A) and 5=Strongly agree (SA)) and 11 items assessed on a scale from 1 (lower value) to 10 (upper value).

Results are presented in frequencies and corresponding percentages of degree of agreement on each statement, as well as the weighted-mean obtained for each item. For data interpretation we considered that the numeric values for means under 2.4 (for positive or reversed negative items) meant a negative attitude, values between 2.5 and 3.4 "indifference" and values over 3.5 a positive attitude.

During the training course we promoted asynchronous communication (supported in forums). The data presented in Table 3 shows that trainees *strongly agree* (mean=5) that the forum is an important space *to discuss different themes*, *to share ideas*, *to clarify questions*, and *to reflect*. They *agree* that the forum is also important *to publish news* (mean=4).

Table 3. *Assessment the use of the forum*

Forum was an important space to ...	SD	D	NA/D	A	SA	Mean
discuss different themes	0 (0%)	1 (3%)	1 (3%)	12 (36%)	**19 (58%)**	**5**
share ideas	0 (0%)	0 (0%)	1 (3%)	8 (24%)	**24 (73%)**	**5**
clarify any questions	0 (0%)	2 (6%)	4 (12%)	11 (33%)	**16 (49%)**	**5**
reflect	0 (0%)	0 (0%)	1 (3%)	13 (39%)	**19 (58%)**	**5**
publish news	0 (0%)	2 (6%)	1 (3%)	**17 (52%)**	13 (39%)	**4**

We created small groups to facilitate conversation in chat for synchronous communication. The analysis of data presented in Table 4 shows that, in most of the statements, trainees *agree* or *strongly agree* on the use of the chat. None of the weighted-mean obtained is under 4. With regards to chat the trainees thought that *access to netiquette rules facilitated communication* (94%), *the rules of procedure defined in f2f sessions eased conversation* (91%), as such *the creation of small groups facilitated the conversation* and as *space to socialise* (88% for each one). The data also stressed that the trainees considered that chat *promoted a close contact between all participants* and *help to instil a sense of community* (82% for each one), and *it provides immediate relief (*73%).

Table 4. *Assessment the use of the chat*

With regards to chat I consider that …	SD	D	NA/D	A	SA	Mean
access to netiquette rules have facilitated communication	0 (0%)	0 (0%)	2 (6%)	11 (33%)	20 (61%)	**4.6**
it is a space to socialise	0 (0%)	0 (0%)	4 (12%)	16 (49%)	13 (39%)	**4.3**
it provides immediate aid	0 (0%)	3 (9%)	6 (18%)	11 (33%)	13 (40%)	**4**
the creation of small groups facilitated conversation	0 (0%)	0 (0%)	4 (12%)	12 (36%)	17 (52%)	**4.4**
it helps to instil a sense of community	0 (0%)	1 (3%)	5 (15%)	12 (36%)	15 (46%)	**4.2**
it promoted a close contact between all participants	0 (0%)	3 (9%)	3 (9%)	10 (30%)	17 (52%)	**4.2**
the rules of procedure defined in f2f sessions have eased conversation	0 (0%)	1 (3%)	2 (6%)	13 (39%)	17 (52%)	**4.4**

The use of glossary (see Table 5) was highlighted by the trainees. As we can see, all weighted-mean obtained is over 4. Almost all of the trainees (97%) considered that *glossary promoted the creation of database with specific terms in the scope of the training course* and the *construction of shared knowledge*. In relation to the others statements, 88% of the trainees perceived that glossary promoted the *collective building of meanings* and *collective authorship*, as well as *a channel of communication*.

Table 5. *Assessment the use of the glossary*

Glossary promoted the …	SD	D	NA/D	A	SA	Mean
creation of database with specific terms in the scope of the training course	0 (0%)	0 (0%)	1 (3%)	8 (24%)	24 (73%)	**4.7**
collective building of meanings	0 (0%)	1 (3%)	3 (9%)	7 (21%)	22 (67%)	**4.5**
collective authorship	0 (0%)	1 (3%)	3 (9%)	9 (27%)	20 (61%)	**4.5**
[a] channel of communication	0 (0%)	1 (3%)	3 (9%)	15 (46%)	14 (42%)	**4.3**
construction of shared knowledge	0 (0%)	0 (0%)	1 (3%)	8 (24%)	24 (73%)	**4.7**

The three following Tables show the trainees opinions about the planning and organisation of the work held on Moodle, the type of communication, the collaborative work and the applied methodology. Four items were negative statements. According to data presented in Table 6, we can verify that all trainees considered that *the support material placed in LMS was an advantage*. The *resource documents,* the *summaries* and the *different users profiles* (mean=4.6 for each one) aided the trainees in their performance and permitted them to get a better understanding of their new roles in different contexts (as students' and teachers' roles); the *visual icons aided the trainees* (mean=4.5) as well as the *organisation of work in Moodle*.

Table 6. *Evaluation of the planning and organisation of work in Moodle*

Items	SD	D	NA/D	A	SA	Mean
Moodle access allows for the defining of different users profiles, permitting a more amble view of the roles each can play	0 (0%)	0 (0%)	1 (3%)	11 (33%)	**21 (64%)**	**4.6**
The Moodle course organisation did not make navigation or access to different section easier	**15 (46%)**	13 (39%)	4 (12%)	1 (3%)	0 (0%)	**1.7**
Visual icons (titles, illustrations and labels) aided the identification of different sections	0 (0%)	1 (3%)	0 (0%)	14 (42%)	**18 (55%)**	**4.5**
The availability of support material placed in directories/folders was not considered an advantage for the organisation of the work	**22 (67%)**	11 (33%)	0 (0%)	0 (0%)	0 (0%)	**1.3**
The availability of resource documents was important for my performance on online work (textbooks, videos, eBooks, studies carried out, information and guides, screencasts, …)	1 (3%)	1 (3%)	2 (6%)	8 (24%)	**21 (64%)**	**4.4**
Access to session summaries did not aid me in task organisation	**21 (64%)**	11 (33%)	1 (3%)	0 (0%)	0 (0%)	**1.4**

Table 7 shows that *the type of forum message was a positive influence in trainees' participation* (mean=4.6) and that *the warnings sent by email by the trainer promoted a greater involvement* (mean=4.4). However, the trainees have an indifference attitude in relation to *messaging to obtain online support* (mean=3.2).

Table 7. *Evaluation of the type of communication*

Items	SD	D	NA/D	A	SA	Mean
The type of forum message positively influenced my participation (email feedback to all participants, the possibility of visualising the participation of the other trainees, …)	0 (0%)	0 (0%)	1 (3%)	12 (36%)	**20 (61%)**	**4.6**
My favourite channel of communication to obtain online support was messaging	0 (0%)	11 (33%)	5 (15%)	**15 (46%)**	2 (6%)	**3.2**
Warnings sent by email by the trainer led me to participate more	0 (0%)	1 (3%)	2 (6%)	14 (42%)	**16 (49%)**	**4.4**

As we can see in Table 8, all trainees had a positive attitude in relation to f2f sessions by either *the presentation of the Moodle course* or *overcome their obstacles and difficulties in task performance*. They also considered the importance of *the collaborative work supported from trainees who had were experience aided them in becoming acquainted with the Moodle environment* (mean=4.4).

Table 8. *Evaluation of the collaborative work and the applied methodology*

Items	SD	D	NA/D	A	SA	Mean
The presentation of the Moodle course, done during face-to-face sessions, was useful in the tasks that were performed (front page, blocks, navigation bar and navigation block, type of tools, …)	0 (0%)	0 (0%)	0 (0%)	10 (30%)	**23 (70%)**	**4.7**
Face-to-face support did not aid in overcoming my obstacles and difficulties in task performance	**27 (82%)**	6 (18%)	0 (0%)	0 (0%)	0 (0%)	**1.2**
Support from trainees who had more experience aided me in becoming acquainted with the Moodle environment	0 (0%)	0 (0%)	1 (3%)	**18 (55%)**	14 (42%)	**4.4**

Table 9 summarizes the frequencies and corresponding percentages for the trainees' perceptions with respect to Performance expectancy.

Table 9. *Performance expectancy (n = 33)*

Performance expectancy	SD	D	NA/D	A	SA	Mean
Moodle will be useful for my work	0 (0%)	1 (3%)	1 (3%)	14 (42%)	17 (52%)	**4.4**
Using Moodle enables me to accomplish tasks more quickly	0 (0%)	6 (18%)	2 (6%)	11 (33%)	14 (42%)	**4.0**
Using Moodle increases my productivity	0 (0%)	5 (15%)	4 (12%)	18 (55%)	6 (18%)	**3.8**
If I use Moodle, I will increase my chances of getting a better grade.	5 (15%)	6 (18%)	7 (21%)	12 (26%)	3 (9%)	**3.1**

The trainees believe that *Moodle will be useful for their work* (94%), *enable them to accomplish tasks more quickly* (75%), and it increases *their productivity* (73%). They are divided about their *chances of getting a better grade* if using Moodle: 35% agree, 33% disagree and 21% neither agree nor disagree.

Table 10 shows the trainees' perceptions with respect to Effort expectancy. The trainees tend to agree that Moodle is *easy to use* (82%), *clear and understandable* (85%) and *easy to become skilful at using* (70%).

Table 10. *Effort expectancy (n = 33)*

Effort expectancy	SD	D	NA/D	A	SA	Mean
I find Moodle easy to use	0 (0%)	5 (15%)	1 (3%)	18 (55%)	9 (27%)	**3.9**
My interaction with Moodle is not clear and understandable	7 (21%)	21 (64%)	1 (3%)	4 (12%)	0 (0%)	**2.1**
It is easy for me to become skilful at using	0 (0%)	1 (3%)	9 (27%)	20 (61%)	3 (9%)	**3.8**

Table 11 shows that the trainees are not influenced neither by colleagues nor superiors (61% for each one). However, they agree that *their students think they should use Moodle* (67%) and *the school has supported the use of Moodle* (61%).

Table 11. *Social influence (n = 33)*

Social influence	SD	D	NA/D	A	SA	Mean
My students think that I should not use Moodle	4 (12%)	18 (55%)	5 (15%)	3 (9%)	3 (9%)	**2.5**
My colleagues think that I should use Moodle	1 (3%)	5 (15%)	20 (61%)	7 (21%)	0 (0%)	**3.0**
My superiors think that I should use Moodle	0 (0%)	2 (6%)	20 (61%)	7 (21%)	4 (12%)	**3.4**
In general, the school has supported the use of Moodle	0 (0%)	3 (9%)	10 (30%)	18 (55%)	2 (6%)	**3.6**

As we can see in Table 12, the majority of the trainees agree with all items. Thus, the data indicates that the trainees perceive that they *have technical assistance* (51%), *support by the administration of the school* (70%) and *by colleagues* (61%), *technical resources* (88%) to use Moodle and there is *compatibility between this LMS and other aplication* (55%).

Table 12. *Facilitating conditions (n = 33)*

Facilitating conditions	SD	D	NA/D	A	SA	Mean
A specific group is available for assistance with difficulties I experience with Moodle	3 (9%)	3 (9%)	10 (30%)	14 (42%)	3 (9%)	**3.3**
The administration of this school has been supportive in the use of Moodle	0 (0%)	1 (3%)	9 (27%)	20 (61%)	3 (9%)	**3,8**
Moodle is not compatible with other applications I use (such as MS Word, MS Excel, Blogger, Prezi, etc)	12 (36%)	18 (55%)	1 (3%)	2 (6%)	0 (0%)	**1.8**
My colleagues have been supportive in the use of Moodle	1 (3%)	5 (15%)	3 (9%)	18 (55%)	2 (6%)	**3.6**
I have the technical resources necessary to use Moodle	0 (0%)	1 (3%)	3 (9%)	21 (64%)	8 (24%)	**4.2**

Finally, in Table 13 we may conclude that trainees have a positive attitude towards using Moodle. They believe that Moodle is *a good idea* (94%), *makes classes more interesting* (91%), they *like to use it* (91%) and *is fun* (81%).

Table 13. *Attitudes toward using Moodle (n = 33)*

Attitudes	SD	D	NA/D	A	SA	Mean
Moodle makes classes more interesting	0 (0%)	2 (6%)	1 (3%)	21 (64%)	9 (27%)	**4.1**
Using Moodle is a good idea	0 (0%)	2 (6%)	0 (0%)	20 (61%)	11 (33%)	**4.2**
Working with Moodle is fun	0 (0%)	2 (6%)	2 (6%)	22 (67%)	7 (21%)	**4.0**
I like working with Moodle	0 (0%)	1 (3%)	2 (6%)	20 (61%)	10 (30%)	**4.2**

Findings and conclusions

The findings suggested that the trainees were very satisfied with the blended-learning approach. They responded positively to our training model and acknowledged the importance of teachers training courses adopting blended-learning practices (Stacey & Gerbic, 2009). The face-to-face interaction helps in the building of the communities and in the feeling of belonging (Wenger, 2006; Pallof & Pratt, 2007). The trainees enhanced the importance of social interaction in learning environments facilitated by empowering tools (for teachers and students) present in LMS, such as forum and chat. They also recognised the importance of profiting from the different dimensions of LMS, which helps speed up and simplify complex learning environments.

One of our goals is to promote a reflexion about teaching practices and in doing so we help to develop subjects who are active in their own development (Leite, 2005; Nóvoa, 2009). During the course we achieved the "creation of rich online environments where participants can share professional strategies, examples of best practice, and professional development opportunities" (Riverin & Stacey, 2008, p.43 apud Thompson & Kanuka, 2009).

As we previously referred, peer coaching process fosters professional collaboration and collegial exchange and it was accomplish in this training course through multidisciplinary tasks.

Thus, we believe that it is crucial to find new patterns and bring meaning to new paths in teacher educational programmes, in particular learning educational technology. The success depends "on the ability of teachers to structure the learning environment in non-traditional ways, to merge new technology with new pedagogy, to develop socially active classrooms, encouraging cooperative interaction, collaborative learning, and group work." (UNESCO, 2008, p.10).

During this school year the second stage model is being implemented. We will hold workshops and non-formal training, consolidating and deepening skills, contributing to greater self-confidence of teachers, monitoring the teaching practices and promoting the establishment of communities of practice to accomplish teaching and learning objectives.

Limitations and problems encountered

The initial schedule outlined in the training course was between February and June but, for unforeseeable reasons associated with the local school training centre, it was changed to a period from May to July. Due to this fact, some trainees could not apply their training course activities with their students, as was specified in our goals. Moreover, technical problems with Moodle and a heterogeneous group prevented certain activities. In respect to this aspect, we think that it would be advantageous to have two trainers to providing a better support for trainees.

In relation to dimensions in Unified Theory of Acceptance and Use of Technology (UTAUT) model, we may conclude that the trainees had an indifferent attitude towards Social influence. In addition, they are not convinced that using Moodle increases their chances of getting a better grade – in the dimension Performance expectancy. In respect to the Facilitating conditions, the trainees believe that organizational and technical infrastructures exist to support the use of Moodle. However, they demonstrate an indifferent attitude in relation to a specific group that is available for supporting their difficulties with Moodle.

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TEACHERS PROFESSIONAL DEVELOPMENT IN ICT: A CASE STUDY ABOUT THE USE OF INTERACTIVE WHITEBOARDS

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Abstract
The Technological Plan for Education potentiated the equipment of some Portuguese schools with Interactive Whiteboards (IWB) and multimedia projectors. Later, the first phase of teacher education training in using IWB was legislated and implemented.
In this paper we explain how this training was developed and how it was implemented. We present some conclusions about the impact that IWB training had into trainee teachers in the Sousa Nascente Association of Schools Training Centre. The study focuses on 386 trainees from different subjects. Data reported include their reactions by means of statistical treatment of a questionnaire answered at the end of the training and their use of IWB. This last aspect was collected through a questionnaire online one year after the end of the teacher training, which aims to identify how many of those teachers use the IWB and for which purpose and with which materials.

Keywords: interactive whiteboards, teacher training, professional development

Introduction

Portuguese schools have recently been technologically modernized in the context of the Lisbon Strategy, the National Strategy for Sustainable Development of the Technological Plan and the National Strategic Reference Framework 2007-2013 (Resolução de Conselho de Ministros 137/2007). After a diagnostic study on education, the Technological Plan for Education (TPE) was created with ambitious goals as it sought to put Portugal among the five most advanced European countries in the modernization of education in 2010. Among the measures planned and implemented, the supply of multimedia projectors and Interactive Whiteboards (IWB) in schools was included, similarly to what was done by the British government in 2003 (Armstrong et al., 2005; Wood & Ashfield, 2008), the Australian government, and the New South Wales in 2007 (Holmes, 2009) as well as an implementation of a system of teachers' training, designed for the specific training in the use of ICT within the subject areas they teach, as a fundamental goal of TPE. Teachers Professional Development (TPD) is crucial to the effective use of technology, to take advantage from it and to maximize the return on the investment (National Centre for Technology in Education, 2008).
The first phase of training, entirely designed at central level, i.e., Ministry of Education, and implemented by the Association of Schools Training Centres (ASTC) throughout the country, was received by a third of teachers in Portugal between July and December 2010. After this phase, it seems important to study the effects that training in IWB has produced in teaching practices. Thus, our study focuses on the Association of Schools of Sousa Nascente Training Centre. We propose the following research question: Has the training received by teachers within the Technological Plan for Education promoted a change in their practice with the smooth and efficient integration of the Interactive Whiteboard?

The study is in progress. Data presented is relevant to assess not only the training received but the use of the IWB by these teachers.

Theoretical framework

The use of new technologies in teaching, although increasingly expected, is not always consensual. There can be diverse barriers to adoption including: lack of access to suitable ICT equipment; no time for training, preparation and exploration of materials; absence of models of good practice in ICT; a negative attitude towards computing; lack of confidence when using computers; fear of change and no institutional support (Becta, 2003). It seems important that these barriers should be broken because there are statistic studies which show significantly positive association of ICT and higher achievement in National Tests for English, at key stage 2; for Science, at key stage 3, and of ICT, GCSE science, in GCSE design and technology, at key stage 4 (Becta, 2002).

When we speak of ICT, nowadays, we address Interactive Whiteboards. An Interactive Whiteboard (IWB) is a large, touch-sensitive board that is used with a combination of a computer and a digital projector (National Centre for Technology in Education, 2008; Smith et al., 2005) and facilitates interactive ICT engagement. It can be controlled by touching the board directly or by using a special pen (Armstrong et al. 2005; National Centre for Technology in Education 2008). Theoretically, the IWB is more than a computer, a projector or a screen once its sum is greater than its parts (Glover & Miller, 2001). The easy access to the ICT through touch makes pupils universally enthusiastic (Somekh et al., 2007). Its potential is enormous and allows, for instance, students to present their works in a more interactive and collaborative model, show video clips, use another educational software or display Internet resources (National Centre for Technology in Education, 2008). IWB enable to save, edit and retrieve stored data and to easily browse between flipchart pages (Beauchamp & Parkinson, 2005; Wood & Ashfield, 2008). Other potential benefits of IWB for teaching are: flexibility and versatility, multimedia/multimodal presentation, modelling ICT skills, efficiency, supporting planning and development of resources (Hall & Higgins, 2005; Smith et al., 2005). It can also enable the teacher to use material previously prepared by a teacher or a group of teachers (Glover & Miller, 2001). Pupils with special education needs seem to pay more attention and often greatly improve their behavior when they do have classes using IWB, despite the relatively little impact on raising their attainment (Somekh et al., 2007). The same study, developed in primary schools, brings evidence of positive impact on attainment when pupils have been taught with an Interactive Whiteboard for at least two years. There is some evidence that the use of IWB on primary classrooms improves the performance of low-achieving pupils in English and that the overall impact is greatest on writing (Higgins et al., 2005). Holmes (2009) developed a study with 13 pre-service secondary mathematics teachers and the students involved perceived that the main benefits of IWB technology relate to its visual nature, its interactive features and the ease which multiple representations of mathematical ideas can be used to promote increased conceptual understanding.

Although studies have found them to be highly motivating and learner-centred when integrated innovatively (Glover & Miller, 2001; Higgins et al., 2005; National Centre for Technology in Education, 2008) some data suggest that despite teachers' good intentions it may well be currently underused (Glover & Miller, 2001; Santos & Carvalho, 2009).

Despite its potential, some problems concern both teachers and pupils arose. A usual problem related with this sort of technology is that pupils find it difficult or even impossible to see the screen on an IWB when sunlight is directly on it (Smith et al., 2005). National Centre for Technology in Education (2008) reports technical support issues and a steep learning curve in the initial stages as factors that a school planning the purchase of an IWB should consider. Technical problems cause disruption, delay and frustration on students' perspective and

teachers', and pupils' skills or lack of them with IWB were also identified by students as problematic (Hall & Higgins, 2005). However, the most common is the need for suitable training in order to use IWB to their full potential (Smith et al., 2005).

At a time when the Information and Communication Society imposes further requirements on the educational actors in a world dominated by change and uncertainty (Day 1999), training in ICT is particularly necessary. The teachers' training was legislated in Portugal for the first time in 1986 (Lei 46/86). Several authors criticized the training as it was viewed almost exclusively as a means of obtaining credits for a career and not as a need to update knowledge and discovery of new practices (Batista, 2009; Estrela, 2001; Nóvoa, 2007; Pereira, 2008; Rebelo, 2004).

The Technological Plan for Education intended among other aspects to focus on teacher training in ICT to take advantage of equipping schools with Interactive Whiteboards also set out in that document. In 2007 the Ministry of Education focused on a diagnostic study on the technological modernization of the educational system in Portugal. From this study three problems were detected: the schools continued to maintain an uneven relationship with ICT; there was an urgent need to renew the computer facilities of some schools and improve Internet access; there was a need to fully and transversally implement ICT It became imperative to create the certification of teachers in ICT. It was necessary to have a digital model that would ensure the efficiency of school management. These measures were partially implemented since not all schools are equipped with IWB in their rooms, and a third of the teachers have received the first of four fifteen-hour-training courses provided, aiming the ICT certification. This certification provided by the TPE is supposed to extend for a total of four years through four fifteen-hour-courses and a first phase would cover only 30% of teachers. Table 1 below explains the organic training, per calendar year, as was thought prior to its suspension. The designation D1 was used for the first 30% of teachers, D2 for the following 30% and D3 for the last 30%.

Table 1. *Training teachers scheme call*

Year	Group	Number of hours of formation	Contents
2010	D1	15	IWB
2011	D1	15	To define
	D2	15 + 15	IWB + To define
2012	D1	15	To define
	D2	15	To define
	D3	15 + 15	IWB + To define
2013	D1	15	To define
	D2	15	To define
	D3	15 + 15	To define (both)

These training courses, fully thought out centrally by the Ministry of Education, were implemented nationwide by the Association of Schools Training Centres (ASTC).

The aim was to provide teachers with knowledge to take real advantage from an IWB as a tool to innovate educational practices and enhance graphically appealing learning environments in which teachers are the architects. Particularly, the objectives to achieve were:

- To support schools and teachers in creating conditions for an appropriate use of IWB in school learning contexts;
- To reflect on the impact of the digital paradigm in the processes of communication and interaction and its potential to promote innovation and change teaching and learning processes;

- To favour the emergence of new teachers' practices at leveraging the benefits of IWB in the renewal of learning contexts and efficiency of the educational process;
- To reflect on and discuss the potential of IWB (DGRHE, 2009).

This first training was conducted by two trainers, one of the subject area (accounting for 9 hours of training) and one of the technological area (responsible for 6 hours). Exceptionally, only a trainer was possible if he/she had double competencies in the specific area of teacher skills and in the technological area. It should be noted that the Ministry of Education only provided training for trainers in the scientific area, which means that the trainers of the area of technology (ICT) had to learn by themselves. The training for the ministerial statement would focus on the use of the IWB Promethean and its Software ActiveInspire, since the company had been selected to equip the nation's schools.

Sousa Nascente case study

The ASTC being targeted by the study is Sousa Nascente, in which a total of twenty-eight workshops of TPE training under the plan in 2010 were implemented, covering a total of 568 trainees. Of these configurations, only 9 are not submitted to analysis, since they have not focused on the use of IWB.

The 19 classes that will be object of study are characterized in table 2, which contains the course name, number of classes, the number of graduates from each class, and beginning and finishing date.

Table 2. *Organization of IWB training in the ASTC of Sousa Nascente (n=386)*

Course name	Number of classes and graduates	Beginning	Finishing
Interactive Whiteboards in Portuguese Language	Class 1: 19 Class 2: 21	07/09/2010 27/09/2010	10/09/2010 25/10/2010
Interactive Whiteboards in Foreign Languages	Class 1: 22 Class 2: 20 Class 3: 20	14/07/2010 15/09/2010 20/10/2010	16/07/2010 13/10/2010 17/11/2010
Interactive Whiteboards in Mathematics	Class 1: 20 Class 2: 20 Class 3: 21	12/10/2010 22/09/2010 27/10/2010	09/11/2010 21/10/2010 23/11/2010
Interactive Whiteboards in Humanities and Social Sciences	Class 1: 20 Class 2: 20 Class 3: 20 Class 4: 20 Class 5: 20	07/10/2010 11/11/2010 04/10/2010 14/07/2010 14/07/2010	04/11/2010 09/12/2010 08/11/2010 16/07/2010 16/07/2010
Interactive Whiteboards in Arts and Expressions	Class 1: 21 Class 2: 20 Class 3: 21	20/09/2010 25/10/2010 22/09/2010	18/10/2010 29/11/2010 20/10/2010
Interactive Whiteboards in Experimental Sciences	Class 1: 21 Class 2: 20 Class 3: 20	21/09/2010 20/09/2010 21/09/2010	26/10/2010 26/10/2010 26/10/2010

The study we propose to develop, centred in Sousa Nascente ASTC, intends to investigate the impact that IWB training has had in the teachers' practice and aims to answer the following questions:

- Have the teachers of the ASTC Sousa Nascente, who received IWB training, started to integrate this technology into their lessons?
- How often do they use the IWB?
- Is the IWB used taking into account its real interactive potential or just to be operated as a traditional framework or as projection screen?

Methodology

The research that we are developing is a qualitative one (Gómez, 2007), particularly a case study (Stake, 1995; Yin, 2009) in the Sousa Nascente training centre. Latorre et al. (1997) present some advantages and disadvantages to this type of study design. The advantages pointed out are: it may be a way to further an investigation based on some analyzed data, it is appropriate for researchers in a small scale with limited time, it is an open method that can later be taken up by different researchers or institutions, it is very useful for the teacher who takes part in the research and decision making. The disadvantage is the impossibility pointed to generalize results. This feature of the case study is further enhanced by Stake (1995), which highlights the interest of this type of study is to deeply understand the case. The study focuses on the impact that the Interactive Whiteboard training has provided on their trainees. The research we are developing consists essentially of four phases:

- Phase I: Characterization of the IWB training offered by the Centre;
- Phase II: Development and validation of a questionnaire to be answered by the trainees about the usage of IWB in their classrooms;
- Phase III: Collection and analysis of obtained data. Selection of teachers (trainees) that are using IWB regularly;
- Phase IV: Monitoring the trainees that are using IWB regularly; analysis of materials produced by the teachers for this purpose.

By now we are in phase III. The first phase included the characterization of the IWB training provided in the training centre and the data analysis from the questionnaires filled in by the trainees at the end of the training.

In the second phase, the questionnaire was developed to characterize how the trainees have been using IWB. It was based on the UTAUT model (Unified Theory of Acceptance and Use of Technology), which was designed by four American college researchers and released in September 2003 (Venkatesh et al. 2003). This model has had its origin in eight existing models – Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAM-TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT) – which explained 17% to 53% of the mentioned behaviour, although this one allows to explain about 70% of the behaviour variation in the acceptance of technology.

The UTAUT model is presented in picture 1 diagram.

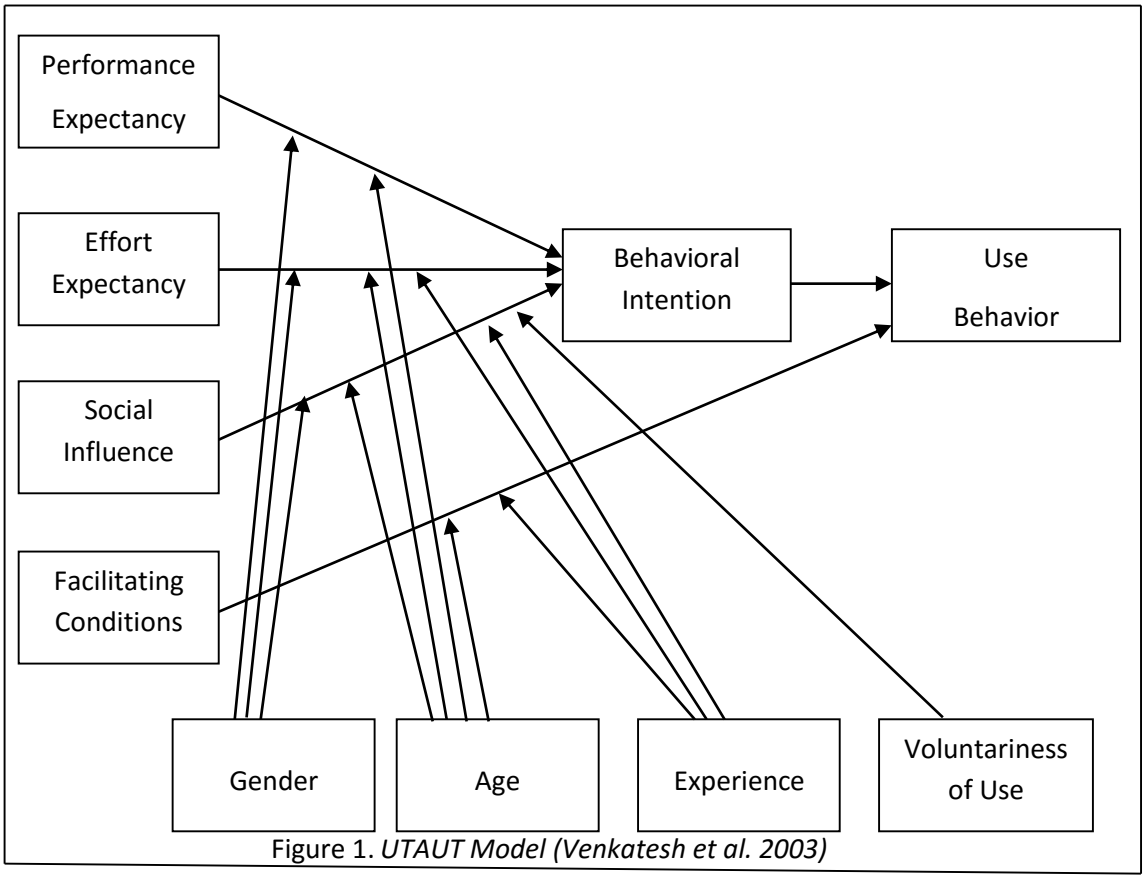

Figure 1. *UTAUT Model (Venkatesh et al. 2003)*

The authors have realised that four constructs played the key role in the acceptance of technology and respective behaviour, namely: Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions. The Gender, the Age, the Experience and the Voluntariness of use are assumed as the moderators of these constructs.

Performance Expectancy is defined as the degree in which a certain individual believes that using the system will help him take profit from his professional performance. This construct is the strongest factor which indicates behavioural intention and, theoretically, will be moderated by Gender and Age, being mostly noted in men and particularly, in younger men.

The questionnaire items used by the researchers to assess this construct have been:

1. "I would find the system useful in my job";
2. "Using the system enables me to accomplish tasks more quickly";
3. "Using the system increases my productivity";
4. "If I use the system, I will increase my chances of getting a raise."

Effort Expectancy refers to the degree of easiness in using the system by a certain individual, which is influenced by Gender, Age and Experience, since its effect is more presented in women, particularly, in the youngest women and in the most recent stadiums of interaction with the system.

The items of the questionnaire used by the researchers to assess this construct have been:

1. "My interaction with the system would be clear and understandable";
2. "It would be easy for me to become skillful at using the system";
3. "I would find the system easy to use";
4. "Learning to operate the system is easy for me."

Social Influence concerns the degree in which an individual comprehends the importance the others give to his use of the system. This construct is influenced by Gender, Age, Voluntariness of Age and Experience, being more remarkable in women, specially, older women, particularly when the use of the system is compulsory and in its most recent stadiums.
The items of the questionnaire used by the researchers to assess this construct have been:
1. "People who influence my behavior think that I should use the system";
2. "People who are important to me think that I should use the system";
3. "The senior management of this business has been helpful in the use of the system";
4. "In general, the organization has supported the use of the syste".

Facilitating Conditions refer to the degree in which an individual believes a technical and organizational infrastructure exists to support the use of the system. This construct will not have a significant influence in the Behavioural Intention, thus being influenced by Age and Experience, showing that its effect is more significant in elder users, specially more experienced ones.
The items of the questionnaire used by the researchers to assess this construct have been:
1. "I have the resources necessary to use the system";
2. "I have the knowledge necessary to use the system";
3. "The system is not compatible with other systems I use";
4. "A specific person (or group) is available for assistance with system difficulties" (Venkatesh et al., 2003, p. 460).

Considering all the above, we selected questions to our questionnaire. Its main purpose is to identify the impact the IWB training had on the teachers' practices and if that has turned into effectively using the IWB and its abilities.
The questionnaire presents a summarized introduction of its aims. It includes two dimensions: the first referring to the training received and using IWB, and the latter concerning IWB and teaher practice.
The questionnaire starts with the trainee identification through name (not compulsory), age, gender, teaching subject, and email address, making possible further contact, in case it is required throughout the study.

a) Training received and using IWB
The items assessing the Performance Expectancy based on the UTAUT model (Venkatesh et al. 2003) are the following items: IWB training has contributed to my personal performance, IWB is an effective means in the teaching/ learning process and Using IWB potentiates my work. To assess the Effort Expectancy we used the items: I have the required knowledge to use IWB, I feel at ease to use IWB and Using IWB is easy. To characterize the Social Influence and Facilitating Conditions constructs we used the following items: Who assesses me appreciates the using of IWB and At school I have the necessary resources to use IWB respectively.
A Likert scale of five items, ranging from strongly agree to strongly disagree, was used to answer these questions.

b) IWB and teaching practice
The second dimension of the questionnaire aims at assessing whether the trainee has been using the IWB and why if he/she has not after the training received. We intend to know whether the trainees have been producing materials to use the IWB and of which sort, whether they have been reusing the materials created and their origin. We also aim to know which sort of use is being given to IWB and the frequency of monthly usage of the board.
This instrument has been validated by experts in the area of methodology and technology.

In the third phase of this study we asked the participants to answer the online questionnaire. The data intend to identify teachers who regularly use the IWB.
In the fourth phase we intend to monitor the trainees who are using IWB through interviews and analysis of the materials created.

Findings

a) Trainees' opinion about IWB training

The trainees answered a questionnaire at the end of the training, designed by the Ministry of Education. It included four dimensions – overall assessment of the training, assessment of trainers, organization of the training by the centre, overall assessment. A Likert scale of five points was used. From all the questions, we enhance those in table 3 which are particularly important to the study. We present the average in each question and the partial average by class and subject area.

Table 3. *Reactions to training (Ministry of Education questionnaire) (n=386)*

Subject Area																		
Portuguese Language		**Foreign Languages**			**Mathematics**			**Humanities and Social Sciences**					**Arts and Expressions**			**Experimental Sciences**		
Classes		**Classes**			**Classes**			**Classes**					**Classes**			**Classes**		
1	2	1	2	3	1	2	3	1	2	3	4	5	1	2	3	1	2	3
The training has met my training needs (mean: 4.2)																		
4.7	4.3	4.1	4.0	4.4	4.5	4.5	4.6	3.9	3.7	4.3	4.3	4.4	4.4	3.9	4.5	3.4	4.3	3.9
The acquired skills will have an impact on my teaching practice (mean: 4.1)																		
4.6	4.2	4.2	3.9	4.3	4.6	4.3	4.7	3.8	3.7	4.4	4.3	4.4	4.5	3.9	3.9	3.2	4.0	3.8
After this training I will use ICT in the teaching/ learning process more often (mean: 4.2)																		
4.5	4.2	4.5	4.2	4.3	4.5	4.4	4.6	3.8	3.8	4.5	4.3	4.4	4.5	4.0	4.2	3.4	4.1	4.1
Overall assessment (mean: 4.0)																		
4.2	4.2	3.3	4.0	4.3	4.2	4.3	4.6	3.7	3.7	3.9	3.5	4.2	4.3	4.0	4.7	3.3	4.0	4.3

From the results presented, we realize that when asked if the training met their expectations, the average answer is 4.2 being the lowest answers 3.4 and the highest 4.7, being 26% of the answers below 4. Class 1 of Experimental Sciences has given this item the lowest value, since only 45% of the trainees clearly refer they needed this training.
In the question about the impact of the acquired skills in the teaching activity, we verify that the answers are placed between the average of 3.2 and 4.7. It has been one of the lowest scored items (average of 4.1), being only 21% of the presented means is similar or superior value to 4.5. Once again, it is the Experimental Sciences class who, in average, gives the item its worst score.
In what concerns the more often use of ICT in the learning/ teaching process after this training (average of 4.2), we realize that in average the answers vary from 3.4 to 4.6 being only 32% of the average answers with scores equal or superior to 4.5 or 4.6. Again Experimental Sciences class1 gives the item its worst score in average.
In what concerns the overall appreciation of the training (average of 4.0) the average values vary from 3.3 (given by two classes) to 4.7 (given by one class). We emphasize that only 11% of the referred classes present average values superior to 4.5, although 68% of the scores are equal or superior to 4.

The presented values allow us to conclude that globally the trainings have been rather well-accepted on the trainees' part, since the presented averages vary from 3.3 to 4.7 considering that the overall averages, per question, vary from 4.0 and 4.2. This first impression seems promising in what concerns the inclusion of IWB into trainees teaching practice.

b) The use of WB

A survey (Babbie 1997) was conducted to analyze the use of IWB in trainees classes after the training. Until now 121 (31%) trainees have filled in the questionnaire online. Below we present the characterization of the trainees as well as their answers.

- Sample characterization

In terms of age, figure 2, we realize that the highest percentage is of the age rank of 40-49 years old (47%), followed by 30-39 (34%), over 49 (17%) and two subjects are under 30 years old (2%).

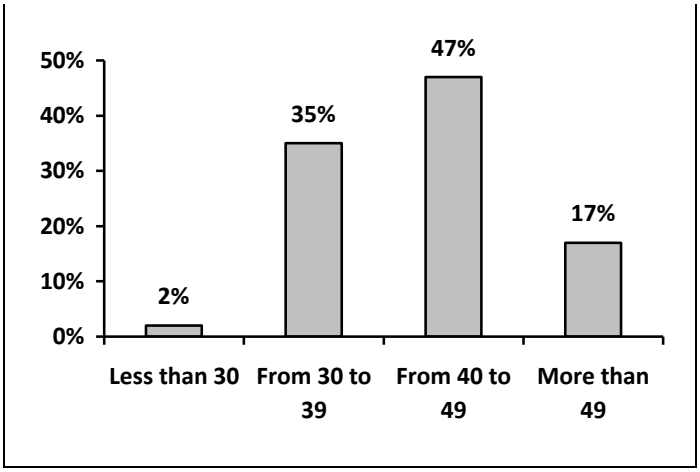

Figure 2. *Respondents' age (n=121)*

Most trainees who have answered the questionnaire (76%) are female and only 24% male (figure 3).

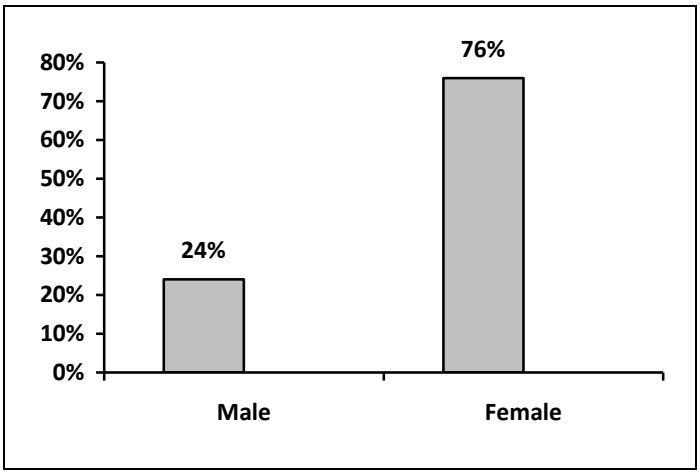

Figure 3. *Respondents' gender (n=121)*

We realize that we obtained more replies to the online questionnaire from 3rd cycle and secondary (68) than from 2nd cycle trainees (Table 4). Particularly teachers of Portuguese (15)

and Mathematics (13) belonging to the 3rd cycle and of Portuguese and English(13), Portuguese and History (12), and Mathematics and Natural Sciences (10) from 2nd cycle.

Table 4. *Course area and grades (n=121)*

3rd Cycle and Secondary School (7th to 12th Grade)			**2nd Cycle** (5th and 6th grades)		
Area	**f**	**%**	**Area**	**f**	**%**
Portuguese	15	13	Portuguese and English	13	11
Mathematics	13	11	Portuguese and History	12	10
Geography	7	6	Mathematics and Natural Sciences	10	8
Computing	6	5	Arts and Crafts	3	2
English	6	5	Portuguese and French	1	1
History	5	4	Physical Education	1	1
Biology and Geology	5	4	Religious Education	1	1
Physical Education	5	4			
Drawing	4	3			
French	3	2			
Physics and Chemistry	3	2			
Arts and Crafts	3	2			
Spanish	2	2			
Philosophy	2	2			
Economy and Accounting	1	1			

- About the training and the use of IWB:

The first eight questions focused on the training and use of the IWB. A Likert scale of five points was used: 1. Strongly Disagree; 2. Disagree; 3. Undecided; 4. Agree; 5. Strongly Agree, in table 5.

Table 5. *The training and using IWB (n=121)*

About the training and the use of IWB	**Likert Scale (%)**					**Mean**
	1	**2**	**3**	**4**	**5**	
The training has contributed to my professional development	7	6	20	50	17	3.6
IWB is effective in the teaching/ learning process	1	4	16	59	20	3.9
I have the suitable knowledge to use IWB	1	25	16	50	8	3.4
I feel comfortable to use IWB	2	35	18	39	6	3.1
Using IWB is easy	2	23	24	47	4	3.3
Using IWB improves my work	3	14	34	37	12	3.4
Who assesses me appreciates the use of IWB	3	15	49	28	5	3.2
At school I have the required means to use IWB	14	27	12	32	15	3.1

The training in IWB has contributed to the teachers performance, according to 67% of the trainees, 20% are undecided and 13% disagree (table 5).

Only 5% of the trainees do not consider the IWB effective for teaching, while 16% are undecided and 79% have a favorable opinion. This item is the highest scored with an average of 3.9.

We realize that 58% of the trainees consider that they have the required knowledge to use IWB in their lessons, 16% are undecided and 26% consider that they did not acquired the required knowledge for using it.

Almost half (45%) of the trainees feel comfortable in using IWB and 18% feel undecided. This item is somewhat relevant as it may be a reason for the use of the IWB or not.

Half of the trainees (51%) consider that using the IWB is easy, and 24% are undecided. Despite the trend to consider that the IWB potentiates the teachers' work (49%) we realise that there is a great percentage (34%) of undecided trainees. The ones who disagree constitute 17% of the trainees.

The item referring to the appreciation of IWB on the assessors' part seemed essential at a time when the teachers' assessment includes some teachers' observation of lessons and there is a certain appreciation of ICT in teaching. However, almost half of the trainees (49%) has no opinion concerning this question, 33% agree and 18% disagree.

When questioned about the existence at school of the required resources to use the IWB, only 47% agree, 12% have no opinion and 41% admit that the conditions or required resources have not been created. We emphasize that this percentage is high and it may be a very important reason for IWB not being used by teachers.

- About IWB and my teaching practice

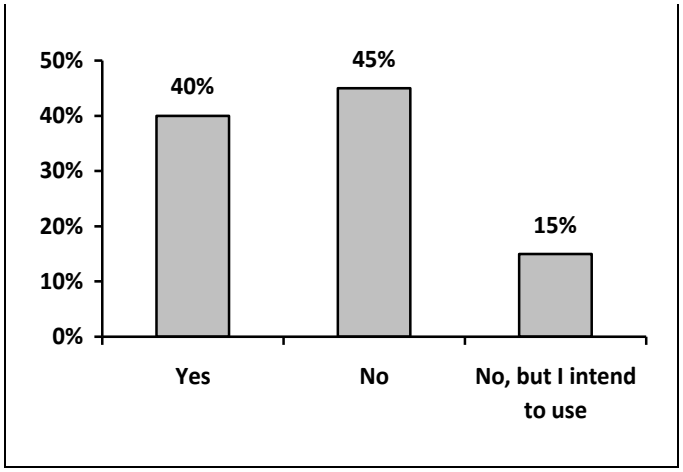

Figure 4. *Use of IWB*

Asked if they were using IWB, 40% of the trainees were but 45% were not. From those, 15% admit that despite not having done it they intend to do it during this school year (figure 4).

The reasons presented for not using the IWB are several (table 6) although the most frequent answer is the absence of this resource in schools or the impossibility of using it once, since not all the teachers have lessons in equipped rooms (48%).

Table 6. *Reasons for not using the IWB (n=73)*

Reasons for not having used IWB before	f	%
There is not a IWB at school or there is no access to it	35	48
Insecurity/ lack of training	10	14
Rare access to IWB and training	6	8
Lack of time to prepare the lessons	5	7
Technical problems and lack of time to prepare the lessons	4	6
Technical problems	3	4

Content not appropriate to use IWB	3	4
Lack of time to prepare the lessons and insecurity	2	3
No particular reason	2	3
Do not like IWB	1	1
Delay in the program and lack of didactical material	1	1
It was not necessary	1	1

Of the 40% of trainees who use the IWB, 23% mention that they have produced materials to work with the IWB. Concerning the sort of materials that they have produced we realize that the use of PowerPoint presentations, the resources of the IWB software and the resources to didactical software are the most selected options (table 7).

Table 7. *Sort of materials produced for the IWB (n=28)*

Resources used in the production of materials	f	%
IWB Software	5	18
Didactical Software	1	4
PowerPoint presentations	4	14
IWB Software and didactical Software	3	10
IWB Software, didactical Software and PowerPoint presentations	7	25
IWB Software and PowerPoint presentations	2	7
Didactical Software and PowerPoint presentations	4	14
Didactical Software, Applets and PowerPoint presentations	1	4
IWB Software, PowerPoint presentations and HotPotatoes	1	4

Of the 40% of the trainees who use the IWB in their lessons, 34% have reused materials to work in the IWB and 7% admit not doing it. In what concerns the origin of the materials reused, a great part admit being from websites (34%), from websites and teachers (32%). Some teachers (17%) only reuse their colleagues materials and the remaining cases present insignificant percentages of 5% and 3% in five cases, according to figure 5.

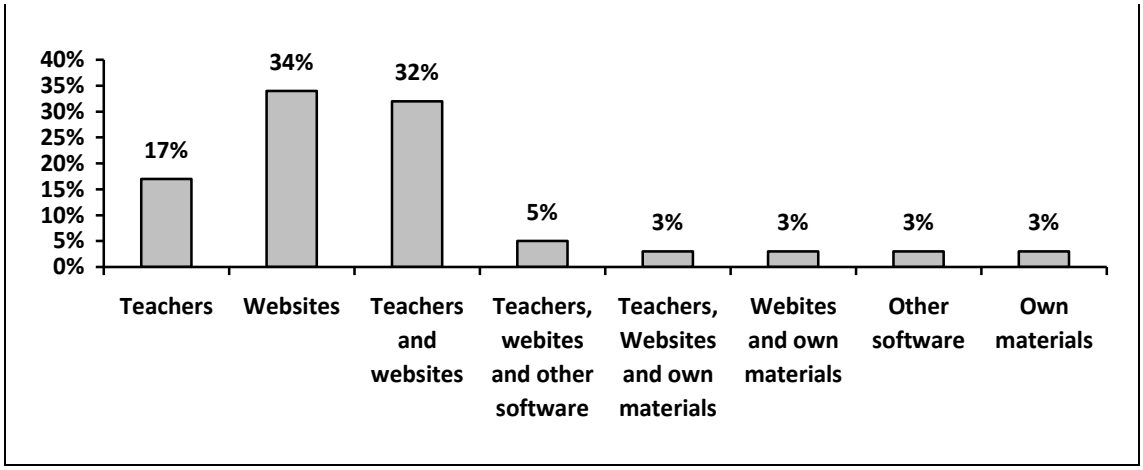

Figure 5. *Source of the materials reused in the IWB (n=48)*

The teachers that use the IWB, they appreciate its interactivity é (38%), 25% refer the interactivity and the projection of contents, 17% mention both aspects and its use as a

traditional board, 6% indicate the projection of content and as traditional board, and 4% mention the interactivity and the use of the IWB as a traditional board such as shown in table 8.

Table 8. *Use of the IWB (n=48)*

Purpose of the use of the IWB	f	%
To project (display) contents	5	10
To appreciate the interactivity	18	38
To project contents and appreciate the interactivity	12	25
To project contents and as a traditional board	3	6
To project contents, as a traditional board and to appreciate the interactivity	8	17
To appreciate the interactivity and as a traditional board	2	4

In figure 6 it is possible to see the number of times the teachers usually use the IWB per month.

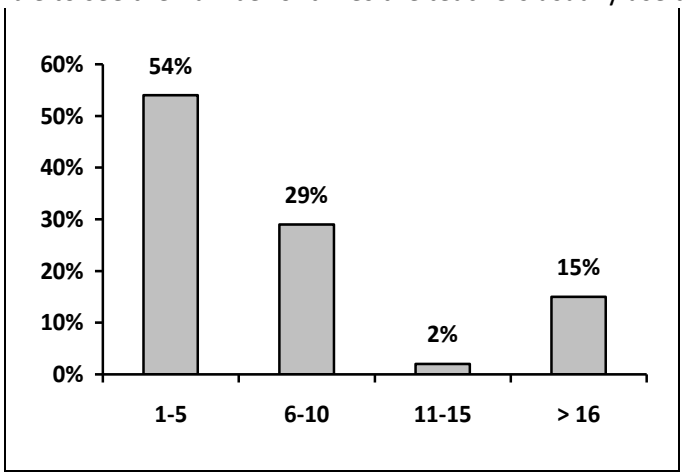

Figure 6. *Number of days per month of IWB use*

The use of IWB is still reduced, with 54% of the trainees to report that they use it between 1 to 5 times a month, percentage which declines to 29% when the usage is referred as 6 to 10 times a month. A minimum percentage of 2% of the trainees use the IWB from 11 to 15 times a month, but more than 16 times is referred by 15% of the teachers.

Conclusions and discussion

This study allows us to conclude that, despite the quite promising initial expectations, with rather favorable reactions to the training, the integration of the IWB still seems to be far from desirable, since only 40% of the trainees are using this tool. The reasons reported for not using this sort of technology are diverse, although the absence of IWB in schools or their poor equipment are emphasized. The resulting insecurity of a fifteen-hour training is also a reason for not using IWB.

The teachers who use this tool quite regularly are only 15% of the trainees. More than half of the teachers (54%) are rare users.

It is important to emphasize that 84% of the teachers who use the IWB enjoy its interactive functionalities, although not exclusively, and only 16% ignore this possibility, using the board to project contents only (10%) or to project contents and use it as a traditional board (4%).

Some of the reasons pointed out for not using the IWB have been described by other authors like Becta (2003), Hall and Higgins (2005) and Smith et al. (2005). It would be desirable that the limitations for using the IWB would be over passed.

It is also realized that the IWB is being used in a rather reductive way by a part of its users, which has also been object of study (Glover & Miller, 2001; Santos & Carvalho, 2009).
The present work does not limit itself to this analysis of data, since the study is in progress.

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FOSTERING THE DEVELOPMENT OF TEACHER IDENTITY IN INITIAL TEACHER PREPARATION THROUGH ELECTRONIC PORTFOLIOS

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Abstract
In this qualitative study, electronic portfolios (e-portfolios) were adopted as a tool to examine the development of science teacher candidate identity during a three-semester teacher preparation program. More specifically, the study was guided by the following research questions: a) How does teacher candidate identity change or develop during initial teacher preparation? b) How do these changes get represented in an e-portfolio? c) How can e-portfolios support the development of teacher identity in initial teacher preparation? Rich, detailed data were collected in a variety of ways and through various sources including artifacts, teacher candidate reflections, and teacher candidate interviews. Outcomes of the study focus on three broad themes: understanding the challenges in learning to teach, future goals as developing teachers, and the value of e-portfolios.

Keywords: e-portfolio, teacher identity, teacher preparation

Many teacher preparation programs in North America are adopting electronic portfolios (e-portfolios) as a means to assess the knowledge, skills, and dispositions of teacher candidates. In many instances, especially in the United States, they are being adopted as a form of accountability to external accrediting agencies to ensure particular performance standards are met (Darling-Hammond, 1999; Ledoux & McHenry, 2006; NCATE, 2009). In addition to this focus, e-portfolios may be used for a variety of reasons to support teacher candidate development, such as showcasing professional qualifications; fostering self-reflection and goal-setting; promoting the development of creative, organizational, and e-learning skills; and connecting theory and practice (Lin, 2008; Stefani, Mason, & Pegler, 2007). E-portfolios are digitized collections of artifacts that may be composed of text-based, graphics, or multi-media components and are archived on a Web site or on other electronic media. They represent purposeful collections of examples of learning and may be used at course, program, or institutional levels.

While the uses of e-portfolios have been well-documented, research is emerging that addresses how e-portfolios may used in the context of teacher preparation to support the development and learning of teacher candidates. For example, Hallman (2007) documented the experiences of two teacher candidates in negotiating the dual portfolio goals of showcasing (the candidates representing themselves as exemplary teacher teachers) and teachers as learners (using the e-portfolio to grapple with ideas and issues related to teaching and learning). Sunal, McCormick, Sunal, and Shwery (2005), in the context of social studies education, explored teachers candidates' teaching values as reflected by the choice of lesson plans, implemented in classrooms during their teaching internships, for inclusion in their e-portfolios. In a study by Wilson, Wright, and Stallworth (2003), teacher candidates reported that the use of e-portfolios allowed for authentic assessment of their work and learning, although the authors concluded that teacher candidates did not reflect on the portfolios and the learning process adequately.

Research by van Aalst and Chan (2007) has shown that teacher candidate ownership is an important element in determining whether or not reflection on the learning process occurs during the creation of portfolios. From a broad perspective, Lin (2008) has noted three major reasons e-portfolios may be adopted in teacher education-as a learning strategy; as a reflective tool, or as a technology tool.

In this study, a small group of nine science teacher candidates documented their experiences in constructing e-portfolios as both learning and reflective tools. More specifically, the study was guided by these research questions: a) How does teacher candidate identity change or develop during initial teacher preparation? b) How do these changes get represented in an e-portfolio? c) How can e-portfolios support the development of teacher identity in initial teacher preparation?

Theoretical perspective

The importance of supporting teacher candidates in transitioning from being students to becoming teachers is a major focus in teacher preparation programs. Research in teacher education demonstrates that the development of self-understanding about being a teacher is critical to learning how to teach (Acker, 1999; Alsup, 2005; Davis, Sumara, & Kapler-Luce, 2000; Knowles, 1992; Knowles & Holt-Reynolds, 1991; Vinz, 1996). Many approaches and strategies are being adopted–action research (Trent, 2010), narrative inquiry (Wassell, 2006), school-university partnerships (Hamel & Ryken, 2010), for example–that encourage teacher candidates to explicitly examine many aspects of their developing teacher identities. In science education (the context of this study), researchers and teacher educators have investigated how science teacher candidates and science teachers have developed personal and professional identities in learning to teach. For example, Eick (2009) examined how teacher candidates adopted standards-based teaching and how it contributed to identity formation. Moore (2008) explored emerging teacher candidate identity in relation to critical agency and social justice, while Forbes and Davis (2008) examined social-scientific issues (SSI)-based teaching and teacher candidate identity formation. Based on a review of the literature by Beijaard, Meijer, & Verloop (2004), research on teacher identity usually falls into three categories: a) teacher identity formation (e.g. describing the tensions beginning teachers experience as they learn to teach, b) characteristics of teachers' professional identity (e.g. teacher perceptions of the subjects they teach, teacher perceptions of factors that impact their identities), and c) stories that represent professional identity (teachers' identities are constructed through their narrative understanding of knowledge and context).

While teacher identity has been conceptualized in different ways (Day, Kington, Gordon, & Sammons, 2006; Helms, 1998; Holland, Lachiotte, Skinner, & Cain, 1998; Wenger, 1998), it is often characterized as being multi-faceted, dynamic, and influenced by both internal and external factors (Gee, 2001; Olson, 2008). It is continually informed, formed and reformed over time and with experience (Cooper & Olson, 1996), involving the complex interplay between personal experience and cultural, social, institutional, and environmental contexts (Nias, 1989, 1996; Sumsion, 2002). Britzman (1991) distinguishes between teacher identity and teacher role, clearly stating that they are not synonymous. According to Britzman, "role concerns functions, whereas identity presupposes investments. While functions can be bestowed, identity cannot. Identity always requires one's consent, gained through social negotiation. Such a process suggests its dialogic qualities; identity is contingent in that it is always positioned in relation to history, desires, and circumstances" (p. 25).

In this study, teacher identity is conceptualized as encompassing teacher beliefs, values, and emotions about many facets of teaching and being and becoming teachers. It "provides a framework for teachers to construct their own ideas of 'how to be', 'how to act', and 'how to understand' their work and their place in society . . . .[It] is not something that is fixed nor is it

imposed; rather it is negotiated through experience and the sense that is made of that experience" (Sachs, 2005, p. 15). Identity is also viewed through the lens of *possible selves*. Markus and Nurius (1986) view this as the "cognitive components of hopes, fears, goals, and threats, and they give the specific self-relevant form, meaning, organization, and direction to these dynamics" (p. 954). This self-knowledge relates to the ideal or possible teachers individuals would like to become as well as *possible selves* that they wish to avoid. With the development of this type of insight, teacher candidates are able to evaluate and interpret their current views of self in relation to teaching. Their desires and aspirations to be certain types of teachers or to achieve particular goals can inform and guide classroom actions and planning and frame future behaviours.

Context of the study

This study was conducted over a nine-month period in 2010-2011. A small class of science teacher candidates (nine in total), who were enrolled in a three-semester, 51 credit hour teacher preparation program agreed to participate in the study. In the first semester of the program, teacher candidates were introduced to Desire2Learn ePortfolio (Desire2Learn, 2012), a web based platform that allows users to store, organize, reflect on, and share artifacts such as word files, graphics, audio files, and presentations. The researcher (the author), a research assistant, and a technical support staff member met with the group on two occasions to present the tool, and provided an opportunity for teacher candidates to practice using the tool. During a third session, more in-depth discussion occurred about the nature of e-portfolios, how they have been used in teacher preparation, and the expectations for usage in the current project.

During the second week of the semester in one of their science methodology courses, the teacher candidates were asked to write a teaching philosophy and then to revise their teaching philosophy at the end of the semester after completing six courses and a series of school-based classroom-based observation/teaching days. They were encouraged to visit their philosophy statements on a regular basis throughout the program. Both were included as artifacts in the digital portfolio; they were also asked to reflect on how their beliefs and perspectives were changing or not changing as a result of their first semester experiences. Artifacts were accompanied by a guided reflective framework that addressed three questions: What? (The teacher candidate summarized why the selection was made and provided a context for the item), So what? (The teacher candidate reflected on what was learned and how this learning was represented by the artifact), and Now what? (The teacher candidate assessed the implications for future learning and future professional development). This guided reflective framework was also used during a 13-week internship as teacher candidates completed six inquiry activities that focused on the following topics: a) identifying internship goals, b) reflecting on issues, concepts, or events chosen by the teacher candidate, c) considering the nature of effective teaching, d) observing professional learning communities, e) identifying how the learning needs of particular children are met, and e) reflecting on whether internship goals were met. The excerpt below provides an example of one of these inquiry/reflective activities.

Personal reflection on issues, concepts, or events of intern's choice

Your entry should be completed at Intern's discretion; however, all six entries should be submitted **before** the last week of the Internship.

Teachers assume many roles within the school and encounter many situations and events as they engage in teaching and other responsibilities. The "Internship Journal" topics attempt to capture your reflections on a number of current issues in education that you may encounter as an Intern.

Select **six** issues, concepts, or occurrences that you would like to discuss. This list may include, but is not limited to, attendance, student behaviour, parental involvement, school policies, extracurricular programs, breakfast and lunch programs, professional development, curricular issues, student motivation, etc.
For each issue, select or create an artifact (e.g. a description of a teaching episode, lesson plan, curriculum document, statement of a school policy, etc.) that represents the issue or concept you are addressing. For each artifact, complete a reflection using the following framework as a guide:
What? (Summarize why the artifact was selected and provide a context for the item)
So what? (Reflect on what was learned and how this learning informs your development as a teacher)
Now what? (Assess the implications for future learning and future professional development)

The primary intent of the inquiry activities was to promote critical reflection and support teacher candidates in connecting and integrating theory and practice, thus providing the opportunity for them to examine their developing personal and professional identities. The complexity associated with learning to teach has been identified as one of the reasons for the existence of a theory-practice gap in teacher preparation (Korthagen, 2010). In other words, theory about what and how to teach is not always well-linked to work/classroom experience (Darling-Hammond, 2006; Kennedy, 1999).

Methodology/methods
This qualitative study was guided by a constructivist-interpretive framework with the aim of developing understanding through the collaborative construction of knowledge (Guba & Lincoln, 2005). The experiences and perceptions of teacher candidates were explored, making sense of the meanings these individuals attached to university and school-based experiences as they created e-portfolios. Rich, detailed data were collected in a variety of ways, thus providing insight into teacher candidates' developing teacher identity. To enhance the validity and credibility of the researcher's explanations and interpretations, several data collection procedures and tools were used (Maxwell, 2005):

Portfolio artifacts: Each pre-service teacher was asked to share her/his artifacts and the corresponding responses to reflective questions. Guided reflections focused on a statement of teaching philosophy and other inquiry activities completed during a 13-week internship.

Participant observation: During the first semester of their teacher preparation programs, teacher candidates, the instructor, an instructional designer (provided technical support), the researcher, and a research assistant met on five occasions as part of a collaborative learning community, affording teacher candidates the opportunity to discuss and share ideas as they created their portfolios and to avail of technical support related to creation of the portfolios. These sessions were facilitated by the researcher and field notes were recorded by the research assistant.

Teacher candidate focus group: At the end of the study, teacher candidates participated in an 80-minute focus group that was guided by reflective questions such as, "How did the selection of artifacts and creation of reflections help you in understanding the role of a teacher? "How did the e-portfolio activities help you in your development as a teacher (e.g. personal and professional goals, understanding diverse learners, etc.).

All data sets were read and re-read by the researcher and research assistant. All artifacts were examined to determine how teacher candidates' thinking and insights changed over time. To manage the data sets, the researcher and research assistant used MAXQDA, a qualitative computer software analysis program, to assist with the coding and retrieval of data. Through analytic induction, the researcher systematically identified broad themes across the data sets and then used this to develop subcategories (Miles & Huberman,1994). For example, one broad theme was "challenges in learning to teach" while a subcategory was creating inclusive learning environments.

Outcomes

In examining how e-portfolios played a role in shaping teacher identity, the author viewed teacher identity as encompassing both personal and professional elements. The subsequent analysis of data resulted in three themes: successes and challenges in learning to teach, future goals as developing teachers (possible selves), and the value of the e-portfolio.

Successes and challenges in learning to teach

The artifacts and corresponding reflective responses generated by the teacher candidates provided a window into developing insights related to their perceived successes and challenges. Seven of the nine teacher candidates referred to one of the successes in learning to teach as developing new self-confidence. Jodi talked about this during a focus group session at the end of the internship: "Overall, this internship has been a great experience. It has really built my confidence that I will be able to handle anything the classroom throws at me and has sharpened my abilities to interact with kids in a positive manner." During the same session, Sam also referred to becoming a stronger person and teacher: "I feel like a much stronger person after this experience and I have definitely pushed myself and have learned to push those around me when necessary (not literally of course!)" In addition to enhanced confidence, the teacher candidates cited other successes during their internship related to improving their content knowledge in their respective science specialties, enhancing pedagogical content knowledge (e.g. adopting more instructional and assessment approaches), and improving their classroom leadership and management skills.

Teacher candidates also gained insight into the challenges associated with learning to teach and the complex nature of teaching. These insights varied from teacher candidate to teacher candidate, although there were also commonalities in the challenges they identified. Four of the teacher candidates were asked to teach subjects or content outside their areas of expertise. One course, Science 1206, that exists in the provincial high school science curriculum targets several disciplines - life science, physical science, and earth and space science. Cindy, a biology major, was very apprehensive throughout her internship about teaching Science 1206. She shared this in one of her reflections:

The scariest part about it is the Science 1206 class; an introductory course to all the sciences! You would think that anyone can teach this course . . . as I did. With a course composed of not only biology but chemistry and physics I fear as the biologist who has never done physics EVER that I will fall apart in the front of the room with thirty students slowly becoming twice as scared as me because "If Miss doesn't know it how will I?!"

Another challenge in learning to teach that arose for all the teacher candidates was meeting the needs of all learners in the regular classroom. They recognized many unique challenges associated with this from adopting diverse instructional approaches, to catering to different learning styles, to supporting children in the regular classroom who have specific learning needs (e.g. the child with autism). Some of their specific concerns included:

We looked at the idea of student-led learning in my science methodology course, and at that point in time, I was completely unsure of how you would even go about it. The notion of students deciding the curriculum, or at least having a say in it, was completely abstract. However, now after 6 weeks in the classroom, on the other side of the desk, I have a completely new understanding. In order to keep students engaged, and in order to deliver a great lesson, the interests of the students need to be the foundation of the lesson. You need to engage your audience and provide the content in a manner that is relevant and interesting to them, or else you're simply wasting your breath. The frustration that comes with deciding how to get through to very diverse sets of learners is more difficult than I had imagined.

It is very beneficial for me to see both of these situations to understand the challenges and rewards of inclusion. I can clearly see when it [inclusion] works and when it obviously doesn't. There are times when a student benefits from being in the regular stream with kids, but there are also a number of times where the student cannot or should not be in the regular stream; they would be more suited to an alternative setting. The needs of one student in environmental science are not being met in his current situation, for example. He spends 75% of his day wandering the halls, and the other 25% is spent arguing with teachers or having his head put down on the desk. He is not getting an education with the system the way it is. This makes it very challenging for teachers.

There is certainly a lot of discussion these days in professional learning communities about "inclusive education practices" - it has become the buzz-word of the contemporary generation of teachers. There is a heated debate amongst the teachers at my school as to how best to achieve true inclusion. One of the ways the district has proposed is with co-teaching efforts. Teachers, however, argue that there has been no guidance as to how best to do this. They argue that there has been very little attempt from the district to streamline the process and specify how co-teaching situations are to be exploited to best effect. Obviously, co-teaching would be very useful for students who struggle in the class. Many of these students may have diagnosed reading or writing disorders or significant comprehension difficulties. There may also be behavioural problems that stem from learning difficulties and frustrated students. Co-teachers can take the necessary time to help accommodate these students' needs, allowing the normal classroom teacher to proceed at a normal pace while still addressing and accommodating every student's individual learning needs. I think the model could work with careful planning.

Another prevalent challenge identified by the teacher candidates focused on motivating and engaging learners. Teacher candidates recognized that they will need to play a pivotal role in engaging and motivating students. One teacher candidate viewed a lack of motivation to learn as being directly related to accountability—"For me, a shocking trend in educating young people in Newfoundland is how little accountability they have when they miss class, pass in work late, or simply don't do the work they're told to do." Another teacher candidate, during a post-study focus group, noted the importance of the teacher in the areas of motivation and self-discipline: "Teachers need to identify factors that motivate students to develop themselves personally as well as academically. We need to find ways to help students focus more on self-discipline when it comes to study habits, goal-setting and working toward goal realization (academic or otherwise)."

Future goals as developing teachers (Possible selves)

When reviewing teacher candidates' initial teaching philosophies, there were many statements about the types of teachers they would like to be and the types of learning experiences they would like to create for their future students. Many of their ideas focused on making the subject matter engaging and interesting, adopting "hands-on" teaching approaches, and facilitating learning experiences that foster student understanding as opposed to memorization. These ideas are represented in the following comments from their teaching philosophy statements:

I will also ask the students, in each course, the topic they would like to learn the most about or are most interested in. This may generate individual thinking and engage them while also letting them know I'm interested in their thoughts (Teacher Candidate 2).

Coming from this perspective my goal as an educator is to show how interesting science is. It is not just words in a textbook; it's life. I plan to incorporate as much hands-on activity as time will allow, letting them see with their own eyes science at work. I feel that students learn best when they are able to relate some foreign concept to their lives (Teacher Candidate 3).

With the advances in technology and practical areas like medicine and pharmaceuticals, it might be preferable to teach students how to analyze information rather than trying to teach them the information itself. I really like the concepts of the *nature of science* and the exploration of *scientific literacy* and definitely want to include those concepts in the classroom (Teacher Candidate 5).

I believe students learn best by doing. Manual tasks seem to be associated with a "body memory" concept. It is also obvious that the more senses you can employ when experiencing a phenomena the more memorable it will be. Hands-on learning is thus critical, but not without a firm factual background (Teacher Candidate 8).

These ideas remained prevalent and continued to remain part of their goals as future teachers. As well, as future teachers, they wanted to strive towards creating learning experiences that would be inclusive of all learners. Some of their comments reflect this future aspiration:

Adapting classes to suit all students' needs can be quite difficult. In science, much of the teaching involves the introduction of new words that are very unfamiliar and also various experiments. During any activities or experiments in my science classes, I tend to pair a weaker student with a strong student to try and motivate the weaker student. At my school, there are occasionally staff members that will assist in classes with students who struggle, but this does not happen all the time. I definitely think adapting my lessons to suit all types of students is an area where I can certainly improve (Teacher Candidate 3)

I believe it is important to study and assess the principle of inclusive education now so that I will be more prepared to deal with similar situations that may arise throughout my teaching career. During the first term in the Faculty of Education, we were introduced to the Pathways spectrum; however, putting these definitions to use is entirely different than reading about them in a textbook. Understanding that as a teacher, it is my duty to elevate and stimulate every student and make each individual feel safe and welcome in the classroom setting is an important lesson I have recognized during this internship (Teacher Candidate 9).

I feel that in my future career as a teacher I will have to apply many technological instruments in every lesson just to increase the opportunity of success for the diverse learners in my classroom and to keep all students interested in the material I am teaching. (Teacher Candidate 5).

Another future aspiration that emerged towards the end of the study, which was not represented in teacher candidates' initial reflections, related to being a continuous learner. All of the teacher candidates noted the importance of being responsive to change and new ideas, and assessing and re-assessing their goals as they relate to teaching and learning. Brent, one of the teacher candidates framed this perspective as follows: "To be a great teacher, I will always have to be a great student." Sandra also reflected these sentiments: "At the end of my teaching career I hope I can look back and say that I made every effort to evolve as a teacher, that I challenged myself to make a constant effort to improve my knowledge of the profession and methodologies as they apply to the delivery of the core material."

The value of the e-portfolio

Portfolios may be used to serve both a product and process function (Zubizaretta, 2004). While the e-portfolio served as a record of teacher candidates' learning, its most important use, according to the teacher candidates, was its ability to foster reflection when learning to teach. When asked at a focus group session about the merit of the e-portfolio for supporting their development as teachers, they noted the integral role reflection played in helping them gain insight into their own abilities as teachers. The tool or platform adopted in the study was not the key factor in their learning. In other words, they felt other tools could work equally as well, as long as the tool allowed them to "think critically about experiences," "make connections amongst ideas and prior knowledge," and "re-evaluate beliefs about teaching as you teach" (Teacher Candidate reflections).

Crafting a learning philosophy and revisiting the philosophy as they completed their teacher preparation program were considered extremely helpful in promoting self-development. Teacher candidates commented on this:

I feel that through writing the statement of teaching philosophy, I have organized a lot of the concepts that I would like to implement into my future teaching. It has taught me a considerable amount about the processes of teaching and learning (Teacher Candidate 1).

Using reflection as a tool for teacher improvement was by far one of the greatest realizations I have accumulated this semester. Through being a reflective teacher, I can adapt in order to approach the material in a way that is universally acceptable to all the students in a classroom and thus become a more reflective educator. Hence, the statement of teaching philosophy influenced my perceptions of teaching and learning to focus mainly on the importance of reflection and learning about the trade through student performance and critique (Teacher Candidate 3).

Writing and modifying my teaching philosophy has made me stop and think about how I am going to teach by critically thinking about my own experiences as a teacher and as a student. I had to think about how I perceived the different strategies and techniques used by my own teachers and internalize them to try to identify what will work for me, and what had the greatest effect on the students. It helped me think about the importance of group work and hands-on activities for developing knowledge, but also other skills like communication and critical thinking and decision-making skills. It helped me think of ways to incorporate the nature of science into my teaching and ways to increase the scientific literacy of my students. (Teacher Candidate 8)

The process of engaging in reflection encouraged the teacher candidates to "consider what it is [they] do as teacher[s] in the broadest sense" (Tom, Teacher candidate reflection). It encouraged them to consider their successes and challenges during the internship, to re-evaluate their experiences in light of their beliefs and perspectives and the concepts and ideas introduced in their courses, and to articulate their future goals as teachers.

Implications

This small-scale study provided insight into how e-portfolios may be used in teacher preparation to shape teacher identity. Three key implications arise from this research and are discussed subsequently.

1. **Focusing on teacher identity explicitly**

Learning to teach is complex and hence, presents challenges to both teacher educators and those who are students of teaching. Darling-Hammond (2006) identified three problems associated with learning to teach. One of these, the apprenticeship of observation (Lortie,1975), refers to how previous learning by teacher candidates as K-12 students results in preconceptions about teaching and learning that may interfere with the development of new understandings and practices as teachers. In other words, "learning to teach requires new teachers to

understand teaching in ways quite different from their own experiences as students" (Darling-Hammond, 2006, p. 35). The challenge of enactment, a second problem (Kennedy, 1999), occurs as beginning teachers consider their developing beliefs and understandings and put them into action in classrooms. However, what they wish to do (goals and intentions) does not always get enacted as envisioned. A third problem involves the complexity of teaching and classrooms. Teacher candidates need to integrate many kinds of knowledge and skills to inform decision-making about how to structure learning for diverse learners.

While many principles, approaches, and strategies may be adopted to support teacher candidates in addressing these challenges, a focus on teacher identity should be an integral part of teacher preparation programs. By focusing explicitly on teacher identity throughout a teacher preparation program, the tacit can be made explicit. Beliefs and ways of thinking (that may need to be changed) developed as a result of the apprenticeship of observation can be considered critically by teacher candidates in light of new experiences in classrooms and in conjunction with theories, ideas, and principles of teaching and learning introduced during university classes. Equally important is that mentoring teachers and teacher educators make their pedagogical reasoning explicit as they work with teacher candidates. This explicit modelling can play a key role in shaping teacher identity. As Loughran (2007a) states:

There is a need for teacher educators to be able to make the tacit explicit . . . . There is a constant need for teacher educators to be able to answer questions from students of teaching such as: "Why does that teaching procedure work?; How does concept mapping enhance student learning?" or "Why would I use a jigsaw method for group work?" Being able to articulate one's own knowledge of practice is vital to enacting a pedagogy of teacher education in order to be able to answer questions of this type (p. 4).

As evidenced in this study, the adoption of digital portfolios enabled teacher candidates to make their thinking explicit. Through critical individual and group reflection, they considered their developing beliefs and perspectives in relation to their development as teachers. This reflection involved analysis and examination of thoughts and practices based on past events and after teaching episodes. Their reflection was also anticipatory, considering future ways of thinking and acting when interacting with students and planning learning events (Beauchamp & Thomas, 2009; Conway, 2001). The possible *teacher* selves they wish to become can be informed with this type of anticipatory reflection.

2. The pedagogy of teacher preparation programs

In supporting teacher candidates during their learning in teacher preparation programs, careful attention needs to be given to the pedagogy adopted. Korthagen (2001) offers these three principles to guide the pedagogy of teacher education:

1. A teacher's professional learning will be more effective when directed by an internal need in the learner;
2. A teacher's professional learning will be more effective when rooted in the learners' own experiences;
3. A teacher's learning will be more effective when the learner reflects in detail on his or her experiences (p. 71).

These principles were evident in this study through the adoption of the e-portfolio. Teacher candidates' choice of artifacts to represent learning and their corresponding reflections were explicitly linked to their experiences in program courses and K-12 classrooms. Through detailed, ongoing reflection they were afforded opportunities to connect their prior and developing beliefs and perspectives to new experiences as students of teaching. For example, the teaching philosophies, crafted by teacher candidates at the beginning of the program, became dynamic

artifacts that were revised as they encountered new ideas about teaching and learning and gained experience in schools and classrooms. While many pedagogical approaches are used in teacher preparation, the process of creating an e-portfolio can play a key role in shaping teacher candidates' identity

The potential of self-study

In adopting any new approach in teacher education such as the e-portfolio, little will be achieved if teacher educators do not engage in self-reflection to improve their practice and examine the impact their individual and collective actions have on teacher candidate learning. One means to assess the impact of various practices in teacher education is self-study. While self-study involves many methodological approaches, and several frameworks have been developed to describe it (Loughran, 2007b), one of these frameworks includes five essential elements of self-study: it is self-initiated; is aimed at improving practice; is interactive in nature; includes multiple qualitative methods; and operates on the basis of trustworthiness (LaBoskey, 2004).

Loughran and Russell (2007) argue that teaching is a discipline and that self-study can be a key methodology to develop the knowledge base for teaching and teacher education. Furthermore, they state:

A central enabling feature of self-study involves learning from experience in order to enable both teachers and learners of teaching to have the experiences they need to reframe preconceptions that centre around the simplistic and misleading idea that teaching is the transmission of information. This, we argue, offers a starting point for taking seriously the notion that teaching is a discipline and that teacher education is the home of that discipline (p.255).

Thus, researching teaching and teacher education through self-study provides a means to examine teacher identity and how to support the development of teacher identity in teacher education.

Summary

This study provides evidence that e-portfolios can be instrumental in shaping teacher identity. In the design of the learning experiences related to the creation of e-portfolios, teacher educators need to consider how the e-portfolio is structured, ensuring that it is well-integrated with program content and experiences in a coherent manner. Furthermore, careful guidance and scaffolding need to be provided as teacher candidates engage in focused reflection about their artifacts and learning. Tacit beliefs and understandings need to be made explicit; this is essential to the success of using the e-portfolio and hence, in fostering the development of teacher identity. While the e-portfolio was not used in this study as a means to foster the development of teacher candidate technology skills, web based platforms need to be user-friendly and if needed, technical support needs to be provided.

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SOFTWARE SUPPORTED TEACHER-LED INQUIRY: ENHANCING INNOVATION THROUGH "BACKOFFICE" ICT

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Abstract
We report on ongoing research into software tools to support teachers in teacher-lead inquiry, which can lead to the innovation in pedagogy and the use of ICT. The NEXT-TELL project is creating TISL, an inquiry method and software tool, which is part of a larger, robust suite of "backoffice" ICT tools to support teachers in their continuing professional development. The TISL software aids teachers in defining a research planning, collecting and analysing data, and sharing and reporting this to others, including colleagues, administrators, and policy makers. We describe early research work using TISL with teachers in schools in the UK and Norway, and discuss preliminary findings. We conclude by identifying the potential for such tools as these to contribute to both educational e-research and to innovations in pedagogy, practice, and policy.

Keywords: teacher-led inquiry, ICT, design based research, innovation, technology-enhanced learning, education policy

Introduction

The impact on schools of contemporary trends in ICT are only beginning to be understood. Developments such as social media, mobile learning, connected classrooms, and "always-on" learning are changing the ways and places students can learn and present significant new pedagogic opportunities. Students live in technology rich environments and their learning contexts now extend far beyond the classroom. Whilst research on teaching, learning, technology and assessment has often focused on summative testing (SQA, 2007, Beevers, 2010), recent trends and developments in technology (Winkley, 2010), e.g. mobile, ubiquitous, distributed and immersive environments, as well as a rise in social and collaborative networks, have generated an increasing interest in the use of technology as a support for formative e-assessment (Beevers, 2010, Elliot, 2007, Pachler et al., 2009). Whilst the latter encompasses the more routinised aspects of record-keeping, monitoring, assessing and reporting on learner's progress, it also extends to an increased capacity for data capture, analysis and dissemination. Examples include the use of e-voting systems (Hanley & Jackson, 2006), learner e-portfolios (Kimbell, 2008, Tolley et al.), diagnostic testing environments which offer adaptive, ipsative assessment data for teachers and students over time (Winkley, 2010, Ripley, 2007, Bull & Kay, 2007, Zapata-Rivera et al., 2007), use of handheld devices to capture data (Bennett & Cunningham, 2009), activity logs, timestamps, version tracking, target-setting (Jewitt et al., 2010), self-guided learning (Sainsbury, 2009), learning journals, and so on. Less well developed, but increasingly emergent, are new forms of e-assessment, which take into account opportunities for technology-supported peer, collaborative, and self-guided learning (for both teachers and learners) using online social networks and read-write technologies such as web

2.0. (Luckin et al., 2008, Elliott, 2007) as well as for increased parental participation (Lewin and Luckin, 2010) via distributed learning networks.

For technology to impact effectively on teaching, learning and assessment, an enhanced and holistic understanding of the learner's learning context (Luckin, 2010) is desirable.

Beevers et al. (2010), for example, suggest that software solutions designed for formative assessment should include a focus on classroom practice, planning of teaching and learning, understanding the 'how' of student learning, developing teacher professionalism, learner motivation and self-regulation, and recognition of a wide range of learning achievements. Daly et al. (2009), meanwhile, confirm that it is not merely software solutions, but teachers' continuing professional development, which plays a key role in turning theory into practice. They argue that "teachers need to be at the centre of their own learning" about technology use and adoption in order to "address context-specific learning needs of students" and that they should be encouraged to collaborate and/or participate in external/online professional development communities. Others, focusing more specifically on the development of e-assessment literacy, have suggested that certification would act as an effective motivator for teachers engaging in professional development activity in this area (Wright, 2008, Balanskat, 2005, Elliott, 2003). Targeted continuing professional development (CPD) (Bannan-Ritland, 2008) could thus be used to improve teachers' data-driven decision-making through an enhanced understanding of the learners' learning context in data-rich, technology-supported learning environments. In particular, teachers professional development must enable them to to guide learners in using new technologies for their own knowledge building. A significant consequence of this is that teachers will need to be able to design and investigate their own institutional practices and to have suitable inquiry frameworks to support this process (Marauskaite & Reimann, 2008). It is not tenable for teachers to rely primarily on existing domain and pedagogical knowledge, and findings from researchers outside of their own classrooms. Innovations in practice that will leverage technology in the classroom must derive also from the teachers themselves, and from the students they know and work with every day. They must therefore have access to robust methods of classroom inquiry, which can lead to innovations in practice and which can generate knowledge that can be shared with others in their profession.

Teacher inquiry has been defined as:

- a bridge connecting research, practice and education policy (Rust, 2009);
- an important and practical way to engage teachers as consumers of research (Rust, 2009);
- a way of engaging teachers in researching their own practice so as to shape practice, as designers of their own professional development, and as informants to scholars and policymakers regarding critical issues in the field of education (Rust, 2009);
- practitioner inquiry that involves systematic, intentional, self-critical inquiry about one's own work (Cochran-Smith & Lytle, 1999).

Across the literature, key characteristics that may contribute to a broadly conceptualised definition of teacher inquiry thus include the notion that it is: systematic, intentional, contextual, self-critical, practical, action- oriented, planned, evidence-based, evaluative, and shared. Further, it encourages teachers to adopt an inquiry stance (Cochran-Smith & Lytle, 2009) contributes to teacher professional development (Dawson, 2007), informs policy and research, shapes practice and promotes school-based innovation, change (Rust, 2009) and teacher autonomy (Castle, 2006).

The use of teacher-led inquiry for innovation must be supported not only by suitable methods, but also by technologies which can streamline the process of defining a research plan, collecting and analysing data, and sharing and reporting this to others, including colleagues, administrators, and policy makers. The opportunities for "backoffice ICT", which will become essential to delivering rich and effective learning experiences remain to be realised. In using the term "backoffice", we are drawing upon the notion of "backoffice" software which supports

business functions, but is not directly customer-facing. Similarly, the Next-Tell software suite is primarily focused on planning, executing, and supporting pedagogic activity and therefore, students to not interact directly with it. We have been exploring ways to address this on the NEXT-TELL (NT) project, an Integrated Project (IP) in the ICT challenge of the 7th framework programme of the European Consortium; its main objective is to provide, through research and development, computational and methodological support to teachers and students, leading to innovation of the use of ICT in schools. Next-Tell is comprised of 12 consortium partners across the EU, who are engaged in the numerous strands of this 4-year research project. (For more information, see www.next-tell.eu.)

Formative e-assessment is one of the key areas that we are exploring. Notwithstanding policy emphasis on summative assessment in many countries, as evidenced by the emphasis placed on improving scores in standardised tests (e.g., PISA and TIMSS), summative assessment provides only a limited snapshot of student achievement, and there are few tools to support evaluation of student progress as-it-happens. Formative assessment, however, remains relatively poorly supported by ICT tools (ref). Thus, there is a significant gap in technology being able to realise its potential to support not only student learning, but also teachers continuing professional development (CPD), and the policy initiatives of key decision makers. Technology to support teacher-led research in formative assessment is particularly promising. Provided they have sufficient ICT tools to collect evidence about the impacts of pedagogic decisions within the classroom, teachers can study their students' learning in a rigorous manner. Teacher-led research conducted in this way has the potential to empower teachers, if they can identify impacts of their pedagogic choices, and translate these into innovations in teaching and policy making on the part of administrators and school leaders. Thus, the potential exists for the strategic goal of improving students' learning experiences can be realised. This also has implications for improving teachers continuing professional development, in that it provides a teacher-driven approach to re-framing their classrooms as research contexts. In doing so, it gives teachers an effective voice in policy development in their school and supports developing their skills with respect to formative assessment and action research.

In NEXT-TELL, we aim to address these ambitions by developing a design-based practitioner research model to teacher inquiry, with and for school teachers, that is supported by novel TEL software. This method, Teacher Inquiry into Students' Learning (TISL) provides a principled, rigorous method for teachers to support their understanding of student learning. It supplements their usual, intuitive awareness of students' progress (and formative assessments they may have employed), by aiding data gathering about student performance that has been generated by teachers' own inquiry. Augmenting this teacher-led research method, we provide a means of pipelining data into a rich toolset of TEL software for analysis, learner modelling, and evidence-centred appraisal. This can have benefits beyond improving formative assessment of students.

By empowering teachers to inquire more deeply into student learning, TISL offers opportunities for teachers to reflect upon not only their students learning, but their own practice. Collaborating with colleagues further supports groups of teachers in making interpretations and conclusions about their teaching. Collecting data about student progress can aid teachers in their own self assessment and can support them in making recommendations they may have for improving students' learning. This can lead to policy changes which are based in real data from the classroom, and reduces the risk to administrators and heads of school of making changes to pedagogic practice because they can ground such decisions in evidence collected from their own students. Often, such decisions are based upon largely summative assessments and without the input of teachers - the very people who are nearest to the students, and who are best placed to make recommendations based upon their observations.

TISL is meant to become a significant means of teachers' professional development by augmenting their skills in formative assessment and providing a means for data collection. By

providing a clear structure for teachers to undertake their own inquiry, TISL scaffolds teachers into becoming researchers in their classrooms. Their research questions can be self-defined from their own knowledge and experiences of their students' learning. This benefits teachers by empowering them to make their own, data-driven interpretations of students learning. By exploring their own research results and collaborating with colleagues, they can gain an in-progress understanding, rather than a snapshot.
In this paper, we describe the TISL approach, provide an brief overview of the other backoffice TEL tools we are building to support teacher-led inquiry, and present initial findings from our research with teachers using TISL. We conclude by suggesting how using TISL in combination with our infrastructure will lead to wider benefits for the teacher-educator community.

The TISL modeller and relation to NT suite of tools

One of the challenges to realising the potential of teacher-led innovation is supporting them in operationalising research activity. At least three significant factors must be addressed. The first is raising awareness of the importance of teacher-led inquiry, what it can mean for teachers themselves, and the possibilities it holds for empowering them to enact change and innovation in their instructional practices. The second is providing a robust, theory-driven method that teachers can use to carry out research in the complex, dynamic social contexts that are their students' learning environments. These may not exist solely within the relatively constrained confines of a classroom, but now extend to the use of ICTs by both teachers and students wherever they happen to be learning. A third factor is the need for a software system which can support the execution of teacher-led inquiry, and which can be harnessed to gather the kinds of data that teachers might want to employ in their research, such as audio, video, and in online activities.
The Next-Tell project is creating a suite of software tools which can support systemic "backoffice TEL" innovation in schools. The suite consists of several modules which support this activity, one of which is a teacher-led inquiry modelling component (the TISL Modeller), which allows teachers to plan, execute, evaluate, share, and report on their own practitioner-led research efforts. To situate the TISL Modeler in context, and provide a broad overview of the larger research agenda within which TISL rests, it is useful to briefly mention the other components of the Next-Tell platform.

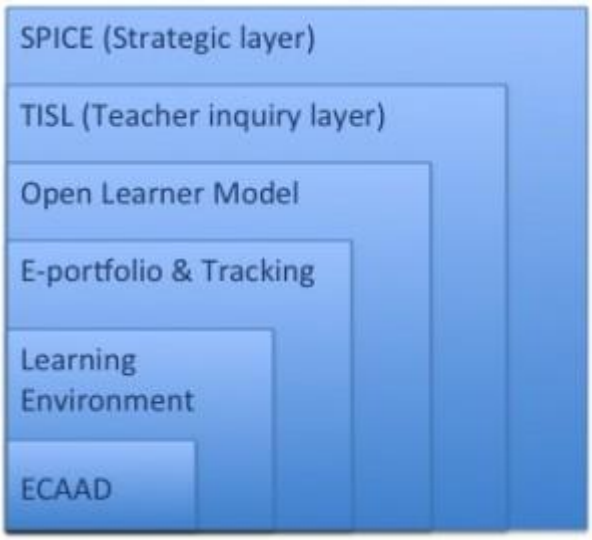

Figure 1

The Next-Tell suite consists of a layered hierarchy of components to support pedagogic innovation. This includes a module to support evidence-centred activity and assessment design (ECAAD, Layer 1), where assessments are developed and integrated into learning activity sequences. These activities are enacted by students in the Learning Environment (Layer 2) and generate data to support formative assessment defined in Layer 1. The products of these activities are saved as student work outputs in ePortfolios (Layer 3). Teacher-defined parts of this data stream also are further interpreted in terms of students' knowledge, skills, and abilities and are recorded in a database, and can be displayed for formative assessment (Layer 4), using the Open Learner Model (OLM). Information in the OLM, is available to teachers for in depth-analysis by the TISL process (the focus of this paper) in Layer 5, guided to some extent by the school's information needs as resulting from an strategic view of ICT innovation, formulated in the strategic layer with the SPICE (Strategic Planning with ICTs in Education) tool (Layer 6). Teach of these components can be employed by teachers independently of one another, though they see their most power effect when combined and used together.

Teacher inquiry into student learning: a method and a tool

The TISL method picks up on the emergent needs identified above through the development of a set of methods and tools that support teachers' engagement with advanced learning technologies, drawing upon the key characteristics of teacher inquiry as a method as described by Rich and Hannafin (2008), Dana & Yendol-Hoppey (2008) and Ellis & Castle (2010). The TISL planning tool in Layer 5 provides a software environment to model and capture teacher-led research activities. At its core, the focus of the TISL method is on teachers' use of student data to promote innovation and change. Innovative practice, here, is conceived as a form of teacher-led professional development aligned to schools' strategic planning goals. The TISL method addresses issues raised in the literature by providing teachers (and, through them, their schools, students and wider communities) with:

- Exposure to advanced learning, and Web 2.0, technologies;
- Software support for real-time appraisal and assessment of students' learning;
- Models (process descriptions) for teacher-led research;
- Access to IT-enhanced methods for data analysis (e.g., video analysis);
- Team-oriented teacher learning about students' learning.

The TISL method, with its focus on technology-supported teacher inquiry into students' learning, holds the following aspects to be of particular importance:

- teacher-led research in the development of effective e-assessment models;
- teacher assessment literacy and certification;
- the alignment of the preceding elements to schools' strategic planning as a sustainable form of teacher professional development.

A first iteration of the TISL inquiry process was generated through collaborative dialogue among NEXT-TELL partners building on preliminary findings from background research in teacher inquiry. The 5-step TISL method was identified as an appropriate and useful starting point for conducting teacher inquiry and for framing the web-based support tool that would support such activity. These 5 steps (or inquiry processes) are defined in terms of teachers' interactions as an inquiry team sharing a common goal for investigating data about students' learning. This 5-step model reflects the relevance and role of each step in the TISL inquiry process planning tool. The 5 step TISL method comprises:

- **Establishing a trigger**: Articulation of current beliefs/practices and identifying an area for inquiry;

- **Choosing a lens**: Identifying an assessment-oriented lens which can be used to frame the inquiry. Examples might be: formative assessment, improving student skills, using a new teaching method, using technology in the classroom, improving student engagement, etc;
- **Developing a plan of action:** planning for and identifying and describe the kinds of methods and tools in which might capture and collect data to support nquiry. Examples might be: Google Docs/Spreadsheets, Video recordings (e.g., YouTube), Audio recordings (e.g. soundCloud), Photos, Moodle/Blackboard or other VLE, Microsoft Word/Powerpoint/Excel, ePortfolio, etc...
- **Analysing practices:** a description, with illustrative examples, of ways in which the teacher-researcher has analysed the data you captured in step 3;
- **Enacting and adapting to innovation and change:** a description of what the teacher-researcher would hope to do (or has done) in light of the findings of the inquiry process, as outlined in steps 1-4.

Table 1.

5-Step TISL Method	Meaning in Teacher Practice	Meaning in TISL Inquiry Tool
Establishing a trigger	Identifying a wondering, a problem, a puzzling issue	Modelling data sources, access mechanisms (*triggers*) and data boundaries (*extent of data corpus*)
Choosing a lens	Framing the focus for the inquiry process/scope, e.g. e-assessment	Identifying scope of data sources, calculation models, cause-and-effect relations
Planning for and collecting evidence	Formulating a research question - collecting/reviewing/interpreting related data sets	Aligning data capture/analysis to process/phases, execution and collection algorithms
Analysing practices	Reflecting on findings vis-à-vis past and future classroom practices	Generating reporting algorithms and mechanisms for data analysis
Enacting and adapting an action/ innovation	Enact informed change and share results with others	Providing dashboard visualisations, support for mediated actions, mediated project planning

In this way, the TISL inquiry process planning tool enables teachers to bring together theory (the 5-step TISL method) and practice in a systematic, goal-oriented way, by providing tools and mechanisms that help teachers to identify and model goals and objectives in the form of triggers and indicators (Steps 1-3) which, in turn, enable outputs (Steps 4 and 5) in the form of systematically generated data visualisations and an explicitly modelled research plan.

Figure 2.

Initial research with teachers

Following on from developing a preliminary model of the TISL method, the 5-Step TISL inquiry model, was tested and evaluated in a series of participatory workshops with educational technology researchers, as well as pre-service and in-service teachers in the UK during May and June 2011. A key feature of the workshops was the provision of a range of hands-on and reflective activities designed to enable participants to contribute to a wider understanding of TISL methods in practice and, in particular, to identify the use of the method in conjunction with available generic tools (Google Docs, YouTube), A key goal was to explore and evaluate the use and application of these tools to teacher inquiry into students' learning with a particular focus on digital data (of a type that can be captured automatically, e.g. data from Google spreadsheets; and more qualitatively – using video data) and e-assessment.

The workshop model was also used to provide an informed perspective on ways of implementing teacher inquiry as a teacher professional development opportunity in the school context. Findings from the workshops were also used to generate a model research design for implementation of TISL studies in the UK. These studies are currently under way. In line with findings from the workshops, they focus on teacher inquiry using (1) Google docs (spreadsheets and web-based forms) for statistical data; and (2) EVA (or YouTube) and video data. Although we did not anticipate the need for audio annotation tools, teachers have also requested the ability to record and annotate audio data. A popular audio sharing and annotation tool, SoundCloud[45], was used for this purpose.

In the TISL workshop, video data of participant activity in a hands-on Science experiment designed to replicate student learning was captured and used to generate face-to-face discussion amongst teacher participants that focused on combining the 5-Step TISL method for modelling inquiry with the use of video data. This activity revealed that the use of video data was perceived to be an interesting and potentially effective method for analysing students' learning, promoting teacher professional development and identifying related implications for teaching, learning and assessment.

Video data of workshop participants used for participant discussions were captured by a NEXT-TELL researcher using an iPod. The video data were subsequently uploaded by the NT researcher to a closed YouTube channel created specially for the workshop. The use of YouTube was an intentional device designed to evaluate the concept of web-based storage of video data as a support for teacher inquiry and teacher perceptions on the use of this tool for this purpose.

[45] www.soundcloud.com

These data were strategically timed by the NT researcher to focus participant attention on particular aspects (beginning, middle and end) of the activity and were limited to a particular length of time (1 minute maximum). The time limit on length of video data was made to demonstrate to participants how to manage video data effectively for inquiry purposes. More particularly, however, this activity was used to emphasise the application of Step 2 of the 5-Step TISL method – Choosing a lens. Here, for example, the beginning-middle-end of activity and the implications of these stages of learning for assessment/innovation were the selected lens for teacher inquiry. The related Step 1 – Establishing a trigger – might, for example, have been – How can video data be used to support teacher inquiry into students' learning.
In a second TISL workshop activity in the hands-on Science experiment was used to capture web-based statistical data from participants using the spreadsheet and form functionality of Google docs. The goal of this task activity was to identify the range of tools that could be used to support students' learning with ICTs and to enable teacher participants to reflect on the kind of data that might be captured and the potential visualisations for that data.
Participants accessed the web-based form in Google docs using a variety of ICT tools, including a desktop computer, a laptop computer, an iPod Touch, an iPad and a mobile phone (Figure 2). This activity revealed that the use of handheld mobile devices by participants (teachers as learners) was perceived to be an interesting and potentially effective method for capturing students' learning data and thinking about the related implications of such web-based statistical data for teaching, learning and formative e-assessment.
In the current, ongoing research, as part of a long-term goal of accessing at least 60 classes across the consortium of Next-Tell partners, we have begun research in schools in the UK and in Norway to support the development of the TISL planning module. We have been introduced the TISL method to STEM teachers in these schools, and introduced the use of audio annotation of student activities as a means to support TISL inquiry and formative assessment.

Key issues and questions which arose in the video data activity related to:
- Ways of capturing, storing and analysing video and/or audio data effectively;
- Technical awareness of issues relating to length (in time) and size (for storage) of videos, as well as issues relating to quality, compatibility with viewing devices, and availability/accessibility of web-based storage;
- Ethical issues arising related to privacy of personal data.

Key issues and questions which arose in the statistical data activity related to:
- Opportunities for collaborative learning and peer review using web-based statistical data;
- Student engagement and motivation through use of handheld and mobile technologies;
- Ways of visualising and assessing web-based statistical data;
- Ability to easily move between spreadsheet, web-based form and charting tools;
- Reliability and accessibility of web-based tools and ownership of web-based data.

Conclusions
We see TISL--a method and a tool for supporting inquiry into rich data on students' learning--as a contribution to the new field of e-research in education (Markauskaite & Reimann, 2008; Reimann & Markauskaite, 2010; AARE/ARDEN, 2011). While eResearch/eScience has been driven primarily by the needs of sharing huge data sets and sharing computational resources, for research in the social sciences and in education the access to virtual environments for collaborative research work is probably more important. Not only does technology help "full time" researchers, such as from Faculties of Education, to go about their job, it also provides scope for new ways of participating in research and for orchestrating research workflows that spawn across multiple stakeholders. The barriers for collaboratively planning systematic studies

into classroom learning and for sharing the resulting data and observations are now minimal, at least from a technical point of view. Not only can teachers easily collaborate amongst each other within and across schools, they can also collaborate with research specialists from universities and other kinds of research organisations. One purpose of the development work in NEXT-TELL is to help making these forms of collaborations easier, by providing a method for inquiry planning, and tool support, that is suitable for the small team in one school, but also for teams that extend across multiple schools and organisations.

A second contribution to educational e-research we hope to make is to raise awareness amongst teachers concerning the potential of IT to help with data capturing, processing, analysis, and the dissemination of findings. While researchers working in universities have been making increasingl use of desktop software and now of web application software to off-load part of the labor involved in data processing and analysis, few of these tools have been made available to teachers engaged in inquiries into learning. This is a bit ironic, given how hard pressed for time teachers are. As soon as teachers take into account not only more or less simple quantitative types of information (e.g., grades, test scores, attendance time, …) but also consider richer data on students learning (e.g., products, portfolios, video data, audio data, log files...) the demands on analysis time can quickly become excessive. Hence our focus on introducing teachers to new methods and tools to (collectively) work with rich learning data.

Integrating research software tools deeply into teachers' inquiries into students' learning has not only coordinating and "convenience" functions, but can also contribute to give more weight to teachers' voice, both for pedagogical decision making as well as for affecting policy. This because the process of inquiry becomes more transparent, and the provenance of findings is easily documented. Groth et al. (2006) define the provenance of a piece of data as "…the process that led to that piece of data"; as such, provenance is synonymous with data lineage, pedigree or history and applies to quantitative as well as qualitative data. Provenance can relate to the use of data both within a study (e.g., How was the data created? How transformed? How did it enter into the conclusions?) as well as across studies (e.g., Which other studies refer to this data?). In this way, provenance can be used to assess data quality and reliability, to establish ownership of data, to establish an interpretation context, or to replicate a study (Chorley, Edwards, Preece, & Farrington, 2007). Since data provenance establishes the chain of evidence (and inference) from the original observations or recordings to the findings that are based on them, it is an important element of establishing trust into the findings. Having means to establish trust in research findings is particularly important in education, where large-scale quasi-experimental control group studies are considered to be the "gold standard".

Last, but not least, collaboratively developed and maintained inquiry plans and designs can become a resource for learning and continuous professional development, provided they are well documented and easily accessible. The approach we have chosen in NEXT-TELL, to represent inquire plans as process models, facilitates to formulate this kind of knowledge on a level so that it can be enacted, and to make it available on database servers through well-understood web technologies.

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DEVELOPING OF INFORMATION ABILITIES THROUGH LEARNING IN COOPERATION ON THE CROSS-CURRICULAR CONTENT OF PRE-SERVICE SCIENCE TEACHERS

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Abstract. This article deals with information abilities of pre-service science (biology, chemistry and physics) teachers by learning through cooperation. There is a lack of educational insights regarding cooperation on the basis of cross-curricular relationships. In order to solve this problem, we formulated two questions of the research: 1) how does learning through cooperation determine the development of information abilities of pre-service science teachers? 2) how do cross-curricular group projects change strategies of information search, attitudes towards sources of information, evaluation and application of information of pre-service science teachers?

The methodology of problem based learning proposed by M. Foldevi (1995) was used in the preparation of pre-service science teachers. According to the methodology, nine phases make up the learning cycle. Groups of students studying different science subjects (six members in each) were formed during seminars of subject didactics. Quantitative (interview using questionnaires) and qualitative (observation and semi-structured interview) methods were used. 120 pre-service science studying at Vilnius Pedagogical University participated in the quantitative study. Such sample of the case study was reliable. 15 respondents participated in the qualitative study.

The studies showed that pre-service science teachers avoided usage of printed literary sources, while they mainly used electronic search devices. Semi-structured interview regarding the ways of information search using open, central and selective coding revealed the basic concept (central category) – the speed of information search and reflection. Clarification of the conditions of the basic concept disclosed that planning of information search depended on the character of tasks.

Projects dealing with cross-curricular contents transformed the attitude of pre-service teachers towards strategies of information search and sources of information. They encouraged deepening into the content of tasks and reflecting learning. Non-integrated tasks limited planning of information search, and they promoted mechanical and quick search of information using electronic search devices without planning or reflecting of information content.

Development of information abilities initiated the metacognitive system of learner's identity anticipating tasks and strategies for information search. Such system was active in project work: pre-service teachers learned how to identify problems and plan ways of their solution. They formulated and verificated hypothesis, gathered, analysed and applied information and evaluated it critically, applied gained experience in new contexts, and exchanged information through learning in cooperation.

Keywords: information abilities, cross-curricular contents, learning through cooperation, pre-service science teachers

Introduction

Economical, organizational and social changes are attributes of modern society. Sociologists distinguish four types of societies in the development of western civilization: traditional, industrial, post-industrial and informational. The modern society is the society of knowledge (Drucker, 1993), information (Jarvis, 1998) or learning (Fulan, 1998). Therefore, the conception of creative society is formed (Florida, 2004; Tinagli, 2004). Transformation from informational to creative society requires the newest knowledge and abilities of their application.

Information is one of the main forces of economy, culture, science and education, as well as the development of the society, so people should be prepared solving of different problems. Quick social and economical change requires application of diverse information, so permanent learning is necessary.

Flood of information permits expansion of educational space, not excluding preparation of new teachers. Life-long learning and adoption of new knowledge and experience are challenges of any society. Two types of information (written and oral) that existed for a long time were supplemented with electronic ones (electronic text-books, databases, teaching material of the Internet, etc.). It means that it is necessary to acquire new competencies regarding selection, structuring, analysis and dissemination of information, so information abilities became very important nowadays.

The structure of information abilities is quite intricate. It consists of search, understanding, application and dissemination of information. Information abilities are important components of managing learning. Learners should know how to plan their learning, find suitable sources of information and adjust to changes. People have to organize their learning themselves. A learner should be able to reflect processes of information management: searching, storing, analysing and application of information (Buschman, 2009; Peciuliauskiene, Barkauskaite, Borodiniene, 2010).

Pre-service teachers experience problems related to search for information, its understanding and dissemination. They are not able to evaluate its novelty and reliability. Student-teachers are able to download information from the Internet, to receive it by e-mail, while abilities related to evaluation and application of information in creative process are lacking (Rockman, 2004).

Information abilities are a part of communicative competency. Communicative context is analyzed by the communicative process (Fiske, 1990; Михаилова, 2004; Hutchby, Moran-Ellis, 2001) and is defined in the conception of general culture of communication. The communicative context is very intensive in practice of science education in Lithuania (Vilkonienė, 2007). The communicative competency related to search for information, its analysis, transfer and application is one of the tasks of science education on the national level (Vidurinio ugdymo bendrosios programos, 2011).

Communicative competency forms with the help of learning through cooperation. Cross-curricular content stresses new aspects of communicative competency and cooperative manner of information control. It is necessary to shift knowledge from one subject into another in each cross-curricular teaching situation (horizontal shift). It provides new character, creates problem situations, and encourages acquiring new information or envisaging new aspects of the knowledge acquired (Funke, 1991; Hunt, 1994; Edelson, 2001; Kirschner, Sweller & Clark, 2006; Spink & Cole, 2006; Keebaugh, Darrow, Tan & Jamerson, 2009).

Communicative competency is an ability of a person exchanging information on the base of knowledge system. The attitude towards sources of information, its search, interpretation and dissemination changes after cooperative work on the basis of cross-curricular contents.

Problem of cross-curricular contents is analyzed in pedagogical literature, while there is a lack of educological insights regarding the role of cross-curricular relationships on the information abilities of pre-service teachers and cooperative work on the basis of cross-curricular contents.

The aim of the research was to reveal the role of learning through cooperation on the basis of cross-curricular contents for the formation of information abilities of pre-service science teachers.

The objectives of the research:

1. How does learning through cooperation affect the formation of information abilities of pre-service science teachers?
2. How do cross-curricular projects change information search strategies, attitude towards sources of information, evaluation and application of information of pre-service science teachers?

Theoretical framework

Information is a fundamental concept of information society. Information from the philosophical point of view is a phenomenon objectively existing in the world and comprising knowledge a person acquires, remembers, analyses and disseminates. Information from the communicative point of view consists of knowledge that can be transferred, acquired and remembered. Information can be understood as an intellectual resource. It is non-traditional from economical and social point of view: its usage does not influence its amount (it does not decrease usually). Nowadays information increases very rapidly and is called „explosion of information". New generation living in 2020 will accumulate 40 times more information in comparison to the generation of 1980. Modern specialist should read 1500 pages per day in order to keep qualification (Трофимов, 2002). Actually, 56.3% of the Internet users perform search in this tremendous source of information at least once a day (Birukov, Blanzieri & Giorgini, 2007).

Control of information can be described with a help of different concepts: information behaviour, information literacy or information ability. The latter concepts formed through decades (Wilson, 2007). According to T.D. Wilson (2000), information behaviour is the totality of human behaviour in relation to sources and channels of information having two components: information seeking behaviour (the purposive seeking for information as a consequence of a need to satisfy some goal) and information searching behaviour (the 'micro-level' of behaviour employed by the searcher in interacting with information systems of all kinds).

According to Ch.S. Doyle (1990), information literacy is a key concept in today's information society and is defined as „the ability to access, evaluate, and use information from variety of sources". It is a unit of information abilities and composed of recognizing the needs for information. It recognizes the basis of intelligent decision making, formulates the questions based on information needs, identifies potential sources of information, develops successful search strategies, accesses sources of information including computer-based and other technologies, evaluates information, organizes information for practical application, integrates new information into an existing body of knowledge, uses information in critical thinking and problem solving (Campbell, 2010; Doyle, 1999).

New models of information literacy appeared later, while the main abilities remained the same: understanding of importance of information, determination of potential sources and search strategies of information, its evaluation and application in practice (Shapiro & Hughes, 1996; Herring, 1998; Hayden, 2004; Тищенко, 2007).

According to G. Siemens (2004), behaviourism, cognitivism, and constructivism are the three broad learning theories most often utilized in the creation of instructional environments. These theories, however, were developed in a time when learning was not impacted by developing technologies.

Connectivism stresses the importance of information during learning process (Siemens, 2004). It is more important to search for particular information (know-where) in comparison to actual knowledge (know-what) or knowing how to act (know-how). Behaviourism, cognitivism, and constructivism agree that learning occurs inside a person, while connectivism accepts learning

outside the person. Relationships with sources of information can be determined individually or learning through cooperation using different strategies, methods or contents based on problem learning situations (Gallagher, Stepien, & Rosenthal, 1992; Capon & Kuhn, 2004; Mayer, 2004).
M. R. Morris and E. Horvitz (2007) stressed contraposition among cooperation in real life, daily situations and individual information search: „people engage in many search tasks involving collaboration with others, such as travel planning, organizing social events, or working on a homework assignment. However, current Web search tools are designed for a single user, working alone". Similar situations appear during learning process. Pre-service teachers cooperated in planning problem solving activities, but searched for information individually. The amount of information on the Internet is increasing very fast and, as a result, search becomes more and more a harder task. New technological solutions are under discover in order to make search of information easier (Somlo & Howe, 2003; Degemmis, Lops, Semeraro, Costabile, Lichelli & Guida, 2004). A common solution is to use authority-based search engines. Focusing the attention on Web search, there are two main classes of recommendation systems: some systems deal with the content of Web pages and some use collaborative approach (Lieberman, 1995; Chau, Zeng, Chen, Huang & Hendriawan, 2003; Birukov, Blanzieri & Giorgini, 2004). In both cases the obtained information is used to create suggestions for the user.
Search for information is important for its users, while it is necessary in education processes. Training of information search abilities is important in teacher preparation programs.

Methodology

The context of the study: the description of the learning method
Vilnius Pedagogical University is the only specialized university in Lithuania preparing teachers. We carried out the case study of preparation of pre-service science (biology, chemistry and physics) teachers realizing the EU Seventh Framework Programme project Science-Teacher Education Advanced Methods (S-TEAM).
In order to prepare favourable conditions for learning through cooperation, time schedule of seminars of subject didactics for different speciality students was synchronised. Heterogenous groups of respondents studying different science (biology, chemistry and physics) subjects were formed. They implemented one cross-curricular project during two seminars (four academic hours) of subject didactics. They worked independently (three academic hours) between the seminars.
The methodology of problem solving proposed by M. Foldevi (1995) that was originally applied for medicine students was used as the background. Therefore, it is quite universal methodology that could be used for teaching of students and schoolchildren. According to the M. Foldevi's methodology, the learning cycle is composed of nine phases (Fig. 1): (1) scenario of a problem, (2) creation of a group plan, (3) formulation of hypothesis of problem solution, (4) "brain storming", (5) definition of the problem, (6) formulation of learning tasks, (7) deepening one's knowledge, (8) discussions and careful research of knowledge, and (9) application of knowledge in practice. The seventh and the eighth phases were the most important from the information search point of view when pre-service teachers worked independently deepening their knowledge.

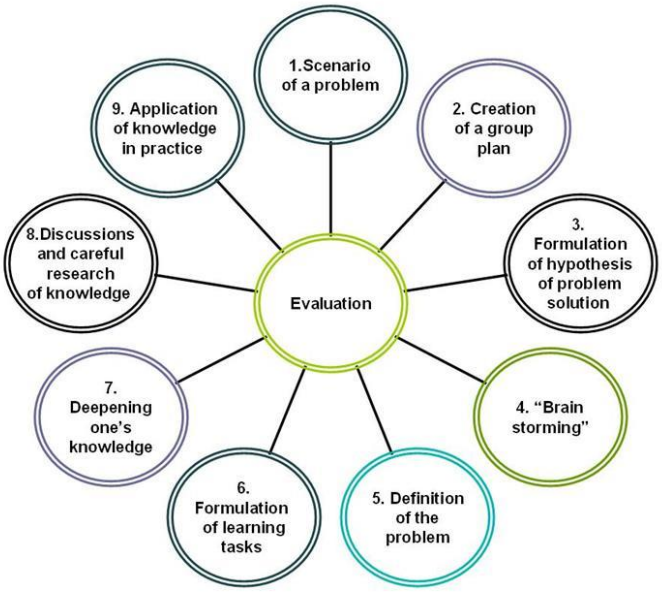

Figure 1. *Problem solving methodology proposed by M. Foldevi (1995): the content and structure*

The pre-service science teachers worked in heterogeneous groups. Every group was composed of six learners studying physics, chemistry and biology. The first six stages of activities were related to planning of cross-curricular problem solution. The pre-service teachers had to define a problem, create problem solving scenario and predict aims of the activity. They searched for particular information independently during the seventh and the eighth phases, while they improved cooperative abilities and tried to find common model of cross-curricular model during the last phase. Different aspects of project activities were evaluated: amplitude and profoundness of cross-curricular relationships, self-reflection, or information abilities. We present the results regarding aspects of information abilities and search of cross-curricular information.

The group of respondents for quantitative (interview using questionnaires) studies was formed of 120 pre-service science teachers making up two thirds of the third and the fourth year science students studying at Vilnius Pedagogical University, so the sample was reliable. Therefore, the representativity of a sample in a case study is not an important characteristic. 15 respondents participated in the qualitative (open questions and interview) study.

Results

Quantitative and qualitative self-evaluation of information abilities

Studies of attitude of pre-service science teachers towards information abilities were carried out paying attention to information search, its understanding, dissemination and application. The respondents self-evaluated their abilities according to the three rank scales: „excellent", „sufficient" or „weak". The results revealed that pre-service teachers self-evaluated search of information and its understanding abilities better than application of information and dissemination abilities (Table 1).

Table 1. *The attitude of pre-service science teachers towards information abilities: percentage frequency*

Type of information abilities	Ranks of self-evaluation (%)

	Excellent	Sufficient	Weak
Information search	**46.2**	52.4	1.4
Understanding	**29.3**	68.3	2.4
Application	13.9	65.9	**20.2**
Dissemination	23.1	55.3	**21.6**

Pre-service science teachers positively self-evaluated information search abilities. 46.2% of respondents indicated that their information search abilities are excellent. The comparison of abilities of information search and its understanding revealed that the latter abilities were self-evaluated worse (29.3% of respondents), while 68.3% had sufficient skills. Abilities regarding application and dissemination of information were self-evaluated less favourable.

Excellent self-evaluation of information search abilities is of scientific interest. Does self-evaluation reflect real situation? How do pre-service teachers search for information? We performed observation as the qualitative method of studies in order to answer to these questions. Pre-service teachers had to search for the necessary information during independent work performing every project. Text-books were placed in one auditorium, while there was a computer classroom nearby. They could search for the particular information in science textbooks or the Internet. Observations were carried out how the pre-service teachers searched for the information and worked in cooperation. After the acquaintance with tasks, the students tried to use textbooks for about 10 minutes during the first seminar. They worked individually and did not cooperate. Later on they began transferring (one by one at first, and in groups later) to the computer classroom in order to use the Internet for the information search. During the next seminar, only one fourth of student-teachers tried to use textbooks as a source of information for approximately seven minutes, and transferred to the computer classroom. Science textbooks were not used during the third and later seminars, only computer based search programs. The pre-service teachers tried working independently, with few discussions only. It revealed that deepening one's knowledge was an individual process. Anyway, the results of the quantitative study showed that self-evaluation of abilities related to the information search was quite positive (Fig. 2). It means that activities related to the individual work are evaluated better by the student-teachers.

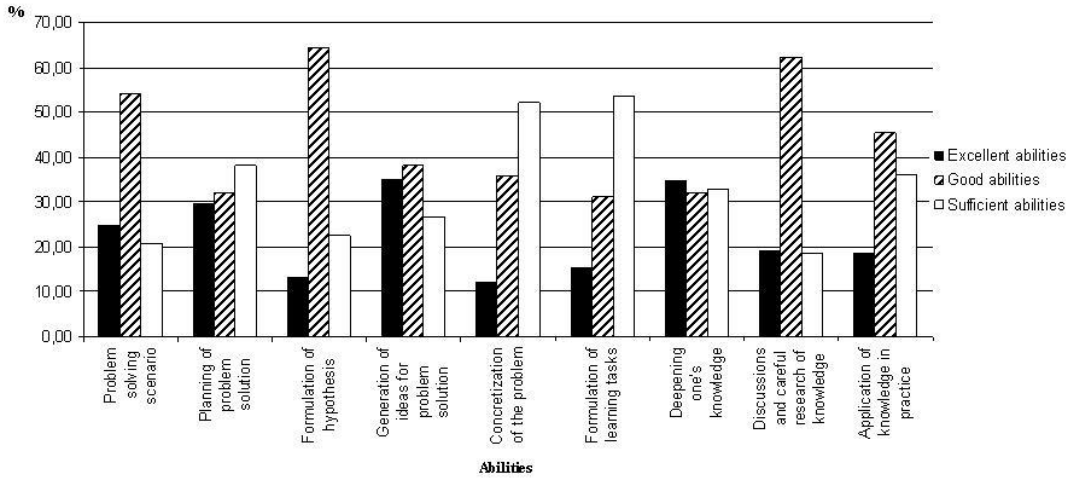

Figure 2. Reflexive attitude of pre-service science teachers towards different problem solving abilities: percentage frequency of self-evaluation

Pre-service teachers worked in heterogeneous groups, and every group was composed of two students studying biology, two – chemistry, and two – physics. Therefore, individual work of respondents using computer-based search tools was obvious despite of the fact that there were conditions for the cooperative work of at least two students studying the same subject. Other studies show that persons having similar interests tend to cooperate searching for information in Web environment (Chau, Zeng, Chen, Huang & Hendriawan, 2003; Birukov, Blanzieri & Giorgini, 2004). This objection could be explained by the reverse distance law: persons having similar interests and being in a distant space cooperate while searching for information more than being in the same space.

Sources of information and its search

We studied sources of information the pre-service science teachers used (Table 2). Different sources were grouped into printed and electronic ones. The respondents indicated that they used the Internet the most often (72.6%), 26.9% of respondents used CD, DVD or DIVX discs often and 43.8% - rarely. Text-books and books were the most popular among printed sources of information (31.7% and 23.1% of respondents used them the most often and often), while scientific articles and magazines were used rarely.

Table 3. *Percentage frequency of usage of printed and electronic sources of information*

Sources of information		Percentage frequency of usage (%)			
		Most often	Often	Rarely	Never
Printed	Oral	17.8	47.6	28.4	6.3
	Books	23.1	43.8	29.8	3.4
	Magazines	13.9	32.2	47.1	6.7
	Textbooks	31.7	39.4	24.5	4.3
	Scientific articles	14.9	26.4	49.0	9.6
Electronic	Internet	72.6	20.2	5.8	1.4
	CD, DVD or DIVX	13.0	26.9	43.8	16.3
	Mass media	16.3	38.9	37.5	7.2

The speed of information search of pre-service science teachers was evaluated as well. More than two thirds (75%) of respondents answered that they searched for information quickly, while only 3.4 % thought that they searched quite slowly. The results revealed that so high self-evaluation of could be influenced by wrong understanding of information search conception. It seemed that such abilities are not complicated if the concept of information search was understood as technical process using web-based searching devices. Answers of respondents were analyzed qualitatively. Three categories were established: „The Internet“, „Knowing of resources“ and „Quick thinking“. The majority of respondents (77) thought that searching for information was rapid as it was enough to know how to use the Internet („<...> the Internet is full of search engines“, „<...> I use the Google at first, while I visit other websites later and search for necessary information...“). 62 of respondents thought that they knew what they were searching for („Knowing of resources“), so information search was easy („<...> ”I know where to search“, “I use correct sources“, ...I know references“). 15 of respondents expressed their opinions that they searched for information rapidly due to the quick thinking abilities („<...> I can think very quickly“, „I can concentrate quickly“...).

We studied some characteristics (sex, motivation towards teacher‘s profession while entering university, future plans of teacher‘s career, learning of informatics at school, future plans of studies and study program) influencing information search abilities (Table 4). Some features are clear and there are no needs of future descriptions, while some should be explained (e.g.,

learning of informatics at secondary school). According to Lithuanian education system, pupils have a possibility of choosing learning of informatics. They can choose broader or narrower program, and there is a possibility to stop its learning at higher (11 and 12) grades. The experience obtained can influence the usage of information communicative technologies, so that was in mind while preparing the questionnaires.

The character regarding future professional plans was described actualizing future plans of pre-service teachers in the questionnaires: they plan or do not plan to work as teachers after the graduation of university. This character is influenced by the national rules regulating entering universities: school-leavers can indicate several different specialities they would like to study. In general, school-leavers having better preparation enter desired study programs, while others enter programs determined only by competitive mark.

The character regarding demands of permanent learning was chosen due to the modern realities of knowledge and information society. Future plans of pre-service teachers were evaluated concerning Master, PhD or informal (self-education) studies.

Statistical significance of differences of attitudes was evaluated using Chi-square test. It was revealed that information search abilities of pre-service science teachers depended on characters of studying informatics at secondary school and future plans of their studies ($p<0,05$, Table 4). Other characters as sex, motivation to become a teacher, future professional plans, or conditions of entering university did not reveal statistically significant differences.

Table 4. *Self-evaluation of information search abilities according to different features: statistical significance of difference of attitudes of pre-service science teachers*

Feature	λ^2	df	p
Sex	2.078	4	0.721
Motivation to become a teacher	8.440	8	0.392
Future professional plans	12.236	8	0.141
Character of studying informatics	18.440	8	**0.018**
Conditions of entering university	2.330	4	0.675
Character of sponsorship of studies	10.630	8	0.224
Plans of future studies (MSc or PhD studies)	45.673	8	**0.000**

Peculiarities of cross-curricular information search

Pre-service science teachers had to explain particular phenomena or objects from the point of view of biology, chemistry and physics performing cross-curricular tasks. Search of such information is quite specific: there is a contraposition between cross-curricular tasks and subject-based information in different sources. The answers of pre-service teachers regarding their attitudes towards cross-curricular and subject-related tasks were evaluated, and statistically significant results were obtained in all cases (Table 5).

Table 5. *Statistical significance of differences of attitudes of pre-service science teachers towards cross-curricular and subject-related tasks*

Influence of cross-curricular and subject-related tasks	λ^2	df	p
Motivate planning of information search	10.529	6	0.015
Motivate usage of different sources	30.484	6	0.000
Motivate communication during information search	36.410	6	0.000
Motivate communication harmonizing information gathered form different sources	73.746	6	0.000
Motivate reflecting of information	20.220	6	0.003

Statistically significant differences can be explained with the help of the fact that pre-service science teachers evaluated cross-curricular tasks better than subject-related tasks. The results showed that cross-curricular tasks encouraged planning of information, usage of broader variety of information resources, encouraged communication among students and deeper analysis of information. Therefore, the speed of information search was not so high, as planning of information search, its analysis and communication required additional time.

In order to generate grounded theory explaining the nature of quantitative studies, eight qualitative interviews were performed. Objective (theoretical) selection of respondents was carried out, when the initial sample was extended according to the data obtained. The aim of the qualitative study was to find out the main category of a high level of abstraction. That was achieved with the help of three types of coding: open coding by extracting categories, axial coding interlinking those categories, and selective coding forming the central category or categories.

Interview with respondents revealed the central category - the speed of information search and reflection - which was in higher level of abstraction and was substantiated by collected and analyzed data (Figure 3). This concept was supported by some statements of respondents: *„Search of information in text-books is quite difficult. It requires a lot of time to find particular concept in a glossary and in a text-book later. Usage of the Google search system is much easier and it does not require much time. It takes more time for search of necessary information in a list of information presented. Maybe information presented in a text-book is more accurate, but it is much quicker to search information on the Internet“ (Viktoras). „I do not have enough time for reading text-books, especially several science text-books. Everything presented on the Internet is simpler“ (Paulius). „I am afraid that searching for information in text-books requires more time. Other members of a group will find information quicker, so I will be behind them“ (Asta).*

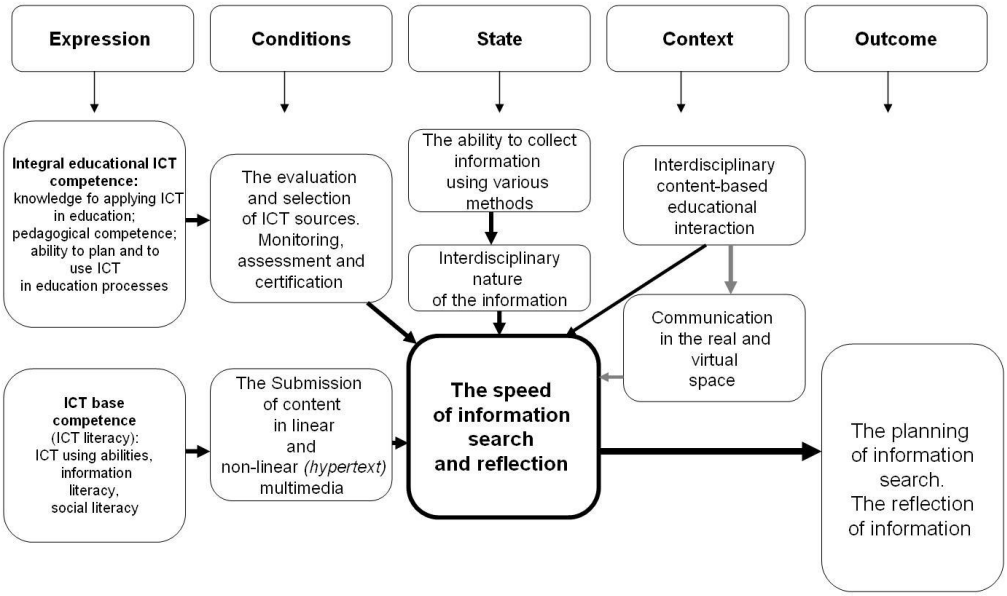

Figure 3. *Theoretical model of conception of information search*

Clarification of the conditions of the basic concept revealed that planning of information search and reflection depended on the contents of tasks. Cross-curricular projects encouraged pre-service teachers planning of information search, analyzing tasks deeper, and reflecting learning. Non-integrated tasks limited planning of information search. They promoted mechanical and

quick search of information on the Internet and electronic information search systems without planning or reflection of information contents.

Conclusions

Rapid increase of information allows broadening of educational space and changes the role of a traditional school. The learner living in information society should be orientated not to conveyance of information, but to abilities of evaluation, selection, classification, systematizing and application of information in practice. Information abilities as dynamic abilities reflecting changes of information contents and its management technologies become very important under such circumstances. Information abilities refer to the understanding of importance and necessity of information, determination of potential sources of information, planning of search strategies and their realization, evaluation and integration into the already existing systems, and application of information in practice.

Empirical quantitative study of information abilities of pre-service science teachers revealed that information search abilities were self-evaluated better than abilities of its understanding, application or dissemination. According to the respondents, abilities of application and dissemination of information were rather weak. It is necessary to improve these abilities in educational practice, as limitation to information search and understanding abilities leads to discontinued cycle of information exchange (lacking of the main final phases of information exchange and dissapearance of communicative meaning of information).

Self-evaluation of information search abilities of pre-service science teachers was different according to the characteristics related to their experience (study of informatics at secondary school) and plans for future studies. Information search abilities were self-evaluated better by the respondents who studied informatics according to a broader programme and whose plans were related with future studies.

Pre-service science teachers define particular problems, create problem solving scenarios, predict aims and methods of activities and apply knowledge in practice working in groups. Therefore, the search for information is quite an individual process. Pre-service teachers do not communicate and cooperate with members of the group while searching for the subject-related information.

Projects dealing with cross-curricular contents transform the attitude of student-teachers towards strategies of information search and sources of information. They encourage deepening into the contents of the task and provoke reflection on learning. Non-integrated tasks limit the planning of information search, and they promote mechanical and quick search for information using electronic search devices without planning or reflecting on information content.

Development of information abilities initiate metacognitive system of learner‘s identity anticipating tasks and strategies of information search. Such a system is active in a project work: pre-service teachers learn how to find problems and plan ways of their solution. They formulate and verificate hypotheses, gather, analyse and apply information and evaluate it critically, apply gained experience in new contexts, and exchange information through learning in cooperation.

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Curriculum and learning processes

ACADEMIC SUCCESS: WHAT DOES THIS MEAN FOR THE TEACHER?

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Abstract
This article aims to study the question of which according to teachers opinion, there are possible reasons why a student should be considered a person of academic success. It is the result of a qualitative research based on the testimony of school teachers in Rio de Janeiro. Some images were used to complement the speech of the interviewees. It was made a categorization of the five main factors that are considered basic to lead a student to the success. The results indicate that academic success should be studied beyond the school walls. The representations of the interviewed teachers lead us to believe that being a student who has achieved success is to be someone who can handle all his basic needs. Understand the meaning of success for the teacher may be crucial for proper development of his work resulting in consequences in his own life and the lives of students, because it will influence the way he sees and interacts with the student and the education.

Keywords: academic performance, academic achievement, teacher training.

Introducing the theme

This article is based on a survey, qualitative, which studied the issue of teachers' work and education through the prism of student success. Using the theoretical framework of Jodelet and Moscovici, aimed to seek the social representation of success for teachers. Based on the key concept of Serge Moscovici theory - Social Representations - and assuming that this concept helps us to interpret the different aspects of social reality, I tried through this research to identify which social representations of educational attainment are present in the opinions of the actors mentioned, in other words, which representations have been prepared and shared by our society on this issue and have been incorporated by the subjects of this research.

The methodology included the collection of interviews of 18 teachers from six schools of different profiles in the city of Rio de Janeiro (Brazil). Aiming to have an overview of the various types of schools, teachers were interviewed in a traditional school, a (considered by some) alternative school, a technical school, a state school, a federal school and a bilingual school.

Semi-structured interviews were conducted. In addition, some images were submitted for classification as positive or negative relating to success. Images were also used to allow comparison between what is spoken and what is symbolically represented. In analyzing the data for each image the possible meanings of their symbols and how they may have influenced the choices of the teacher were studied. Finally, the results were compared with previous studies in Brazil (Souza e Silva, 2003) and France (Lahire, 1997).

The views of these two authors of different nationalities are relevant to be presented here since they share several commonalities in their research and the research presented here. Why the teachers? First of all, because they already had the experience of being a student and had lived the whole process of the school education where success could (or not) have been experienced. Secondly, because today they are an important part of the history of people who are been shaped within the school institution and, in turn, live the same process. Finally,

understand the meaning of success for the teacher can be crucial to his work as well as for student life, as it will influence how he sees and interacts with the student. According to Souza e Silva (2003, p. 142), "during their entire school career, students are evaluated according to the representation they build by themselves and the representation that is constructed of them in this place."

Factors of influence on academic success

Lahire believes that school failure and school success are "relative notions of extreme variability" that must be analyzed according to their "historical and social variations" (1997, p. 54). This possibility of historical variation occurs, for example, in a given labor market situation. And social variation may be exemplified comparing the same outcome for different families: what is an excellent result for a poor family may be just the minimum expected for an upper class family. In addition, for this author, will be at stake, too, the representation of the ideal student that the teacher constructs, in other words, the perfect student profile designed by the teacher. Souza e Silva, based on his research in which an analysis is made of the trajectory of a specific group of students (residents of the Maré slum, in Rio de Janeiro), is more emphatic: “school success is defined as achievement by students from the popular sectors of higher education qualifications, whether in public or private (undergraduate) schools"(2003, p. 18).

Therefore, in seeking a definition of success, the personal perspective of those who want to define it comes into play.

Besides reflecting on the success, it was proposed a categorization of factors that, in the opinion of teachers, are essential for a student to achieve it. The factors were grouped into five categories: family, teachers/school authority, student self-esteem/willpower, student's overall health and economic resources. They can be summarized in the following scheme:

Table 1. *Success factors categories*

Categories	Main issues for teachers
family	support of parents and family, good family structure, values transmitted by family.
school	teacher competence, good base, competent leadership, consistency in the process, enjoyable class, content, other activities.
student	emotional component, friends, life curriculum that the student brings, willpower, motivation.
health	sports, food, quality of life.
economic status	student´s social stratum and economic resources

Reflecting on the influential factors of school success

We can do a brief reflection on each of the factors mentioned.

The teachers pointed to the category of family and its values as fundamental. The vast majority of respondents pointed out, as fundamental to achieving success, that the student has to have a good family background with parents (or close relatives) encouraging the search for an ideal. Another key issue for teachers was the importance of values transmitted by the family. Lahire (1997), in his research with successful children, says he found families that were used to go to libraries, parents who gave books as gifts to their children, and read the same book to share comments. Likewise, the child may not show any interest in reading because of the lack

of a model that orient in that direction. We note, however, that regardless of the financial condition of the parents, the familiar example is marked as extremely important.
In this study, one of the teachers interviewed highlights: who comes from a family with a tradition of studying, has the tendency to raise the profile of knowledge and this ultimately affects him.
Lahire (1977, p.17) notes that the child "does not 'play', necessarily and directly, in the same way of his family, but finds its own mode of behavior depending on the configuration of interdependence within which he is inserted."
The speech of another interviewee is in line with this author thoughts: The first factor is the family. Have to look at homework, see if he studied ... show that he is not going to school just because one have to go. The school is important, but parents have to believe in it. Valuing school, taking it seriously. Not necessarily they need to be graduated. But you have to believe in the school.
In this speech, the factor of parents' demands is pointed out as a differential in the performance of children. Analyzing on the other hand, indirectly, also charges parents for participation in their children school life. And it makes clear that parents need not only to demand higher standards from the child, but also to believe in this school.
Lahire (1997), referring to family literacy culture, talks about how simple everyday family practices may help in the formation of habits, the organization of time, etc. For example: using agendas, organizing photos by date / events / places, using the calendar, shopping list or things to do, record of financial resources. Such practices lead the child to be organized, to have regularity, to know how to plan which helps in times when students need these skills. To this author:
Precision, regularity, internalization, calm, autonomy, order, clarity and detail view, these qualities are inextricably behavioral and organizational that highlights from a whole set of elements in relation to the context of interview, the style of discourse rather than its content. (...) These family qualities are also school qualities (1997, p.294).
We can assume that the family organization is fundamental to the success of a child, making it clear that when it comes to family organization, does not necessarily refer to having a traditional family model, but the quality of relationships established between its members. One respondent marks the fact that the family may (wrongly) assign the school solely responsibility of the construction of student success. For him, at times, the family plays the "blame game", convicting the school of guiltiness that it should also bear. One possibility for such attitude is the fact that some parents are bewildered by how to educate their children, associated with an old picture for some of the school as the major institution responsible for educating and holding answers to the uncertainty experienced by these parents.
The reports also reveal that the family does not necessarily have to be structured along traditional lines so that their children succeed. One of the professional listened, being well aware of new models of family that exists today, says: I do not have the pretension to imagine what a structured family is anymore, because there is no right or wrong. But if you have family, people who try to walk (together), to clarify things for the student, direct participation of students within the school.... I think this is the way in order to create such a commitment. There's no point discussing a number of issues within the school if there is no commitment. The commitment of a child is not based only on the role of the school. The role of family is fundamental.
It is strong the representation of the family success as a first success, a mainspring which will give rise to other aspects of success. We can say that, in the view of teachers, without it, the other aspects lose some importance.
They also rated the factors related to school and their teachers at the same level. Although the quality of the school as a whole is basal, the research shows that the big stars are the teachers,

their dedication, motivation and pleasure in what they do. They must be competent, have a good education, be updated and live a continuous learning about the use of available resources. It is worth noting that because of the large number of students per class and the fact the teacher needs to work in several schools at the same time, the student ends up being not but a number. This makes this person to lose his individuality in teacher´s view, shadowing characteristics that are peculiar and that can no longer be worked as potential to be developed. We often hear reports of people who testify about teachers who marked their lives were not necessarily those who had more knowledge of the contents to be administered, but those who perceived him as a person, as a unique being. The representation of the teacher as an emblematic figure in the student's life can be very strong, reaching influence on their career choices as reported by Souza e Silva (2003, p.137), based on his research:

In terms of relationships within school field, there is significant importance given by respondents to various specific teachers. They had a reasonable influence on their definitions by university course. Whether by personal style, by the attention given and / or by how developed the content of the discipline, mediation of teachers was important to empathize certain areas of study and, consequently, the choice of graduation to be held.

It is also mentioned the need for a school that gives a more complete education to the student, offering activities outside the classroom, such as projects and competitions, promoting coexistence in the school community. That is, the choice of a (considered) good quality school is one of the factors that influence student success. There are implicit factors in it coming from the principals´ profiles, teachers, peers and the school's own representation.

This statement is reinforced by Souza e Silva (2003, p.136) referring to a model school:

The qualification was held, among other variables, by teachers experience and training, by the operating facilities and its maintenance, by the commitment of certain school groups to the tradition of the institution and, not least, by the possibility of selecting among an expanded universe of candidates for admission, students better prepared. Thus, quality maintenance fed [positive feedback] from the 'distinction' historically conquered by that specific educational institution.

One of the testimonials prioritizes the importance of a more comprehensive student education: Must have one school that offers many opportunities for students to develop their skills, their talents, their tendencies, different types of intelligence he/she has. Here at our school, there are trips, different types of extra-curricular activities. He learns not only within the school but the connection with the things around him, the world around him. The combination of all this prepares the student for the construction of a quality education.

Parallel to this, according to another interviewee, beyond its initial responsibility, the school has another one: Today we have much more responsibility than one should charge to school regarding education. Previously, education was fundamentally constructed at home and just complemented by teachers. Today we do all the work.

Regarding the importance of school, one of the interviewees speaks poetically: The school cannot be a reflex of society but a reflection on society. He adds that in contrast to what is commonly heard about school role in preparing for life: The school does not prepare for life, but school is life. We all who spend most of our time here, if we do not consider the school as life, where is our life?

I dare to say that despite all the difficulties faced by the school today, it still has the representation of a serious institution that makes a significant difference in the lives of those who attend it.

Another key factor in the success of a student is his own interest in learning, where one emphasizes the importance of willpower and discipline of students and reinforces their belief in the value of what they are doing. In addition to the family and school, the student himself has an important role in their school success. For several of those interviewed, the major factor is

his belief in himself. They also emphasized the importance of having the willpower and discipline. And, to be motivated, students need to believe in the value of his education. One respondent said: The success has to come from an awareness of the importance of studying. It is important that students internalize the need to study, to read, to be consistent. Lahire (1997) notices that some children that achieved school success internalize certain rules in the form of "personal needs". The author stresses the need to develop learner autonomy, ie, he learns to "handle problems by himself", understanding his shortcomings in order to solve them, seeking to make use of the resources that are available to him as dictionaries, maps etc.. For Lahire (1997, p.197):children seem to have early internalized (...) school success attainment as an inner necessity, personal, an internal engine. Thus, they have less need for external requests and warnings than other children, and even seem sometimes more mobilized than their parents.

Within this category, an important issue raised by teachers regards the student selection of friends, of people he will relate to. This point is also stressed by Souza e Silva (2003, p.144): "Social networking prioritized by school students in more advanced periods, occupy central roles in the unfolding of their school history".

To feel motivated students need to believe in the value of what they are doing. One respondent raises an important fact: The success has to come from an awareness of the importance of studying. I do not know if it comes from family or school or both. I do not know if it comes from the individual. He has to have a goal and unfortunately we lack this nowadays. When my students talk about the illiteracy of football players and their wages that he (student) will never get. Or the boy who lives in a slum saying that (honest) work will never pay as a drug dealer. We have to create arguments that sometimes even we do not believe based on the surrounding reality, trying to change that thought. I tell them to get out of mediocrity they have to read. At the start of classes, I compare their lives to a company. And wonder what kind of company each one is. A company that is worth having shares? Is bankrupting? What slogan would you use for your company? They are impacted. This teacher did not comment, but this metaphor of life as a company is present in "Palco da Vida" by Fernando Pessoa ("You may have defects, live anxiously and get angry sometimes, but remember that your life is the biggest company in the world. And you can prevent it from going bankrupt").

In the case of the theme of this research, the need to succeed is a factor that could boost the other factors, disrupting the inertial balance of the subject in a way that may lead him to seek his full potential.

The health and economic factors were graded as minor importance, which is somehow unexpected given that this research was conducted in a developing country where much still needs to be done in these areas.

The overall health of the student comprises the importance of a good quality of life, what includes sports and good nutrition. But it was a less valued item among the teachers surveyed, as it was only mentioned briefly in the midst of other comments. It was perceived that health matters only when it is referred to its absence, or only perceived its importance when the student is sick, has some physical limitations, is a drug user, does not have good nutrition.

The student's economic status is a factor that, in the opinion of some teachers, will influence its ability to succeed. The low-income students may have difficulty attending school, as they must, sometimes, miss classes in order to work (part-time). On the other hand, the economic resources allow students to have access to other realities, other cultures through travelling, thus widening their worldview. It also allows families to plan periods of cultural exchange or specific courses aiming the profession that his son wants to follow. It is common to find children studying in bilingual schools (created primarily for children of foreign citizens working in Brazil) just because they plan to continue their studies at universities abroad. Currently, this type of school has the representation of a place that offers a high quality education and, especially, that

ensures inclusion of its student in a globalized world. However, all respondents agree that regardless of the economic factor, success is a real possibility.
Interestingly, the overall results are strongly in line with previous studies, even considering the cultures of different countries as can be seen by comparing with Lahire´s study. In the opinion of teachers, none of the factors alone is sufficient to guarantee student success, but must act complementarily. The findings of this study indicate that school success should be studied and "measured" beyond the school walls, not limiting to notes and ratings. The representations of the interviewed teachers lead us to believe that being a student who has achieved success is to be someone who can handle all his basic needs.

Thinking about images
Data collection was based, besides verbal statements, on choices of representative images about the topic, since this study considered the importance of the image that often says more than many words. Through this reflection, I tried to identify how they could have interfered in the choice of teachers and their representations of success.
As already mentioned, the goal of this task was to compare what was said verbally with the expressed symbolically, because, assuming that social representations are linked to individual and collective imaginary, I found interesting to work with images chosen by be interviewed as it is material rich in meanings.
The images used were captured by me on the Internet and filtered by a judge group (formed by fifteen students and academicians of all ages and backgrounds), at the discretion of presenting different views of success, do not restricting to academic success. That is, I tried to offer various possibilities of linkage to the topic in question: relating to school, jobs, family, and others.
I believe that the choice of teachers, when asked to choose images and classify as positive or negative, was predominantly made by the association which, according to Hall (1986, p.218) is "a spontaneous flow of interconnected thoughts and images around a particular idea, determined by unconscious connections. "So we talk a lot more unconscious than conscious choices when working with images.
For this task, I chose to reflect on the two most voted images as positive image of success.

Image 1

The first one was not chosen by anyone as a negative image. It was voted as the most positive image by referring to the family, the continuity of a process. It shows a man (that everyone understood that it would be a father) holding a child (meaning son) at the top as if he were presenting (to the gods?). It is a moment that the light suggests the dawn. The silhouettes are highlighted by a light that suggests the rising sun. For one interviewee, it represents the family, the continuity of the process. The picture that conveys tranquility. For me, one of the strongest dimensions of human existence is the family. I'm talking about a personal success. It is the possibility of continuity. I say that every generation has to take a step ahead of the previous generation.

The image recalls the scene in the movie "Lion King"[46] one where the wise Rafiki, accompanied by baby's parents (King Mufasa and Queen Sarabi), raises the lion cub Simba and presents him to subjects.
One respondent, referring to himself as an educator, associate this image to what he thinks is a representation of education: is the formation of a citizen, an act of love, affection. The meeting of two generations. A good method of education is common sense and care. He considers this essential, because he perceives it as a representation of a first success which may lead to another: leads me to think about familiar success what a mainspring is. From that I may achieve others. For many teachers, when asked about the factors that influenced the success of a person, the family had a prominent place as this speech reinforces.

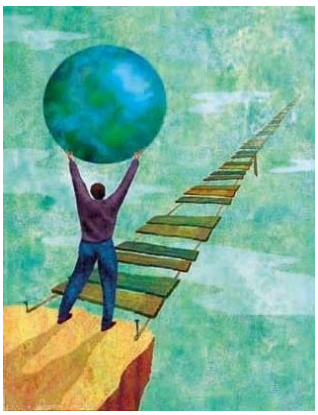

Image 2

In the second image most voted as positive (image 2), we have a man crossing a bridge holding a ball representing the world. An association was made of this image with education: It brings the image of having a way to go, a trajectory.has a gap that you could be diving into this abyss but in face of your perseverance, your goal, you can embrace the world. I think that education gives this condition. You are a winner, going through some obstacles.has some gaps that you could fall over. but taking this positive thinking, with goals, perseverance, and optimism, you could embrace the world as you would like to have a better world.
In this picture, we have the symbolism of the bridge, which suggests a way that allows us to cross to another side. And this bridge in question lacks some boards that were associated with obstacles and challenges to be overcome. The crossing of this passage will bring benefits that extends to the whole society. Where can lead the bridge called educationA teacher sees himself in this picture: the individual has the world in his hands but did not stop, he remains in the search. I identify myself with him.
The two statements regarding this image may be linked to the hero myth that, as Muller says (1997, 8), is always present in human history:
The drama of heroic person, who has the courage to overcome all odds and fears, despite the dangers, to penetrate spheres hitherto unknown and gain new knowledge, fascinated men of all cultures and of all times like any other subject. (...) The human being who venture into the new, the unknown and extraordinary, (...) It represents the high hopes and deep desires of humanity.
Like the hero who, with the victory of his journey, favors humanity, a teacher emphasizes the importance of contributing (favoring) to society to which he belongs: the guy with the world in his hands. He has many opportunities in this world to be who he wants to be, to follow trends.

[46]Movie "The Lion King" from Walt Disney Pictures, 1994.

He has to be happy doing what he likes and needs to contribute to the world that he is holding, to the society. If he likes what he does, he is far more likely to contribute to society doing what he is doing than if he only targets the money or desire to be the first, best, or have an (self)image that is not true…

We may emphasize that these statements do not realize success as “always win”, but facing possible obstacles and surmounting them. This idea is close to a quote from Booker T. Washington cited by Oliveira (1991, p. 283): "Success is not measured by heights that a person attains, but by the obstacles he had to overcome to achieve them."

In conclusion...

It is important to remember that in relation to factors that favor the achievement of academic success, none of the factors mentioned by teachers is a determining force alone. Therefore, several factors operate interconnected with each other; sometimes one can have more prominence than the other. Lahire (1997, p. 287) adds that "these multiple elements do not add up to each other, but combine to create the reality". In fact, in order to a student succeed in school, all factors must act together. They are not decisive because, despite being present in a person's life, there is no guarantee of success. And on the other hand, we have several testimonies of people who, despite the absence of some of these factors in their lives, have reached some level of success. Therefore, academic success is a process built along a trajectory. Souza e Silva (2003, p. 142) highlights the importance of representation created by educators, the family and the student in his own life.

The meeting between the current family judgment and that bound by school professionals establishes the expectation of students’ permanence. In the process, affirmed judgments are internalized by the child and their practices are evaluated according to these judgments. The way we react to them will be critical to the progressive dissonance / consonance of the child in relation to his school. What happens then is something greater than the known 'self-fulfilling prophecy' - centered on the expectation of the teacher. What is evident in the case, is a 'prophetic' movement constructed by society, including the student. The process occurs not only during childhood. During their entire school career, students are evaluated according to the representation that they build for themselves and the one that is built from them in this space.

The issue of academic success is relevant both in the social and academic sense, since through it we can change the viewing angle on the issue of learning. Instead of directing my gaze to the causes of failures in the process of learning (as in the usual approach of focusing on school failure and overcoming its causes as a path to success) I proposed to study this matter from another point of view, seeking the positive, what went right, what led to success.

We can say that understanding the meaning of success for the teacher may be crucial for proper development of his work resulting in consequences in his own life and the lives of the students, because, as already mentioned, it will influence the way he sees and how the student stands in relation to him and to education.

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UNDERSTANDING THE DIFFICULTIES IN MATHEMATICS OF ENGINEERING STUDENTS IN THE TRANSITION FROM SECOND TO THIRD LEVEL EDUCATION

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Abstract
The students' performance in national examinations of second level school education / access to third level education is often poor. The same result is also present in the Program for International Student Assessment (PISA), which induces that, students who have access to third level education in general have difficulties in basic mathematics content. Those difficulties may be assumed as one of the causes of abandonment and the existence of failures. Skills development outside the third level school and its relation to the reasons associated with lack of success in Mathematics Teaching Engineering issues have caused debate and led to reflections of teachers about their teaching practices.
A first research work of Bigotte de Almeida, Fidalgo, Rasteiro (2011) and Bigotte de Almeida et al. (2011) aimed to perceive the reasons why students do not succeed on Differential and Integral Calculus courses, taught in the 1st year of degrees in engineering at Instituto Superior Engenharia de Coimbra (ISEC), led to the conclusion that a greater understanding of the difficulties faced by these students was needed and had to be studied.
Frequently, the students found great difficulty in Engineering Science courses in the area of mathematics, especially with the basic infinitesimal calculus leading to a high failure rate and therefore a lack of motivation of all individuals involved in the education process. As a result teachers are in constant self-reflection on strategies designed to fit the best, the increasing heterogeneity found in the skills acquired by students in second level school education. Taking into account the results obtained in a diagnostic test performed by students in the 1st semester of this academic year, an exploratory study aims to analyse the regularity with which certain errors in basic skills (essential for full integration into curriculum courses such as Differential and Integral Calculus) appear. This analysis will be an important tool in informing the state of students' knowledge, essential in the teaching/learning process, and contribute, through an interpretation and categorization of these errors, for the selection of activities that promote the reorganization of teaching practices and lead to the development of skills, fundamental to success in undergraduate engineering. The reorganization of the teaching/learning process has to take into account the fact that learning styles have been modified result of technological developments. It is imperative that teachers and students have consciousness that working group learning is an urgent necessity.

Keywords: teaching/learning processes, mathematical basic errors

Introduction

It was around the 90's that the quality of learning in higher education emerged in the reflection of the scientific community as a problem arising from a further deepening of democratic systems. Consequently, we are witnessing a growing number of students attending this level of education that show a variety of personal and motivational characteristics. No less important, the politics of higher education access in Portugal, as exemplified by the regime aimed at those over 23 years old, or students from the professional and technological courses, brought new

challenges to the university and polytechnic institutions, requiring them an ability to adjust its spaces, making them more attractive and competitive, able to motivate an heterogeneous audience as a result of their needs and expectations.

Additionally, the paradigm emanating from the Bologna Declaration admits a change assumption: to replace a teacher-centered model and transmission of knowledge by a learner-centered model and the construction of knowledge by assigning significance to this knowledge. Thus, it is accepted that in addition to the acquisition of knowledge, the training component becomes part of promoting the development of personal and professional skills that enable students to better adjust to the flexibility, complexity and adaptability in different life contexts.

No less important, due to the determination to continue to develop the quality of training in higher education it comes a heightened attention to school failure, making the promotion of success a fundamental objective of the institutions' action. In the last decade, although many studies have been seeking to understand the reality of academic failure in higher education, leading to investigations that seek to know, in depth, how learning takes place in students' level of education, some analysis on the relationship between teaching methods and how students learn (Grácio et al., 2005) need to be developed. On the other hand it is important to contextualize these concerns in the particular case of teaching and learning mathematics. The authors, mathematics teachers in the various degree courses taught at the Instituto Superior de Engenharia de Coimbra, are confronted with an increasing lack of motivation, uninterested and consequent neglect of students in relation to the mathematic courses. This situation, compounded by the difficulty shown by students in elementary and basic concepts, essential to successful integration in the syllabus, inevitably leads to high failure rates and subsequent concern of the teachers.

In this new environment of teaching/learning arises a greater demand for higher education teaching, higher criticism, a further reflection on their teaching practice and a constant adjustment of the difficulties and educational courses to particular characteristics of their students in respect to the meaningful construction of knowledge.

A first research of Bigotte de Almeida, Fidalgo and Rasteiro (2011) and Bigotte de Almeida et al. (2011) aimed to perceive the reasons why students do not succeed on Differential and Integral Calculus courses, taught in the 1st year of degrees in engineering at Instituto Superior Engenharia de Coimbra (ISEC), led to the following conclusions: the students' class attendance decreases throughout the semester and the assessment tests participation is only relevant if we do not consider final exams (students clearly prefer a type of distributed evaluation meaning with this, that the tests are given throughout the semester). Other conclusion of the referred work was that a greater understanding of the difficulties faced by these students was needed and had to be studied. Taking into account these preoccupations an investigation group *GIDiMatE – Grupo de Investigação em Didática da Matemática na Engenharia,* was created and its first action, (Bigotte de Almeida et al., 2011) was to diagnose the state of knowledge possessed by 1st year students. Thus a diagnostic test was performed by students in the 1st semester of this academic year, 2011/2012, which allowed concluding that students show a clear lack of basic skills required for the contents in Differential and Integral Calculus curricular units, regardless of how they acceded to higher education. It is worth noting that students with first enrollment have superior results than those obtained by students who have failed the course in the previous years, which expresses a possible loss of basic elementary competencies.

Taking into account the results obtained in a diagnostic test performed by students in the 1st semester of this academic year, an exploratory study aims to analyze the regularity with which certain errors in basic and elementary skills (essential for full integration into curriculum courses such as Differential and Integral Calculus) appear. The errors analysed in this paper are considered to belong to second and third Portuguese cycle of studies and will, in following, be

designated by basic. The elementary errors are skills supposed to be achieved at Portuguese High School (fourth study cicle) level and will not be considered in this work.
A table of possible basic errors was designed based on reviewed literature on the subject and also teacher's expertise.
This analysis will be an important tool in informing the state of students' knowledge, essential in the teaching/learning process, and contribute, through an interpretation and categorization of these errors, for the selection of activities that promote the reorganization of teaching practices and lead to the development of skills, fundamental to success in undergraduate engineering. The reorganization of the teaching/learning process has to take into account the fact that learning styles have been modified result of technological developments. It is imperative that teachers and students have consciousness that working group learning is an urgent necessity.
This exploratory study is integrated into the design of research-action "*Understand learning to better teach*" which the authors develop in the activities of the research group *GIDiMatE – Grupo de Investigação em Didática da Matemática na Engenharia.*

Theoretical framework
One of the major concerns of Differential and Integral Calculus courses' teachers focuses on how to present the concepts integrated into curricular units such as Mathematical Analysis I, taught in the 1st year of undergraduate engineering (primitives, integral calculus and differential equations), which allows students a better understanding of these topics.
The experience of researchers over the years, as teachers in higher education, has established the lack of preparation of students in basic skills which are essential in those curricular units, and it is therefore essential to know how, where and why students learn or not learn Mathematics.
This investigation, which is supported on errors, does not intend to evaluate the student, but to contribute to understanding how he takes ownership of certain knowledge and what difficulties he still needs to overcome before being able to work with the content in question. Thus, the analysis of errors can also be understood as a teaching methodology, if classroom activities are developed in which the students' errors are exploited and taken as learning tools.
Several studies claim that the integration of students in scientific area of Mathematics curricular units is related to the degree of knowledge gained in previous school levels. Thus the importance of making a survey of errors that students usually make, which prevent them from correctly solve the questions proposed in the assessment tests, is high. Indeed, the observation of mistakes made by students as well as the various versions in which they arise in problem's resolutions associated with the syllabus of curricular units may allow the construction of a strategies reference base frame to be included in teaching practice.
In this study, the analysis of errors has been understood as a teaching methodology since in its interpretation will be highlight the absence of basic and/or elementary skills critical to the contents of Differential and Integral Calculus Curricular Unit avoiding the lack of contents follow-up which, could involve a student demoralisation and lead necessarily to the lessons' abandonment and school failure.
The European Society for Engineering Education, SEFI, through its workgroup MSW (Mathematics Working Group) promotes a discussion forum and advice addressed to all those interested in the mathematics education of engineering students in Europe. In this context, and in order to define what teaching math contents were appropriate for engineering, the first curricular guidance document was created in 1992. That document makes a detailed and structured list of topics, organized by levels, which correspond to specific contents essential to Mathematics learning in engineering degrees. Subsequently, in 2002, the MSW has updated the document releasing a report, *Mathematics for the European Engineer – A Curriculum for the*

Twenty-First Century (SEFI, 2002) with learning outcomes rather than a simple list of topics. Regarding the minimum knowledge advised to higher education entry to an engineering course, these learning outcomes are detailed by areas and identified by topics in subsection 3.1.1 *Core Zero pp-24*.

From among these areas and according to Portuguese school education program, GIDiMatE gave special attention to algebra, analysis and calculus, geometry and trigonometry. These areas were considered by the group as being the most relevant, because they can be assumed to be the essential contents of most bibliographies of scientific area of Mathematics in higher education of engineering.

The research question is: "How to overcome Mathematic difficulties that were pointed out by the most common errors made by 1st year students of undergraduate engineering?"

Methodology

Generally the methodology followed the steps of content analysis where a first reading, which coincided with the correction of assessment tests, helped to decide on the units that would be object of analysis. Subsequently categories were defined, according to some criteria previously established but also adapted subsequently in harmony with the information obtained, either in the sample collected or in literature, in order to understand the situation. By comparison, systematic encoding and extraction of some regularity, the researchers wish to obtain information that may explain the difficulties in Mathematics, namely in the syllabus, regarding the second and third cycles of basic education.

The description of each category will give an in-depth errors understanding since their causality is interpreted on a description basis.

Starting from the research question: "How to overcome Mathematic difficulties that were pointed out by the most common errors made by 1st year students of undergraduate engineering?", the following action strategies were developed:

Analyze the regularity with which certain errors in basic knowledge, essential to full integration in the Curriculum Units of Differential and Integral Calculus, taught by the undergraduate Civil Engineering and Computer Science Engineering, appear;

Categorize those errors and identify the basic mathematical knowledge necessary to overcome them;

To design an errors data grid and perform a quantitative and qualitative analysis;

To do an in-depth study of some examples found in assessment tests in order to better understand the students' difficulties;

To propose a reference basic frame that allows the selection and construction of activities to promote the reorganisation of educational practices. The realization of those activities, particularly in a Competence Centre (to be created) opened to all students enrolled in ISEC, will be a contribution to the development of fundamental knowledge that is necessary to succeed in undergraduate engineering.

The sample

Students who access the Instituto Superior de Engenharia de Coimbra (RAC-SA, 2010) have very different characteristics, both at the origin (on average 60% of students placed on engineering degrees do not come from the district of Coimbra) and in respect of basic academic training (the majority of students placed, approximately 63%, are from the science and technology courses). In the current scholar year, 2011/2012, application notes of Computer Science Engineering students range from 108.3 to 168.3 and were engaged 133 (81 have chosen ISEC as first option). In Civil Engineering the application classification varies from 110 to 180.3 and 70 students were engaged (43 have chosen ISEC as first option).

This exploratory study was carried out in the 1st semester of the academic year 2011/2012 and comes in the sequence of conclusions grasped by the researchers, in previous investigations, regarding the need to understand the failure in the mathematics curricular units taught in undergraduate engineering, and the desire to identify the students' degree of knowledge in elementary and basic mathematical content found essential to integration in higher education.

In order to define strategies for teaching/learning that lead to meaningful learning, it was made the analysis of the errors in the assessment tests of students in the courses of Mathematical Analysis I, degree in Computer Science Engineering, and Mathematics I, Civil Engineering degree. These curriculum units are taught in 1st year of undergraduate and integrate into their syllabus: differential calculus (as High School revision plan), primitives and respective techniques, improper integrals and definite integral calculus, integral calculus applications, areas and volumes, curve lengths, and differential equations. The evaluation methodologies proposed in these two curricular units are different: while the first integrates distributed evaluation processes (Mid-term tests – T1 and T2, with taught content's distribution, without requiring a minimum classification and with the possibility of performing each one of the assessment tests in regular times scheduled at the exams calendar – EX) the second only provides for the summative evaluation, by normal examination at regular times scheduled at the exams calendar – EX . Thus the performed tests examined are those presented in Figure 1.

		Computer Science Engineering	**Civil Engineering**
		Students evaluated	**Students evaluated**
	T1	98	
1st exam	**T1**	5	
	T2	60	
	EX	20	83
2nd exam	**T1**	7	
	T2	18	
	EX	39	42

Figure 1. *Number of students that performed the assessment tests*

The researchers' experience, and the collected literature review (Cury, 2005, 2007; Gill, 2007), led them to identify a set of errors that empirically were consider as being the most common and impeditive to correctly answer to certain questions.

Under these assumptions a draft of an important errors grid was designed. The option in this approach fell in "The National Curriculum of Basic Education-Core Competencies" for Mathematics.

Errors categorization

Error A: Powers functions' product

Frequently students don't know how to generalize powers' product properties, included in elementary Mathematics program, to the algebraic expressions (power functions' product). Thus, identity

$$(a(x)b(x))^p = a(x)b(x)^p \ , p \in Q \ ,$$

appears to be a very common error. It was included in this case the errors obtained by the wrong application in case of negative power.

Error B: Powers of sums

The easy generalization of powers' product properties to the power functions' summation is verified with pronounced regularity, assuming, in general, the form

$(a(x)+b(x))^p = [a(x)]^p + [b(x)]^p \ , p \in Q$

being the most frequent representations

$(a^2(x)+b^2(x))^{\frac{1}{2}} = a(x)+b(x)$

$(a(x) \pm b(x))^2 = [a(x)]^2 \pm [b(x)]^2$

In this case, students additionally reveal not to know how to apply common polynomials multiplication properties using wrongly the identity $a(x)^p \pm a(x)^q = a(x)^{p \pm q}$, $p,q \in Q$, which confirms that those properties weren't understood and therefore aren't correctly applied.

Error C: Sum of fractions

The rules for determining the sum of rational numbers (with the need to reduce to the same common denominator) is not understood by the students and, therefore they generalize the error to the sum of two rational algebraic expressions. It is usual to find the error:

$$\frac{a(x)+b(x)}{c(x)+d(x)} = \frac{a(x)}{c(x)} + \frac{b(x)}{d(x)}.$$

From the interpretation of the various ways in which this error occurs, we can induce that it arises as a result of a non-identification of the addition operation properties, showing once again some misperception with the multiplication. Note that one of the most frequent representations of this error is:

$$\frac{1}{c(x)+d(x)} = \frac{1}{c(x)} + \frac{1}{d(x)}$$

what might be considered as an error type B when the function power is equal to -1.

Error D: Distributive law from elementary algebra

The wrong application of this property led to the detection of a set of errors associated with it and applied in various situations, in particular, in simplifying fractions and in solving equations, as for example:

$\frac{a(x)+b(x)}{a(x)} = b(x)$ or $\frac{a(x)}{a(x)+b(x)} = \frac{1}{b(x)}$

$$a(x)b(x)+c(x) = d(x) \Leftrightarrow a(x)+c(x) = \frac{d(x)}{b(x)}$$

Once again, it becomes clear the inappropriate "over generalization" of the addition properties by rearrangement of the corresponding multiplication properties.

This classification also had support on the learning outcomes related to knowledge and capacities organized by mathematics filed level, proposed by the Mathematics Working Group of SEFI (European Society for Engineering Education).

The four categories defined above were framed in Core Zero which contains a list of topics that covers, in addition to the High School or pre-university school syllabus lectured in European countries, requirements considered by the group, as constituting a solid platform of knowledge essential for the study of mathematics in engineering degrees. The performed analysis is included on Algebra categorization area, in particular regarding the arithmetic of real numbers and algebraic expressions and formulas.

Data analysis

With this work is not intended to make any results interpretation regarding the level of the student assessment procedures classification, but just look in a deep and systematic form into the written responses to the questions posed and extract, within the content analysis, information that may enable progress in the knowledge of the causes of the errors made by students, regardless of their former education or their greater or lesser talent for mathematics. With regard to quantitative analysis research, the assessment tests of students effectively assessed in the undergraduate Civil Engineering and Computer Science Engineering were observed in accordance with the adopted methodology. The aim was to count the number of tests that contained at least one error in basic knowledge at Mathematics basic education curriculum level, essential to the full integration in the Curriculum Units of Mathematical Analysis I.

It was found that the percentage of errors is higher than 72% and if we consider the average percentage of errors in case of the Computer Science Engineering exam, there is not a significant difference between the two analysed courses.

		Computer Science Engineering		**Civil Engineering**	
		Tests with errors		**Tests with errors**	
	T1	72	74%		
1st Exam	**T1**	5	100%		
	T2	45	75%		
	EX	16	80%	60	72%
2nd Exam	**T1**	6	86%		
	T2	12	67%		
	EX	27	69%	32	76%

Figure 2. *Percentage of assessment tests with errors*

In a more refine analysis of the various assessment tests performed by the students the errors found were counted and, based on the first approach taken, included into the categorisation set. The preparation of the several assessment tests held throughout the semester did not have as prior concern the detection of errors for later content's analysis and so, it was realized that a certain type of errors was associated to some particular questions. Furthermore, in this approach the questions that have not been answered by the students were not removed from the sample, which implies that the percentages observed refer to the whole assessment tests.

It should be noted that, the absence of a response does not infer any conclusion and also that the same error occurs more than once in any given assessment test or question or even the occurrence of multiple errors in the same answer. Thus, whereas one wants with this exploratory study to define a basic reference guide enabling the selection and construction of activities, that promote the reorganisation of educational practices, helpful to knowledge development fundamental to the success in engineering undergraduate students, the researchers assumed that the ratio of errors should be determined taking into account the total number of observed errors. It has been found that the most common error made by Computer Science and Engineering's students was the one included in category D "Distributive law from elementary algebra" (35%) and for Civil Engineering's students was the one included in category B "Powers of sums" (32%).

	Computer Science Engineering	# type of error /# total of errors	Civil Engineering	# type of error /# total of errors
error A	44	18%	22	25%
error B	65	27%	28	32%
error C	47	20%	17	20%
error D	83	35%	20	23%

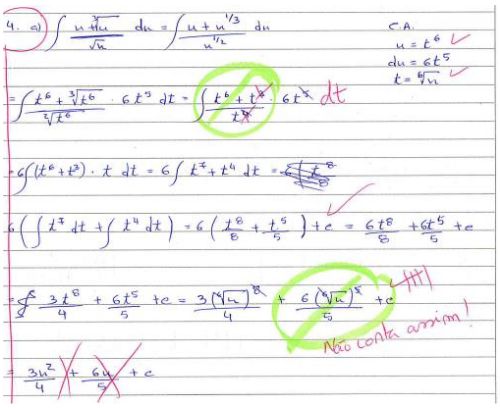
Figure 3. *Relative frequencies distribution of errors by category and by analyzed course*

In addition to the errors that led to the categorization presented above, other type of errors were detected which may illustrate particular knowledge difficulties within the basic research notions that have been chosen to do this exploratory study. With the purpose of giving a more detailed illustration of some errors that deviate from the standardized ones, a few examples were selected from the assessment tests of Computer Science Engineering. The examples were chosen taking into account the following criteria:

- test with the largest number of errors, by category;
- in case of a tie event, test of an approved Curriculum Unit student.

After the collection of these data, it was found that all selected tests emerged in the test held at the 1st exam taken in regular times scheduled at the exams calendar – T2's examination, in which primitives calculus's techniques were evaluated. It should be noted that in this Curriculum Unit the evaluation methodology adopted was continuous/distributed, with syllabus division.

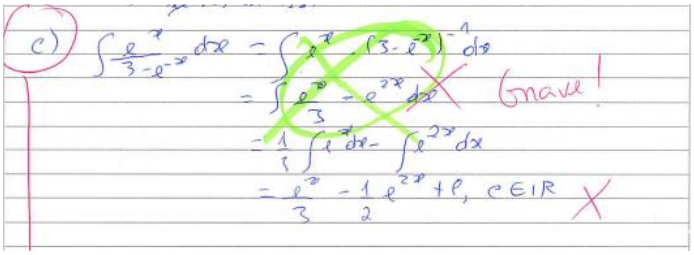
Example related to the error type A:



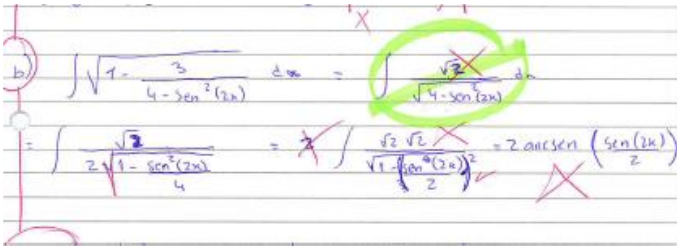
The student shows confusion between powers with fractional exponent and quotient of powers with the same base.

Example related to the error type B:

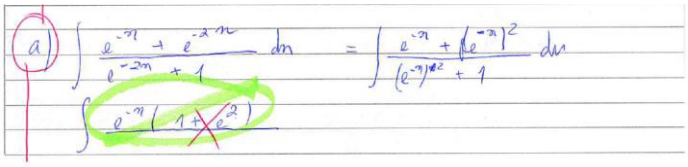
Although the student reveals knowledge of the implementation of distributive property he does not respect, however, the order of operations. Additionally the common representation of error type B (powers of sums) is present.



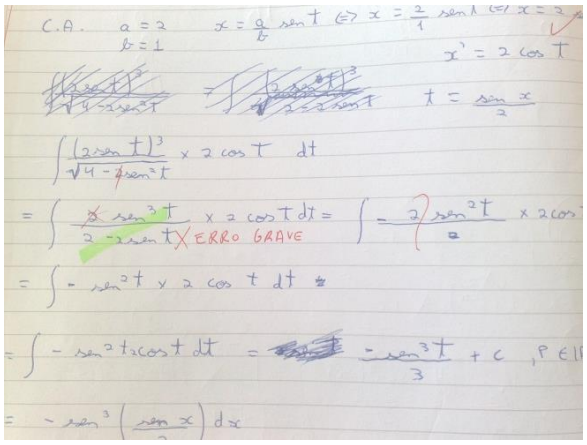
Example related to the error type C:
This example intends to show one of several wrong ways students use to add fractions.



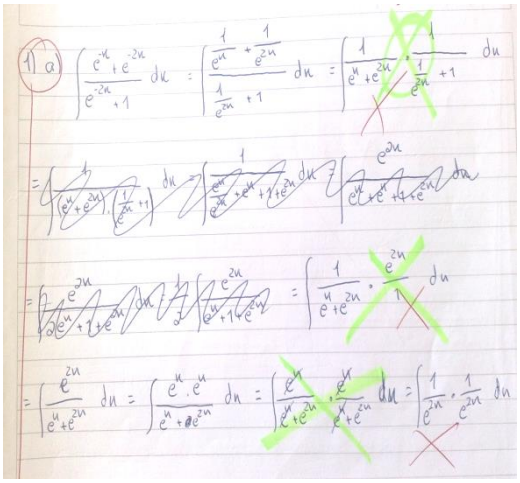
Example related to the error type D:
The student, when applying the distributive property of multiplication over addition, expresses ignorance of power functions properties .



In order to illustrate the existence of various types of errors in the same resolution the following examples were randomly selected:
We can verify that the student, in the application of the primitive's calculus using change of variable technique makes a sequence of errors that are common to several similar situations.



Non identification of the identity $(2sent)^2 = 4sen^2t$ (error type A);
Improper simplification through equality $\sqrt{4-2sen^2t} = 2-2\,sen\,t$ (error type B).
When we try to understand this common mistake, highlights the inappropriate "over generalization" of the multiplication properties through its application in the addition or the improper application of notable cases of the polynomials multiplication, using:
the wrong equality $4-2sen^2t = (2-2sent)^2$;
wrong fraction simplification writing the identity $\frac{2sen^3(t)}{2-2sen(t)} = \frac{2sen^2t}{2}$ (error type C).



The student to solve a primitive that was at the beginning identified as direct made the following errors:
misuse of sum of fractions highlighting the most common representation of the error C, through the application of the false equality $\frac{1}{e^x}+\frac{1}{e^{2x}} = \frac{1}{e^x+e^{2x}}$;

wrong fraction simplification: $\frac{1}{\frac{1}{e^{2x}}+1}=\frac{e^{2x}}{1}$;

at the point in the resolution where the student writes $\frac{e^x e^x}{e^x+e^{2x}}=\frac{e^x}{e^x+e^{2x}}\frac{e^x}{e^x+e^{2x}}$ he/she applies the fractions addition properties, "interpreting" the product in the numerator as a sum; in the final simplification an error type D occurs in one of its most frequent representations.

Conclusions and recommendations

A more specific analysis in interpretation of these errors, as well as its various representations in student's assessment tests indicates the absence of basic knowledge at the level of understanding and differentiation of properties which are inherent of addition and multiplication operations.

It was also noted that the errors' frequency is directly related to the question posed which infers the need to implement strategies in the classroom or outside classroom additional work that could meet the real needs of the students. Thus, it is suggested the preparation of activities focused at the acquisition of basic knowledge, which may be done in parallel with the development of the Curriculum Unit, in order to overcome the difficulties which were detected.

One of the possible strategies to adopt in the classroom can be peer learning since it is a form of cooperative learning that enhances the value of student-student interaction and results in various advantageous learning outcomes. To implement modular mini-courses, inside classroom and/or using an e-learning scheme, can also contribute to the full integration of students in higher education in particular in engineering degrees.

According to the Report of the Mathematics Working Group (SEFI), it was concluded that students whose resolutions have errors reveal difficulties in arithmetic of real numbers, namely:

- understand the rules governing the existence of powers of a number;
- combine powers of a number;
- evaluate negative powers of the number;
- carry out arithmetic operations on fractions;
- represent roots the fractional powers and Algebraic expressions and formulae, such as add and subtract algebraic expressions and simplify the result;
- multiply two algebraic expressions, removing brackets;
- carry out the operations add, subtract, multiply and divide on algebraic fractions.

For the proper functioning of Differential and Integral Calculus courses it is recommended, at its beginning to acquire the consciousness, through a diagnostic test, of the early students' difficulties in order to make a timely work routine, avoiding the demotivation and the consequent abandonment to school, factors that lead inevitably to failure at school.

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EXCURSIONS IN LEARNING TO TEACH MATH PROBLEM SOLVING

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Abstract
Problem solving is considered a powerful learning tool in Math Education, both for learner and teacher. It might typically strengthen motivation of subjects involved by the challenges they have to overcome and should foster the development of three main vectors: metacognition, knowledge and experience. Successful implementation depends on teacher educators capable to induce learning through effective teaching. Educators must be conscientious of their influence on their pupil's attitude facing unexpected questions. To achieve this conscientiousness, teacher training should: *1)* Be based in a model of the mathematical-problem-solving activity which underline psychological behavior. A classical description was given by the Hungarian mathematician George Pólya; more recent work was done by Alan Schoenfeld. We suggest a balanced approach which uses applications of mathematics but also pure problems. We must motivate, but also wish to train formal methods and argumentation. So teacher training should also *2)* Contain ingredients that will help to arouse students' interest and participation; it should *3)* Provide possibilities of sharing experiences/resources/ information among teachers, considering them the agents of dissemination of teaching tricks in the educational community; and to be most effective *4)* Teacher training should concentrate on mathematical problems that spread or need significant knowledge and provide opportunity for teaching to control the cognitive and metacognitive processes.

Keywords: heuristics, mathematics, problem based learning, problem solving

A glimpse into mathematical educational problem solving

The first author typically teaches adolescents aged 15-19 that have dropped out from standard secondary education and started professional specialization that confers a Level IV certificate in the European Qualifications Framework. In the past these teenagers contributed to the big dropout rate in Portugal, compared with other countries (Ferreira & de Lima, 2006, p. 100). To solve this long term problem, in the 1990's, Professional Schools started to flourish, first with little feedback but recently they became an option to a significant portion of the school population. What math contents are suitable to teach? The available textbooks, in general, are simple adaptations from standard curriculum that don't correspond to the mathematics these pupils one day will use and consequently don't capture their attention. We were reminded of the words of the mathematician and problem solver George Pólya (1887 – 1985) that a teacher who only makes routine exercises runs danger in annihilating the student's interest and potential.

Although this paper was motivated by these experiences, it is not directly concerned with the teenagers mentioned. Our hope is rather to contribute to diminish school failure rate, which in Portugal is considered to be in a good part due to mathematics, by enriching the critical ninth grade math curriculum already with a problem oriented approach. In other words, the rationale is: if students had been challenged early enough by problems, they would have a less passive attitude towards mathematics. The aim is to engage students into mathematics otherwise they

will miss know-how essential to further studies and professional career. In his classroom the first author experienced that students react positively when challenged by appropriate mathematical problems, packed into interesting stories.
In this document we: *i)* relate our initiatives to add more problem solving activity into the math curriculum. We would like to potentiate this positive experience with problem solving. *ii)* try to convey what problem solving in mathematics means and *iii)* critically assess how to introduce it in order to avoid failure of one more educational project. Temporary excitement with problem solving is not the same as long term consolidation of mathematical knowledge.
The second and third authors wish to state that the initiative to bring more problem solving, here reported, into the math curriculum is for the most part due to the initiative of the first one. Equally true is that the style and the metaphors of this paper are mostly due to the first author. Although the second author, trains since years school kids for Olympiads, all three authors are at the beginning of a journey which, when enriched by data, experience, and results found by themselves and other writers, that have to be still studied in detail, will make them better teachers of heuristics.

Heuristics in math teaching – tools for problem solving
In recognition of what was described it will be important to have sufficiently many teachers who know how to solve problems and later how to teach it. As we shall see, already apparently simple problems are difficult for the usual pupil.
We have endeavored to bring together some eighteen high school teachers, in *Heuristics in Math Teaching – Tools for Problem Solving*, a fifty hour course at Nova Ágora Educational Center, in Coimbra, last trimester of 2011. The main purpose was to exhibit and study different mathematical problems, typically for ninth graders, inspired by George Pólya's problem solving model put forth in *How to Solve It*, published in 1945. It can be substantiated by more modern insights into cognitive processes: our plan is to implement further workshops each one of which will draw on earlier experiences. In this sense this first meeting, whose lessons and results will be developed in later sections, was an important learning experience for us.

The workshop consisted in the following parts *A*, *B*, *C*, *D* and *E*:
A. Five weekly meetings (twelve hours in total, September and October 2011) between the authors and the high school teachers in which the project was presented and participants were briefed concerning their expectations; a holistic view of problem solving in education was given: that is the theories of different authors on this subject were presented; classic problems were elucidated, many extracted from History of Mathematics; the benefits from interaction between teacher and student when attacking problems as presented by Pólya were shown; selected questions from *International Mathematical Kangaroo*[47] competitions and problems from the *Brazilian Mathematical Olympiads*[48] were given to the participants, explored and solved individually and in small groups; we explained some heuristic procedures applicable in problem solving.

B. Individual work of the teachers in the classrooms of their schools (fifteen hours, the last two weeks of October). After answering a questionnaire received from their teachers about their attitudes towards mathematics and some lessons on problem solving the students received a guide inspired by Polya's suggested four steps, namely *i)* comprehension of the problem; *ii)* planning the solution; *iii)* executing the plan; *iv)* revision. Teachers implemented a test to

[47] Multiple choice questionnaires invented by Peter O'Holloran, math teacher at Sydney, Australia, in the early 1980's. In (1991) this idea was implemented in France, baptized as *Kangaroo without borders*. Since then, every year, students from countries all around the globe participate in this event.
[48] Competition organized by the Brazilian Mathematical Society.

evaluate student's capacity using questions from the *International Mathematical Kangaroo* competitions.
C. Four weekly meetings (ten hours, during November). Our workshop teachers presented their experiences with the implementation referred, results obtained and major difficulties felt by pupils through problem solving. More problems from the *Brazilian Mathematical Olympiads* and the History of Mathematics were discussed. Among others, we showed the short animation *Changing Education Paradigms* inspired by a talk of Sir Ken Robinson (2006), followed by discussion.
D. Individual work (ten hours, end of November and first week of December). Teachers implemented problems of their choice and others proposed by the authors; they compiled student's achievements in a portfolio.
E. Final meeting (three hours). Resources, in digital support, have been offered to participants. Statistics extracted from *GAVE*[49] concerning 2010 ninth grade Math National Exam has been discussed.

Insights through theoretical and practical framework

Methodological steps to overcome math problem solving difficulties

Civilization steps forward by solving theoretical, practical and multidisciplinary problems. Therefore problem solvers are important for society: in fact many scientists and other influential persons tell us that more important than mere competency, is to be able to create novelty from it. They worry that our courses and student evaluations rely too much on rod memory. It is completely natural to teach problem solving drawing on the experience of proficient problem solvers. Mathematical problem solving is, often, a difficult task and it requires hard work. Fortunately we can find help in treatises on the *art of invention*, and in books like *The Psychology of Invention in the Mathematical Field* by Jacques Hadamard (1865 – 1963).
The ideas of how to teach problem solving were crystallized in George Pólya's *How to Solve It* (2004) book. There he presents four major steps to help answering successfully. Succinctly put, the first step consists in reading and understanding the question. A critical point is to identify what we want to know and select relevant information without forgetting possible restrictions associated to the problem. Nobody can answer a question without previously understanding its meaning. If there is a picture related to the problem, it must be drawn including relevant data; appropriate notation for what is unknown should be chosen. It is useless to make calculations without understanding the problem statement.
Are we ready to move forward? If the answer is positive, a plan is necessary, connecting the given information with the unknown. If we have no ideas, the author suggests the study of a similar problem, evaluating the possibility to use that resolution method. The goal now is to establish a plan that can be implemented. This is the hardest part! Questions are welcomed, but George Pólya underlines that the less we know about the subject, the harder it will be to make the right ones; in fact it will be impossible if the necessary background is lacking.
The third stage is the plan execution. Each step must be carefully checked in order to avoid mistakes.
Finally, after the solution is written it is useful to revisit the work done to possibly improve the strategy and give a more elegant solution, which in the best cases may even satisfy the mathematician's sense of aesthetics. Such afterthoughts contribute also to consolidate knowledge acquisition. Finding a different way to the final result stimulates imagination and often brings to bear different mathematical tools.
Each step above is important. Even if a suddenly shining idea seems swift the way to a solution, it is not advisable to lose patience and jump deliberately over the steps presented before

[49] *Gabinete de Avaliação Educacional*, Ministry of Education, Portugal.

because experience shows that the devil may lurk in the detail. Only when the general structure of a problem is understood, and a plan is established, it is advisable to work out the details. George Pólya's book doesn't promise miraculous solutions to all problems, but it contains excellent guidelines. Progress in Mathematics, such as in other fields, is achieved with work, perseverance, method and serendipity.

"Solving problems is a practical skill like, let us say, swimming. We acquire any practical skill by imitation and practice. Trying to swim, you imitate what other people do with their hands and feet to keep their heads above water, and, finally, you learn to swim by practicing swimming. Trying to solve problems, you have to observe and to imitate what other people do when solving problems, and finally, you learn to do problems by doing them." (Polya, 2004, pp. 4-5)

The authors wish to underline for the mathematical layperson that solving mathematical problems is harder than swimming. Anyway, mathematical activity can indeed be compared with sports (Schoenfeld A. H., 1983). The practitioner must be dynamic, but this is not sufficient; a professor has the responsibility to optimize pupils' results. He can be likened to a team coach and do more than just to produce the procedure. Under his supervision the athlete performs training and when necessary the coach corrects and specifies a more efficient method. In the same way a good teacher has to present/propose/induce efficient decisions that lead to save student's time. Where does the boundary between failure and success stand?

Problem solving achievement uses domain specific strategies besides weak methods or general heuristics (Anderson, 1987). In athletics, high jump is an extremely demanding technical sport. During the 1896 Athens Olympic Games, Ellery Harding Clark (1874 – 1949) won the competition with 1,81m leap. In the 19th century the athlete's approach was diagonal to the bar, raising one leg first and afterwards the remaining body. New techniques emerged; one of the most astonishing was performed in 1968 Mexico City Olympic Games by Richard *"Dick"* Fosbury. In a similar way an adequate and sophisticated method can solve a problem much more efficiently than standard procedures or the first approach that comes to mind. Without such efficiency it would be impossible for some individuals to solve all the six problems they are confronted with in the *International Mathematical Olympiads*[50].

We are herewith at the center of our quest. What does it mean to teach problem solving well? It means to accelerate by guided instruction the acquisition of some of the higher order skills that can be potentially useful for attacking any mathematical problem. We are not saying that through the methods we will solve every problem, but proficient problem solvers almost always use them. Even if Alan Schoenfeld relates in his book *Mathematical Problem Solving* (1985) that a Putnam's[51] trainer, about Pólya's strategies, said *"It's worthless"*, we wish to note the background in which that statement was made: he trained some of the best problem solving students in the USA, individuals who already have years of training and dominate all corners of general heuristics. Our aim is rather to get mostly very inert and mathematically passive students to work. For these pupils, we think Polya's suggestions are very useful as a first step; as they are for the high school teachers we wish to educate. But it is also clear that we should heed Schoenfeld's detailing of why heuristics fails if we let students with little more than a guide. So teachers should be informed by teacher educators of the third chapter of Schoenfeld's *Mathematical Problem Solving*, to become really effective, heuristics that we teach must be specialized in subcategories which have to be taught by examples.

In point *3)* of our abstract we mentioned that it would be desirable to foster interaction between teachers of problem solving. This is of particular importance in our country where this activity has no tradition. Professors left alone would easily loose all enthusiasm. It is therefore important to create a problem solving community, because as William James (1842 – 1910) said *"The*

[50] World Championship Mathematics Competition for High School Students and it is held annually in a different country.

[51] Annual contest organized by The Mathematical Association of America for college students.

community stagnates without the impulse of the individual. The impulse dies without the sympathy of the community" (Lee, Jor, & Lai, 2005, p. 3) To make this point we used a game inspired by the equilibrium theory of the 1994 Economics Nobel Prize winner, John Nash. It shows with the compelling certainty of mathematics, how collaboration can benefit all. There is frequently a balanced solution when we don't know others' actions. The teacher divides the class in four groups. Each group receives two cards, one with an X and another with a Y, and a chart with all possible combinations and points (Table 1). The goal is to score the highest number of points after ten rounds.

Table 1.

X = -10		Y = -30		Y = -20		Y = -10		Y = 10
X = -10		X = 10		Y = -20		Y = -10		Y = 10
X = -10		X = 10		X = 20		Y = -10		Y = 10
X = -10		X = 10		X = 20		X = 30		Y = 10

This chart has to be read as follows: If all groups show X, each one gets -10 points. If three groups show X, they get 10 points, while the Y group gets -30, etc… In each group its elements are allowed to exchange ideas, during a predefined period of time, to decide what letter they are going to show. The four teams give their answers at the same time. Their points are registered on the board. Before the third round starts, the teacher gives all participants the opportunity to dialogue for some time, if they so desire, to delineate a possible game strategy. The third round score is multiplied by three. The same opportunity is granted before the fifth round, in which stage score is multiplied by five, and before the tenth round, when the score is multiplied by ten (Table 2).

Table 2.

TEAM/GAME	1	2	3	4	5	6	7	8	9	10	FINAL SCORE
SCORE	× 1	× 1	× 3	× 1	× 5	× 1	× 1	× 1	× 1	× 10	

The goal is to get the maximum score letting, deliberately, a better specification open. To achieve that purpose all groups must exhibit, in all rounds, the Y card. This conduct gives each team ten points, forty in total, a value that rise to one hundred and twenty points on round three, two hundred on round five and four hundred on round ten.

In the first session of the workshop teachers were challenged to play this game. During the activity the X and the Y have been exhibited in the different rounds. The X choice is not innocent: with this decision group elements hope to score more points and punish the others who played the Y. In the following rounds the teams that had played the Y quickly changed to the X. With all groups rising the X teams' scores decreased dramatically. One or more participants, who became

aware of what was happening, when allowed to speak, tried to persuade the others to play the Y. This conduct gives benefits to all but suspicion has already compromised collective trust. The probability that all groups play the X, from now on till the end, is very small.
Ironically the group with the best score cannot well be declared the winner. If in all rounds the groups had shown Y, each of the groups would have finished with two hundred and fifty points. Only with this strategy it is possible to maximize the benefit for all participants. Note that even though an egocentric group will bet on showing X, society will not let it happen that this group wins. The role-play underlines the difficulty in cooperative work. In *Heuristics in Math Teaching – Tools for Problem Solving* that was no exception. The game results were far away from maximum.

What is a mathematical problem?

This section is written for those readers that are not familiar with the mathematical problem solving process. So, what is a mathematical problem? Even this is not completely clear and depends on the background of the solver. In this sense it is customary to distinguish between exercise and problem.

"An exercise is a question that tests the student's mastery of a narrowly focused technique, usually one that was recently "covered". Exercises may be hard or easy, but they are never puzzling, for it is always immediately clear how to proceed. Getting the solution may involve hairy technical work, but the path towards solution is always apparent. In contrast, a problem is a question that cannot be answered immediately. Problems are often open-ended, paradoxical, and sometimes unsolvable, and require investigation before one can come close to a solution. Problems and problem solving are at the heart of mathematics." (Zeitz, 2007, p. x).

Consider the following request. Given two intersecting straight lines l_1 and l_2, and a point P on l_1. Draw a circle through P that is tangent to l_1 and l_2 (Figure 1). For somebody who does not know the precise notion of what a circle and a straight line are, this problem is, until the study of the concepts, out of reach. The same applies to mathematicians when are engaged in themes they are not expertise. Even after our subject intuitively acquires the notions of a circle and a straight line with illustrative figures, and tell him what tangentially means, and even if with these intuitive ideas he is able to do a free hand sketch or be instructed to draw the correct figure with the tools allowed, he will still be unable to justify step by step the construction. He, at most intuitively feels that the bisector of an angle contains the centers of the circles that touch l_1 and l_2 and the center of circle that pass tangentially to l_1 through P lie on the perpendicular to l_1. If somebody assures him that these intuitions are right, there is still a missing piece: if one draws a circle with center C in the intersection of bisector of l_1 and l_2 with the perpendicular to l_1 through P and radius CP, why should this circle be tangential to l_2? The reason is there a unique perpendicular to l_2 through C which yields a point $P' \in l_2$. The triangles IPC and $IP'C$ have in I equal angles that are extended to P and P' as well, further more, $\overline{IC}$ occur in both as hypotenuses. We can invoke a theorem called SAA[52] that guarantees the two triangles are congruent, hence $\overline{CP}$=$\overline{CP'}$.The circle with center C will pass through P' and tangentially to l_2 since the radius CP' is by construction perpendicular to l_2.

[52] Side Angle Angle: If two angles of one triangle are congruent to two angles of another and a side of the first triangle that is not common to both angles is congruent to a side of the second triangle that is not common to both angles, then the triangles are congruent.

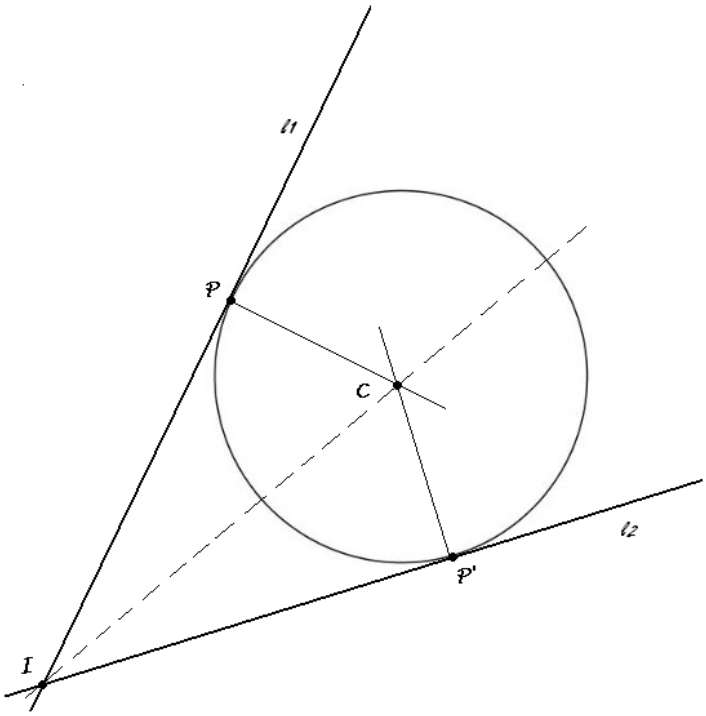


Figure 1.

If we analyze this argument, we find that even this most simple partial solution and justification for a ruler straight-edge construction to follow makes necessary quite a number of mental acts that exceeds considerably routine tasks. In particular a complete justification relies on very precise definitions and specific theorems that must be known and presented in correct order. From this point of view – in order to practice mathematics with some fluency one needs to reconstruct a student's mental personality; and this is only possible with resilience.

Illustration of the Heuristic Method

Heuristics was the workshop focus. Called *heurética* in Greece, it is the study of the methods and rules of discovery and invention. Extended investigations on it till Polya's time were rare, but he relates the critical work done by Pappus of Alexandria (290 – 350) regarding Euclid's *Elements*, Bernard Bolzano's (1781 - 1848) interesting observations about the matter, and the most famous attempts of systematization of Gottfried Leibniz (1646 – 1716) and René Descartes (1596 – 1650) which however had a wider scope than mathematics. Heuristic procedures represent an opportunity to introduce fresh activities to classroom. The goal is to stimulate the student's creativity and critical appraisal about what is being learned, how and for what.

As a consequence of what was said a suggestion that comes naturally is to introduce problem solving into the curriculum. The question of where and how within the context of the current schooling system has a natural answer: in mathematics. The density of cognitive problems and the clear cut manner by which they are solved - the clear answer to *"is S a solution to Q?"* - have no equal in other sciences. Also mathematics is a not expensive science that can be done with paper and pencil engaging brain activity, mechanisms incorporated in four categories of behavior and knowledge: resources, heuristics, control and students' beliefs (Figure 2) (Schoenfeld, 1985).

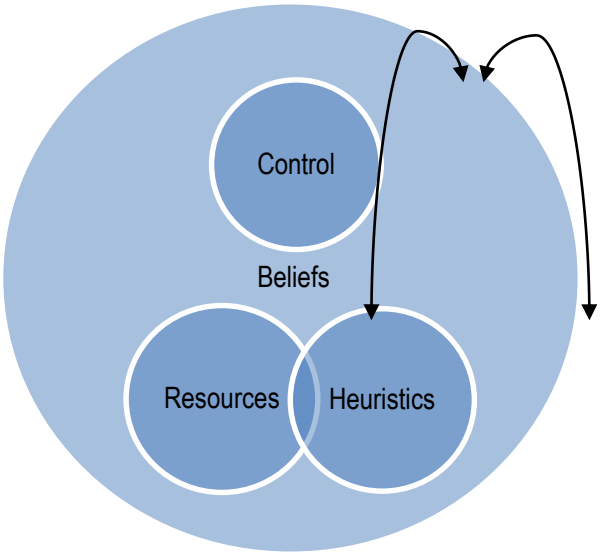


Figure 2.

Let's plunge into a problem solving activity!

What is the result of adding the first one hundred natural numbers? Classroom was in deep silence. Some pupils start adding up, others remained without action, thinking about the question or were, as the teacher suspected, indifferent to the challenge, but few minutes later and to his surprise, Carl Friedrich Gauss (1777 - 1855), ten years old, presents the correct solution: 5050. His argument combines simplicity and effectiveness. If 1 + 100 = 101, 2 + 99 = 101, 3 + 98 = 101, 4 + 97 = 101… 49 + 52 = 101, 50 + 51 = 101 then the total value results from 50 × 101. Gauss, without formal knowledge, used symmetry property of arithmetic progressions. The sums of terms equally far away from the extremities are all equal. How may Gauss have found that result? Possibly by specializing the problem to four or five terms and seeing the pattern referred. Indeed specialization is an important technique in heuristics.

Educational Psychology is engaged in finding and understanding variables involved throughout problem solving activity. Task difficulty and students' knowledge play an important role in dynamics between starting point (initial situation) and the end (problem conclusion).

Two hundred people are gathered in an international congress. One hundred and twenty speak Portuguese and one hundred speak Hebrew. How many conversations between two people are possible without a translator?

The following discussion is taken according to Polya's problem solving guidelines, with *T* and *S* meaning teacher and student.

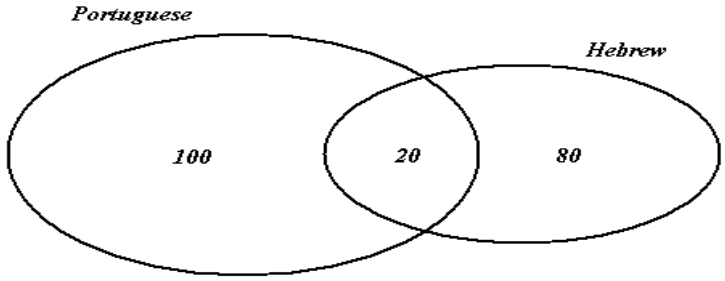
First, there are the questions concerned with comprehension.

T: What's the unknown?

S: The number of conversations, between two people, that can be established. … But, I do not understand …how comes that one hundred and twenty people speak Portuguese and one hundred speak Hebrew if there are two hundred participants? … Ah! There are twenty people that speak both Portuguese and Hebrew.

T: Good! Draw a figure!

S: (*Draws the following figure*):



T: And what will you do now?
S: This is somewhat complex.
T: So let's design a plan of how to do this. (*Comment: this is Polya's second step.*) Is there an easier problem that is related to this?
S: … Yes: How many conversations can be established between the one hundred people who only speak Portuguese?
T: Good! So let's solve this first. (*Comment: the teacher lets the student here deviate from thinking the plan to the end. As we shall see in a moment, this is less than optimal.*)
S: The first speaker can talk with 99 others. Let's say the Portuguese 1 with Portuguese 2, Portuguese 3 …and so on.
T: Use better notation!
S: $P_1P_2; P_1P_3; P_1P_4; \ldots; P_1P_{100}$, next $P_2P_3; P_2P_4; P_2P_5 \ldots; P_2P_{100}$, then $P_3P_4; P_3P_5; \ldots; P_3P_{100}$. Ah! There will be 99 + 98 + 97 + … + 3 + 2 +1 conversations. Now I know how to proceed. The sum of terms equally far way from extremities is one hundred, identical to the sum of terms at the extremities. After joining forty nine pairs of those numbers it is necessary to add the central value: 50. Inside this group 4950 conversations can be established (49×100 + 50 = 4950).
T: Good! Can we extend this reasoning?
S: Yes I can similarly find … wait a minute … the number between only Hebrew speakers. There will be 79 + 78 + 77 + … + 3 + 2 +1 conversations. This makes 39×80 + 40 = 3160 conversations. Similarly we find 19 + 18 + 17 + … + 3 + 2 +1= 190 conversations between the people that speak both languages. Now we sum and it is done.
T: Really? (*Comment: the mistake, here not too critical, would not have happened if the teacher insisted with the student to think the problem to the end. In more complicated situations plunging into a problem without thinking to the end can lead to a blind alley, loosing much time.*)
S: (*After a pause*) No. In fact the 20 Hebrew 2-language speakers can talk also with the 100 only Portuguese speakers and the 20 Portuguese 2-language speakers can also speak with the 80 only Hebrew speakers. This gives us 100×20 = 2000 pairs plus 80×20 = 1600 further Portuguese Hebrew conversations. The sum is 3600+190+3160+4950 = 11900.
T: Great. You have solved the problem. But it's not a very elegant solution. So do you see a simpler way?
S: (*After a pause*) Well we could say as follows: There are, in principle, by my Combinatory Analysis knowledge $\binom{200}{2}$ conversations between 200 people, but the 1-language speakers of different nationality cannot speak with each other. This gives:

$$\binom{200}{2} - 100 \times 80 = \frac{200!}{2!\,198!} - 8000 = \frac{200 \times 199}{2!} - 8000 = 11900$$

The reader notes here a good example of what a trainer can contribute with good questions or suggestions. How much time could our student have saved!
For learning routine skills it is reasonable to organize and divide a school textbook into curricular themes, but a student's manual also should contain problems that make necessary the use of knowledge that was acquired months or even years before. What we criticize is that despite now

the mathematics books in Portugal have considerable graphic quality; they are less adept in conveying the spirit of definition - theorem - proof style so typical of mathematics, and one finds in them much more routine exercises than problems. So it is not an approach that would challenge pupils' imagination.
Student's manual is one of the many instruments that teachers can use in classroom. The tools necessary to operate with the problems should not simply be on the mental shelves; students should open those shelves of memory, manipulate and combine those tools, because otherwise they get rusty. So a slight methodological change could generate substantial impact on pupils' mind, motivation and, consequently, acquisition of significant math knowledge.

Another example of problem *versus* exercise is given below.
Second degree equations are studied in ninth grade. Theoretical exercises are abundant in the student's book but lessons must go beyond algorithmic or routine applications and it is teacher's responsibility to provide that can happen.
Solve the equation system: $\begin{cases} x^2 - xy - y^2 + 1 = 0 \\ x^3 - x^2y - xy^2 + x - y + 2 = 0 \end{cases}$
The student is surprised because he doesn't see which math procedure to apply. Are the equations linked? Through this key question emerges one *Eureka* insight:

$$x^3 - x^2y - xy^2 + x - y + 2 = 0 \Leftrightarrow x(x^2 - xy - y^2 + 1) - y + 2 = 0.$$

The main difficulty has disappeared and gives place to straight calculations.

$$\begin{cases} x^2 - xy - y^2 + 1 = 0 \\ x(x^2 - xy - y^2 + 1) - y + 2 = 0 \end{cases} \Leftrightarrow \begin{cases} x^2 - xy - y^2 + 1 = 0 \\ x \times 0 - y + 2 = 0 \end{cases} \Leftrightarrow$$
$$\Leftrightarrow \begin{cases} x^2 - xy - y^2 + 1 = 0 \\ y = 2 \end{cases} \Leftrightarrow \begin{cases} x^2 - 2x - 3 = 0 \\ y = 2 \end{cases}$$
The second degree equation $x^2 - 2x - 3 = 0$ is easily solved.

$$x^2 - 2x - 3 = 0 \Leftrightarrow x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4 \times 1 \times (-3)}}{2 \times 1} \Leftrightarrow$$
$$x = \frac{2 \pm \sqrt{4 + 12}}{2} \Leftrightarrow x = \frac{2 \pm 4}{2} \Leftrightarrow x = \frac{2 + 4}{2} \vee x = \frac{2 - 4}{2} \Leftrightarrow x = 3 \vee x = -1$$

The solutions for the equation system are $\{(-1; 2), (3; 2)\}$. Indeed replacing *x* and *y* by those values in the initial system, it proves to be satisfied.

In the words of Portuguese mathematician Pedro Nunez (1502 – 1578) Algebra is the *"… way to find the unknown quantity in every purpose of Arithmetic and Geometry and in all art of counting and measuring, as also in Cosmography, Astrology and mercantile purposes"* (Nunez, 1567, p. a ii). Published in 1567 the *Libro de Algebra en Arithmetica y Geometria* is vividly written, explaining that number, *cosa* (x) and *censo* (x^2) are quantities that can be differently combined. Royal Cosmographer since 1529 and nominated Chief Royal Cosmographer in 1547, his navigation procedures techniques were often accepted with reluctance by captain sailors. The teacher educators face, eventually, the same resistance as Pedro Nunez: often the teachers don't want to assume the role of students. A qualified teacher isn't necessary the one with decades of school experience. If his methodology stays the same year after year, decade after decade, that's like repeating endlessly first year as school teacher.
It is quite possible that the small methodological change we propose generates a positive large effect. As a metaphor we recall Edward Lorenz's (1917 – 2008) forecast weather studies, in the

1960's, using variables like temperature, wind speed and atmospheric pressure. Before having started a second computer simulation, he changed parameter 0,506127 to 0,506, a small adjustment. He believed the difference was irrelevant with the advantage to get faster final computer results (in that time computers didn't have today's calculation capacity). He thought the two simulations will generate similar outcomes, but in reality, this proved to be wrong. The idea that initial adjustments can have, in a long time, significant impact is worldwide described as *Butterfly Effect*[53].

A ghost called Math: Let's put some light above the subject

Since 1974 the educative system has suffered deep changes due to economical, cultural, social and political transformations. The increase of compulsory education, more and better school infrastructures, which were built to receive the growing number of pupils, the assessment to new technologies and the dissemination of teaching degrees provided by public and private Universities have democratized the access to Education in Portugal. Despite this development, in the last decades, internal evaluations show students' poor performance in math exams. Concerning to OECD Program for International Student Assessment (PISA)[54] progress has been made since 2000. The 2009 results show that Portugal is in line with the European Union (EU) average as we can read in the report *Progress towards the Common European objectives in Education and Training – Indicators and benchmarks 2010/2011*[55]. Regarding early leavers from educational training aged 18-24, the numbers are very negative, despite the evolution made: 42,6% in year 2000 and 31,2% in year 2009 when in 2009 the EU average is 14,4%.

In Portugal, 2008 Elementary Math Curriculum concerning pedagogical orientations emphasizes the need *"to develop problem solving capacities, mathematical reasoning and communication, using these skills in the construction, consolidation and mobilization of the mathematical knowledge"* (Ponte, et al., p. 62). Bringing into play heuristics allows the teacher to approach contents with demands of the life in society. This behavior inspires students' creativity and endorses reasoning development. The teacher, as a knowledge supporter, must refine strategies, explain and guide, without forcing, resolution methods, and allow the student to endeavor strategies, under his supervision (Schoenfeld A. H., 1983). Creative learning is related to problem solving apparently in opposition to execution of algorithms or routines, but in fact proficiency means also to proceed in leaps that use bunches of memorized knowledge. Each one plays specific functions (Ausubel, 1960).

Fifteen-year old students begin secondary school, a new three year cycle, which is a critical moment for the academic future and professional choices. It is here that our teacher training sets in: enrich the mathematical food presented with nutritive supplements in a way to improve instruction.

Today information travels at light speed. In seconds we can download gigabytes of data, but the essential, that is, comprehension, needs time to be acquired and demands effort to be assimilated by the brain. Technology has flooded the classrooms, but we must realize that computers and graphic calculators help student's work, however doesn't replace pencil and rubber, as multimedia boards don't substitute a white sheet of paper. Teaching and learning is not a hundred meters race, it is a long life marathon.

Achilles, the Greek hero, competes with a tortoise. The athlete runs ten times faster than the reptile and starts one hundred meters behind the animal. What distance does the turtle cover until it is reached by Achilles?

[53] Sensitive dependence linked to problem initial conditions.

[54] Triennial study that evaluates; reading level, scientific knowledge and mathematical ability of fifteen-year old students.

[55] Reading: 17,6%; Mathematics: 23,7%; Science: 16,5% (p. 183).

The problem statement is clear, but how can it be translated into Mathematics? Is it possible to establish connection between distances covered when Achilles catches the tortoise? $d_{Achilles} = d_{tortoise} + 100$.
What is the link between Achilles and the tortoise velocity? $v_{Achilles} = 10 \times v_{tortoise}$.
Attending that $velocity = \frac{distance}{time}$ and the time necessary to Achilles catches the tortoise is invariant: $d_{Achilles} = 10 \times d_{tortoise}$. From former relations: $10 \times d_{tortoise} = d_{tortoise} + 100 \Leftrightarrow 9 \times d_{tortoise} = 100 \Leftrightarrow d_{tortoise} = \frac{100}{9} \Leftrightarrow d_{tortoise} = 11,(1)m$.
This problem is one of Zeno's paradoxes. When Achilles reaches the tortoise location it is ten meters beyond. The athlete needs some time to cover that distance and when he reaches that point the tortoise is one meter farther. By the same logical procedure the distance between opponents is shorter but Achilles misses to catch the tortoise.
The explanation for such odd problem was first unleashed by the Greek mathematician Archimedes (287 BC – 212 BC) that developed a method for the sum of infinite terms that get progressively smaller.
It is widely recognized that problem solving is a higher order thinking skill; it is considered the opposite of what today's information processing machines can do, namely the execution of algorithms which they are fed with by programmers, *"Software does exactly what one tells it to do, and can make incorrect decisions trying to focus on a single important goal"* (Jones, 2008, p. 3). It is also a truism that we hardly can extend compulsive schooling beyond a twelfth year. The schools have to prepare the citizen of tomorrow to live in an ever more complex world. Many educators feel the responsibility to prepare pupils for that future giving them a competitive edge beyond what machines can do.
"There is a very real danger that the type of mathematics instruction we provide students is training them to be rigid in their thinking, not flexible and adaptable, is teaching them how to perform procedures but not when and under what conditions to perform them, and is showing them what to do but not why to do it." (Lester, 1985, p. 43)

Outcomes: successes, limitations and problems encountered

As a preliminary report the workshop teachers refer that the majority of the students were receptive and seemed to enjoy more doing mathematics with problems than with the usual curriculum. We used as a source of problems *International Mathematical Kangaroo* questions for the ninth grade. Typical questions were related in *Heuristics in Math Teaching – Tools for Problem Solving* section and it was said that whereas official competition asks for multiple choice response, we demand to justify the answers. The first tests had thirty questions, this was a task virtually impossible to do in ninety minutes, so that our future tests will have only ten or even less questions. The results our teachers got from their students in the first tests were simply catastrophic.
Herewith we come to limitations we have encountered. We think that a much more ideal environment for making problem solving work would take place if the teachers themselves should first be exposed to these specific methodologies. The lecture and analysis of first pages Pedro Nunez *Libro de Algebra en Arithmetica y Geometria* book in order to solve first and second degree equations was very well received. The proof that is possible to teach and surprise experimented secondary teachers. The best place would be at the University, if not, in courses very specialized about the topic. Then they should train their pupils and only after we expect better school outcomes.

Digression into one teacher classroom practice

Teacher education is what educates teacher: it is what adds to the professional development of teachers. We can say with satisfaction that our participants were quite surprised that their expectations were met or even surpassed. Thus, for example, one participant says:

"In my opinion, this course in balance was quite positive. My initial expectations were satisfied or even surpassed. It served to deepen my mathematical and didactical knowledge, as well as that of the school curriculum, having in mind the construction of thought using specifically the Pólya method for solving problems. We realized experiments of developing the school curriculum in mathematics which contemplated not only the elaboration of problems, but also the analysis on them, and for this we could count on the help of the teacher educator."

Let us show here how the participants imbued with the spirit of problem solving tried to transmit their excitation to their pupils; and let us also see some of the responses given from ninth grade students to the following question: How to divide 21 pots of honey, 7 full, 7 half full and 7 empty, among three sons such that each one receives the same quantity of honey and the same number of pots without transferring any honey from one pot to the other? After a while, having worked with Polya's guide, some of them said: *"this is equal to the problem of the camels"*[56], which was another problem that they had resolved earlier. Such experiences consolidate their perception that what is learned can be transferred and also that abstraction can be useful (Figure 3 and 4).

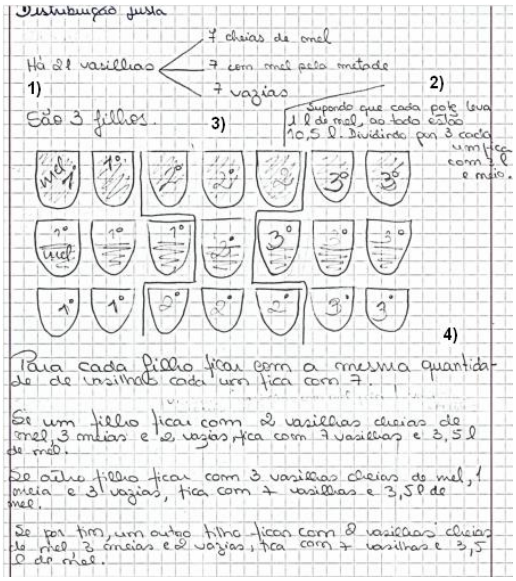


Figure 3.

Translation: The pupil makes clear to himself what is given: **1)** 7 pots of each type and three sons. **2)** Supposing (implicitly without loss of generality) that each pot has 1 liter he calculates how much each son has to receive. He finds correctly that there are 10,5 liters to distribute and so each one has to receive 3,5 liters. **3)** He draws a figure with 7 full pots (first row), 7 half full pots (second row), 7 empty pots (third row) and correct borders. **4)** He gives the justification for this division.

[56] Malba Tahan's book *O Homem Que Sabia Contar* (p. 14 – 16).

Another solution

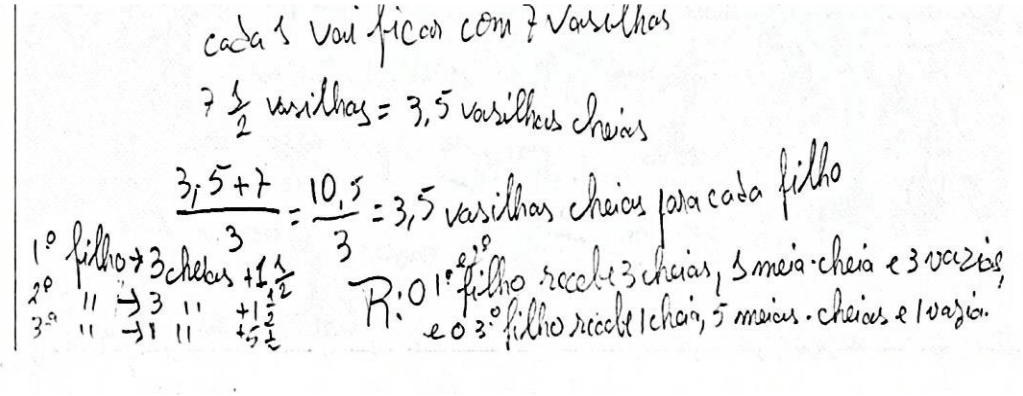


Figure 4.

The student says: each one receives 7 pots. He notes that the seven half full pots give 3,5 full pots, adds these to the seven full pots and divides the amount by the three brothers: writing "$\frac{3,5+7}{3} = \frac{10,5}{3} = 3,5$ *full pots for each son"*. At the inferior left side corner he says: 1st son ⟶ 3 full + 1 $\frac{1}{2}$ (1 half pot), 2nd son ⟶ 3 full + 1 $\frac{1}{2}$ (1 half pot), 3rd son ⟶ 1 full + 5 $\frac{1}{2}$ (5 half pot). Finally, he translates this in words: *"The first and the second sons receive 3 full pots, 1 half pot and 3 empty pots; and the third son receives 1 full pot, 5 half pots and 1 empty pot."*

Problem solving activity promotes reasoning and that triggers neurological impulses. Paraphrasing what Alexander Pope (1688 – 1744) said about how Newton unlighted the world, we are inclined to say: Nature and nature's laws lay hidden night, God said "*Let Newton be!"* and all was light, we say about Problem Solving *"Let Heuristics be"* and the path to solution will be revealed!

Final statements

The relative enthusiasm showed by the pupils, when confronted with the problems, and the apparently, greater motivation for mathematics, is of course encouraging and important, but fluency in problem solving is not possible without knowledge, as we hope to have made clear, and chunks of knowledge are what we have committed to memory by hard work. Therefore to avoid failure, the courses which include problems must be well designed. The problems should not be predominantly pure brain teasers which cannot be connected to the mathematics that the children know or will know. A pure brain teaser would be e.g. a chess problem, or a puzzle like the one to separate a string from a topologically complicated object. Of course such problems have their place but in school mathematics only sparingly, since it will be hard to establish connections to any of the geometry, algebra, probability, functions, analysis and other topics that make up school mathematics. Such problems would cost much of the time that must be used for acquiring more fundamental knowledge like the formula for the quadratic equation, the congruence theorems of geometry, the basic formulae of combinatory, the rules of differentiation, etc., that is, the mathematics that has proved useful in the sciences and everyday life. So problem based learning promotes learning to learn, that is learning skills apart of learning facts, and learning to teach, as well as teaching to learn. Education is more than passive knowledge transmission, it demands ability to support student thinking into deep mathematical concepts, a milestone for those who embrace this profession.

Teachers' educators are the ones that are sitting here exchanging experiences in practice.

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GOALS, TEXTS AND QUESTIONING

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Abstract

Students' questioning has been considered an important metacognitive competence. However students just ask few questions and the ones formulated are considered of low cognitive complexity. Therefore, the development and implementation of pedagogical contexts and resources that promote questioning is an important challenge for teachers and teacher educatorsIn this work we address question generation when students read scientific texts, aiming to analyse how reading goals influence question generation. According to a framework that relates questions to the obstacles found in achieving a certain information processing goal (Otero, 2009), given the same textual input one would expect different obstacles, and therefore different questions, depending on readers goals. So, the research questions guiding this study were: How do readers' goals affect the detection of reading obstacles and, subsequently, the generation of questions on scientific texts? In particular, what kinds of questions are asked when students read a passage for understanding versus reading the same passage to carry out an experiment? (Abrahams & Millar, 2008). Three studies were carried out in order to answer these research questions. The first study involved 65 12th grade students who read experimental texts under two goal conditions: reading for understanding vs reading for experimenting. One hundred and forty five 9th grade students participated in the second study. The reading goals were basically the same as in the previous study: reading for rewriting a text and improving its understandability vs. reading the same text in order to carry out an experiment. In addition, a second variable was manipulated: the experimental texts were presented in an academic, non-contextualized condition, or, alternatively in a non-academic situated condition. Finally, 60 9th grade students participated in the third study. Reading goals were similar to those in the previous studies but a new passage was used involving two differentiated paragraphs. The first one, introductory, basically described states and provided a setting for the second one, a procedural paragraph. Three categories were distinguished in the questions asked: association questions (What, How), explanation questions (Why), and prediction questions (What Happens Next). (Ishiwa, Macías, Maturano & Otero, 2011). As expected, the results showed that students questioning depended of the reading goals: association questions were associated with experimenting goals and explanation questions with understanding goals. Also, text features were associated with the formulated questions, namely the kind of relations associated with paragraphs. These results suggest that understanding and experimenting tasks involve different obstacles for science students, leading to different questioning patterns. Some of the pedagogical implications that this basic result has for science education and for writing scientific texts are considered.

Keywords: reading goals, students questioning, science texts

Introduction

Reading purpose is a variable extensively studied as a determinant of text comprehension (Ishiwa, Sanjose & Otero, 2012; Morgado, 2001; Van den Broek et al., 2001). In this study we examine incomprehension, rather than comprehension, focusing on the effect of reading purpose on the detection of obstacles and the generation of questions on scientific texts. Incomprehension should be expected when students process scientific texts because scientific discourse has features making it especially difficult to understand (Graesser, León &Otero, 2002). Question asking is one resource that may be used to solve these comprehension deficits. We use question asking as an index of incomprehension because both are closely connected: asking a question involves anomaly detection as first step (Graesser & MacMahen, 1993). Therefore, given the appropriate social conditions to pose questions, the detection of comprehension obstacles is associated to question asking.

Questions on texts may be conceived as attempts to overcome obstacles in order to build a desired mental representation of discourse (Otero, 2009). These obstacles may appear when subjects try to build a representation of discourse at any level (Otero & Graesser, 2001; Yuill & Oakhill, 1991). A question such as "*What does asphyxia mean?*" may be understood as an attempt to remove a lexical obstacle that blocks a reader who tries to build a discourse representation at the textbase level. But readers frequently attempt mental representations at the situation model level also, and questions may be asked to overcome the new obstacles found. A reader may want to represent the temporal or spatial circumstances of a described event (When X? Where X?), how a certain process develops (How X?), or what causes it (Why X?) (Ishiwa, Macías, Maturano, & Otero, 2006).

In building a situation model, what questions may a reader ask? They depend, of course, on the obstacles found in building the particular representation, an idiosyncratic endeavor. However, the three kinds of inferences described above, involved in building a situation model, suggest three kinds of obstacles and corresponding questions: questions linked to associations, explanations, and predictions (Ishiwa, Macías, Maturano, & Otero, 2010). The first kind of questions addresses the need to adequately represent the entities of a system. The second kind of questions focuses on explanations or justifications for these entities. Finally, prediction questions address the need to foresee consequences.

In sum, the obstacles found and the questions asked when a reader processes discourse depend on the mental representation attempted that is on the inmediate reading goal. But, readers' goals when processing discourse may be varied. A student may read a paragraph to understand it well enough to answer teacher's questions, she may read a statement to solve a word problem, or she may read written instructions to perform an experiment in the laboratory. These various goals influence the discourse representation that a student attempts to build. For instance, it has been found that reading for recall vs. reading to perform an action respectively facilitates the creation of a textbase vs. a situation model representation (Kintsch, 1994; Mills, Diehl, Birkmire & Mou, 1995; Schmalhofer & Glavanov, 1986). Therefore, these different reading goals should also influence the obstacles found in building these representations and the questions asked: more obstacles related to the construction of a situation model would be expected in the second condition than in the first condition. This, in its turn, should correspond to different questions asked also.

An experiment based on the conceptualization that relates goals to explanation obstacles and questions asked is reported in this article. We manipulated representation goals through two different tasks: reading to *understand* a procedural text versus reading to *perform the procedure* (carry out an experiment) described by the text. Different discourse representations would be expected in each of the two situations. When reading for understanding, causal relations are a especially important component of the mental representation. This expectation is supported in general by models such as a constructionist theory of discourse comprehension of Graesser,

Singer and Trabasso (1994): generating explanations of why events occur is an essential component of text comprehension. Readers are active SEARCH AFTER MEANING. Numerous studies have demonstrated the importance of causal or goal-based explanations in the mental representation of narratives (Klin, 1995; Suh & Trabasso, 1993; Trabasso & Suh, 1993; Van den Broek, 1990), and also of expository texts (Coté, Goldman, & Saul, 1998; Millis & Graesser, 1994; Singer & Gagnon, 1999; Wiley & Myers, 2003). Therefore, in correspondence with the importance of causal relations in the mental representation of a scientific text read for understanding, a high incidence of explanation obstacles would be expected also. Direct support for this hypothetical abundance of explanation obstacles may be found in the study of Costa, Caldeira, Gallástegui, and Otero (2000). In this experiment, secondary school students where instructed to read short scientific passages and to ask any questions that might help them to understand the passages. A categorization of the questions in the 18-items-taxonomy of Graesser, Person, and Huber (1992), showed an overwhelming majority of "causal antecedent" questions. The students were especially sensitive to the comprehensibility of causal relations, and were able to detect many difficulties in these causal relations.

A different mental representation and different obstacles would be expected when reading to perform a procedure. Reading about a physical system in order to carry out an experiment involves attempting a representation where objects and processes are elaborated in enough detail so that the operation of the system could be predicted (Norman, 1983). Explanatory inferences and causal relations may be important in so far as they are relevant for the working of the procedure. Otherwise there would not be any need to include them in the representation. Therefore one would expect more explanation obstacles and explanation questions in the understanding condition than in then experimenting condition.

Method

In order to test the previous hypotheses, a sample of secondary school students was provided with procedural texts to be read under the two previously described conditions: understanding or experimenting. The students were instructed to ask in writing any question that they would find necessary. The dependent variable of interest was the number of explanation questions asked under the two conditions.

Subjects

One hundred 12th grade students, in 5 classes, participated in the study. The students belonged to two schools in areas of medium socioeconomic status in Tomar, a Portuguese city of 20000 people. They were enrolled in a Physics course, and all of them had taken science courses (Physics, Chemistry, Biology and Geology) in the 4 previous years.

Material

Two passages that described and explained physical phenomena that could be reproduced in a laboratory were used: "Cartesian diver" and "Heating water by stirring" (Table 1 shows English translations).

Both passages were organized into two paragraphs. The first one described a certain phenomenon: the sinking of a diver, in the Cartesian Diver passage, or the increase of temperature of water by stirring, in the Heating passage. The second paragraph provided a brief explanation of each phenomenon.

Table1. *Texts used translated from Portuguese*

The Cartesian Diver
Submarines explore the depth of the oceans, both floating and diving to the ocean's bed. To understand how they work, a toy invented by Descartes, the *Cartesian Diver* may be used. It can be made with a plastic pen cap and a piece of plasticine. The Cartesian Diver is put into a plastic bottle with water near to the top, so that it can float with the top of the cap outside of the water. We must be careful not to choose a cap with a hole and we must test, in a glass of water, the quantity of plasticine so that the Cartesian Diver can float. If we cork the bottle well, when we press the sides of it, the Cartesian Diver will dive to the bottom. To make it come up, we just have to release the pressure on the bottle. A physicist would explain that a body can float whenever its weight balances the buoyant force on it. As this is a force equal to the weight of the displaced fluid, it grows a little when we press both sides of the bottle. However, the Cartesian Diver's weight increases too, because of the water that goes inside the pen cap. We can conclude from this that the Cartesian Diver only submerges when its weight supplants the buoyant force.

Heating water by stirring
The quickest and most natural way to heat water is to put a coffee pot of water over a fire. What perhaps most people don't know is that water can be heated in another more original way. This can be reproduced with the following experiment that illustrates the Equivalence Work-Heat Principle. We take a very heavy object suspended by a resistant wire. This wire must be rolled in a vertical pipe, connected to several blades which can rotate while bound to it. You put the blades and the pipe into a container with the water you want to heat. When the heavy object falls, the blades will rotate and the water will heat. The explanation of the phenomenon is as follows: the weight of the object falling from a certain height performs work: the object falls and makes the blades rotate thus acquiring kinetic energy. The blades, by rotating, perform work on the water, thus increasing its internal energy. This can be proved by measuring the temperature of the water.

Procedure

The teacher of the class presented the tasks as part of the classroom activity. The students in each class were randomly assigned to the two conditions, understanding or experimenting. They were provided with booklets that included the two experimental paragraphs describing the devices, and different written instructions depending on the reading task. In the understanding condition, the task was presented as a reading comprehension exercise and they were instructed to read each paragraph with the purpose of developing their comprehension ability. In the experimenting condition the task was presented as part of a laboratory exercise and they were instructed to read the paragraphs so that they may build the devices in the next class. In both conditions they were advised to write all questions that they may have on the paragraphs in the space provided. These questions would be answered before the next class.

The students read the paragraphs during one normal class session of 50 minutes. The whole procedure took about 30 minutes.

Measurements

The explanation questions asked were identified. Two of the authors categorized a subset of 56 questions resulting in a Kappa coefficient of intercoder agreement of 0.89.

Results

A two-way mixed ANOVA was carried out on the number of explanation questions asked per student and per passage (Table 2), with task condition as a between-subjects factor and passage as a within-subjects factor. No significant effect was found for task condition. However, a significant effect of passage was found (F=36.53, p=.00) more of these

questions were asked on the Cartesian Diver passage (M=1.21, SD=1.25) than on the Heating passage (M=.43, SD=.70) Also, no interactions between passage and task were found.

Table 2. *Explanation questions asked per student and per passage in different task conditions*

	Understanding		Experimenting	
	Cartesian Diver n=51	Heating n=51	Cartesian Diver n=49	Heating n=49
	M (SD)	M (SD)	M (SD)	M (SD)
Explanation questions	1.33 (0.33)	0.47 (0.94)	1.08 (0.28)	0.39 (0.76)

Discussion

There was no effect of task condition on explanation questions asked, against expectations. Two explanations, at least, could be provided for this no-difference result. One concerns an instrumental aspect while the other is substantive. First, the lack of significant differences could be simply due to a lack of power of the statistical test. Fewer questions are asked for both passages in the experimenting condition than in the understanding condition. This suggests a consistent pattern and a difference of practical significance, although it may not be reflected as a difference of statistical significance.

An alternative, substantive explanation could be provided based on the framework used to conceptualize question generation. Students could have attempted poor, insufficiently elaborated mental representations that would not substantially differ between conditions. Therefore, students may not have found specific obstacles associated to each of the representations and the resulting questions were indistinguishable between conditions. Should this be the case, any help in building more elaborated representations should bring about differences in the obstacles found and the questions asked.

Questions asked did depend on text. Significantly more explanation questions were asked on the Cartesian diver than on the Heating text. Explanation questions address explanations or justifications of these entities, such as “Why the buoyant force does increase when we press the bottle?” The significant differences in frequencies of these two kinds of questions between passages point to the existence of text variables that were not properly controlled in the experimental design. In order to examine the sources of differences between passages in a post-hoc analysis, both texts were examined with the computational tool Coh-metrix (Graesser, 2004). Coh-metrix produces indices of a text that may be used to evaluate its cohesion and the coherence of the resulting mental representation. An index showing the causal complexity of a text is CAUSC, the ratio of causal particles to causal verbs. Lower ratios point to lower causal cohesion because there are comparatively less particles signaling connections between the events. CAUSC equals 0.67 for the Cartesian Diver passage and 1.67 for the Heating passage. That result points to a greater difficulty in understanding causal relations in the former passage compared to the latter. This is consistent with the greater frequency of explanation questions in the Cartesian Diver passage.

In sum, the differences in the frequencies of explanation questions asked on the two passages may be the result of different causal complexity of the two texts. The Cartesian Diver passage seems to be causally more complex, while being conceptually more homogeneous, than the heating passage.

In order to check for the validity of results obtained in this experiment a new experiment was done, involving one new text, Ethanol gun. The casual complexity of the text should be similar to the complexity of the diver text so that more questions may be asked and significant diff could be found.
Therefore, text characteristics appear as a significant variable influencing the distribution of questions in the categories of our taxonomy. As the central purpose of our study lies in examining the effect of reading task on the obstacles found by students and the questions asked, we tried to focus our attention on the effect of passage in a new experiment involving the Cartesian Diver passage and the Ethanol gun passage that was shown to have comparable causal complexity to the Cartesian Diver passage.

General discussion

Several conclusions can be drawn from the previous study. First, the main conclusion concerns the influence of task and reading goals on the explanation questions asked by students on a given scientific text: the explanatory obstacles found by students, and the explanatory questions asked, depend on reading task. The results show a consistent pattern. Explanation questions were systematically less in the experimenting condition than in the understanding conditiom. Therefore, the need to explain entities and their operation was different between task conditions. The understanding task was more demanding of explanations than the experimenting task in our experiments. This is in agreement with results from other experiments (Ishiwa, Sanjose, & Otero, 2009) showing that explanation questions, are specially asked when readers try to understand this kind of texts.
Second, the experiment show that text has an important influence on the kinds of questions asked. As shown by the Coh-metrix analysis, science texts used at a certain grade level, such as those used in this study, may differ in important parameters affecting the obstacles found by students and the questions asked: semantic similarity of their elements, causal complexity of the relations between the actions and events described, and several others that may be dissected with a tool such as Coh-metrix.

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QUESTIONS ABOUT PLATE TECTONICS IN 10TH GRADE PORTUGUESE TEXTBOOKS

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Abstract
The aim of this study was to evaluate the cognitive level of the questions about processes and structures in Plate Tectonics from the 10th year Portuguese textbooks. We analysed three sub-chapters: Geological mobility; Volcanoes and Plate Tectonics and Earthquakes; and Plate Tectonics. The categorisation was based on the revised Bloom's taxonomy. Overall, the textbooks had 121 questions related with Plate Tectonics: 23 in textbook A; 50 in textbook B; 23 in textbook C; and 26 in textbook D. The majority of the questions belong to the first two categories of the cognitive process dimension with less complexity: remember (40.5%) and understand (31.4%). At least one question of the category evaluate was included in each textbook, but only two of them contained questions of the highest cognitive level (create) In order to improve the scientific and critical thinking of the students, teachers should reflect upon the questions in the textbooks and formulate more questions of high cognitive levels.

Keywords: plate tectonics; questions; textbooks

Introduction

Textbooks still are the main motivational resources that facilitate the teaching and learning processes. Since scientific advancement relies on finding solutions for problems, it is even more important that, when learning Science, students become aware of the importance of asking questions and have the opportunity to develop this skill and a scientific thinking.

In Science education, asking questions is an important skill, which promotes student involvement, knowledge development and self-regulation, therefore learners' questions are a powerful metacognitive activity. Thus, asking questions may be considered as a facilitator of learning andl as a result of that learning process (Graesser et al., 2009; Keeling et al., 2009; Schein & Coelho, 2006). For this reason, it is essential to emphasise the importance of questions in the textbooks. Several studies, conducted in school contexts, have taking into account the connection between the characteristics of the pedagogical contexts and teaching methodologies and asking questions (Palma & Leite, 2006). Although there is already a consensus on the regulatory role of students' questions in learning, the relationship among the characteristics of questions, academic levels and associated learning difficulties has not been systematically analysed yet. Thus, the students' questions are important, because they can indicate the level of knowledge, both for students themselves and for teachers, as well as provide information which is similar to that of an evaluation test. Some exploratory studies using students' questions, as an alternative method of evaluation, showed the potential of the students' questions as an indicator of their learning difficulties (Pedrosa de Jesus & Moreira, 2009; Schein & Coelho, 2006).

Other studies (e.g. Graesser et al., 2009; Keeling et al., 2009; Palma & Leite, 2006) revealed that the skill to ask questions enhances learning and favours the diagnosis of previous knowledge, as well as the improvement of the skills of observation, investigation and explanation. They also showed that the mental process associated to asking questions stimulates thinking and may

contribute to the intellectual development of the person who asks the question. Accordingly, questioning is a central strategy in learning new contents and formulating new problem-questions.

The lack of scientific knowledge about a subject is generally associated with the everyday knowledge and the questions may express this lack of knowledge (Otero, 2009). Although the skill to ask questions appears before school age, school has an important role in stimulating individuals to question themselves further about the world around them. The textbook itself can be a motivating and triggering resource in this process.

In the classroom, questions are generally asked by the teachers, either orally or by means of written exercises. In turn, questions asked by students are few (Márquez et al., 2005). Adding students to formulate questions, reformulating them according to the answers obtained and choosing the more adequate type of questions, it will contribute to the promotion of Science education and, also, to the education for citizenship, helping them to become active citizens able to adopt a critical and responsible attitude towards the world Reference ?

Usually, students ask questions of low cognitive level but a research carried out showed that the questions asked by the students, after the teaching of a curricular unit, are related with the evaluation results and with the difficulties faced in the evaluation tests (Gonçalves et al., 2011).

Teaching with the aim of developing the skill of asking questions generates more active learning, allowing students to strengthen their cognitive level capacities. Bloom (1956) presented the original taxonomy of the cognitive domain, which categorises the level of abstraction in questions from educational contexts. This taxonomy was revised by Anderson and Krathwohl (2001) in order to help teachers to understand and implement a standard-based curriculum. For the teacher, the taxonomy presents a comprehensive classification of the students' cognitive processes, which is one of the aims in teaching. Classifying the questions helps to determine the learning levels included in a lecture.

Astudy carried out by the present authors to categorise the questions in the sub-chapters: "Methods to study the interior of the Geosphere" and "The internal structure of the Geosphere", using bloom's revised taxonomy, revealed that from a total of 177 questions, most of them (131) were included in the two first lower cognitive level categories, remember and understand (data not published).

Plate Tectonics is an unifying theory that satisfactorily explain the whole range of the geologic processes. However, it is also a very complex theme, which is clear from the amount of difficulties that, recurrently, arise in its study.

The main goal of this work was to evaluate the cognitive level of the questions about Plate Tectonics processes and structures in 10th year Portuguese textbooks. Therefore, an exploratory study was performed in order to quantify, analyse and categorise the questions on this topic, analyse its relation with teaching and learning implications and identify the main comprehension difficulties.

Methodology

The study was conducted using 10th year Portuguese Geology textbooks from the 2012 edition (N=4), designated as A, B, C and D, and the three sub-chapters analysed were: Geological mobility, Volcanoes and Plate Tectonics and Earthquakes and Plate Tectonics.

The questions were classified on the basis of the Bloom's revised taxonomy considering the six categories of the cognitive process dimension from the lower to the higher level: 1) Remember (recognizing and recalling); ; 2) Understand (interpreting, exemplifying, classifying, summarizing, inferring, comparinga and explaining); 3) Apply (executing and implementing); 4) Analyze (differentiating, organizing and attributing); 5) Evaluate (checking and critiquing); and 6) Create (generating, planning and producing) (Krathwohl, 2002). An example for each of the categories is given in Table 1.

The questions were classified by three researchers, who obtained an agreement value of 78.4%. In those questions, initially included in different categories, the researchers tried to reach an agreement.

Table 1. *Examples of questions/category of the Bloom's revised taxonomy in the 10th year Portuguese textbooks of the 2012 edition.*

Category	**Question (example)**
Remember	"*Identify the main consequences of volcanic activity in the Azores*."
Understand	"*Based on the data in Figure 1, characterise the tectonic framework of Southeast Asia.*"
Apply	*"Relate the distribution of earthquakes with the depth of the hypocenter."*
Analyse	*"Comment the affirmation "The geography of the earth is subordinate to the movement of tectonic plates."."*
Evaluate	"*Justify the high geothermal gradient observed in the Azores*"
Create	"*Infer some possible consequences (climate distribution of living species) of the mobility of the Earth.*"

Results and conclusions

The textbooks of the 10th year Portuguese Geology had 121 questions related with Plate Tectonics: 23 in A, 50 in B, 23 in C and 26 in D (Table 1). The majority of the questionsare from a low cognitive level: remember (40.5%) and understand (31.4%). It is also important to highlight that every textbook has at least one question of the category evaluate, but only two of them proposed questions that can be considered in the highest cognitive level (create) (Table 2).

Table 2. *Classification of the questions according to Bloom's revised taxonomy (The categories, according to the cognitive level, are ranked, from left to right, from lowest to highest.*

Category Textbook	**Remember (N)**	**Understand (N)**	**Apply (N)**	**Analyse (N)**	**Evaluate (N)**	**Create (N)**	**Total (N)**
A	9	7	1	1	3	1	23
B	20	13	3	4	7	3	50
C	11	6	3	1	2	0	23
D	9	12	2	2	1	0	26
Total	49	38	9	8	13	4	121

Considering that textbooks enhances the teaching and learning processes, they should include questions which allow students to develop cognitive processes in the various levels. According to these results, teachers should reflect upon the questions in the textbooks and formulate more questions of high cognitive levels in order to improve the scientific and critical thinking of the students Therefore, through the analysis of the questions included in the textbooks, every teacher can adapt their teaching strategies that could lead to a better teaching and , learning processes..

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THE LUDIC IN HIGHER EDUCATION: A (IM)POSSIBLE PRACTICE?

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Abstract
This paper starts from a question: would the play be a possible practice in higher education? If so, how is it possible to change a space that is marked by intellectual-academic work into one where the learning-by-playing has its room limited to Child Education? This paper aims to discuss the importance of the ludic space as methodology for teachers training in the university scope. The issue that triggered me into researching the relevance of the ludic as a work methodology in teachers training was the fact that most of them experienced few playing possibilities when studying the subjects. The proposed work is marked by the use of the ludic space as a privileged spot to promote the idea of learning-by-doing. Materials that are absent in the academic environment, such as modeling clay and paint are always used. Hereby I report my journey with a class of the Faculty of Education (UFRJ) for three non-consecutive semesters (2010-11). The partial conclusions show that learning by playing provides a better understanding of the subject and it promotes the construction of thinking autonomy, leading the student to apply the theory in practice.

Keywords*:* ludic space, games, teachers training; higher education.

Introduction

This paper starts from a question: would the ludic be a possible practice in higher education? If so, is there the possibility to change a space that is marked by intellectual-academic work into one where the learning-by-playing has space, since the play seems to be limited to Child Education? This paper aims to discuss the ludic space as an important and necessary methodology for teachers' training in the university scope. The issue that triggered me into studying and researching its relevance in teachers training was the fact that most of them experienced few playing possibilities within the university. Most of the classes and tests follow the traditional scheme, with some practice inserted only when the curriculum requires it.
This paper aims to show the results of activities carried out in three non-consecutive semesters as Professor of the same class of Pedagogy (The Federal University of Rio de Janeiro - UFRJ). This class received the proposal to learn and to be evaluated by the use of the ludic as a work methodology. Starting from the analysis of the construction of the works submitted by the students and the students' evaluation of the subject at the end of the semester, I intend to make considerations about the relevance of the ludic in higher education and suggest a way of working which produces long-term results, in the sense that the students, who are teachers-to-be, might apply the ludic look in their internships and workplace outside Child Education.

To sit or not to sit on the floor, that is the question: are we really teaching when the students are not seated on their chairs?

I have been a professor at higher education for nearly 25 years, and the fact that the students have always looked at attending classes as something boring, mandatory and not fun at all, has always caught my attention. Over many years I tried to develop a way to bring to the students,

who are future teachers, the pleasure of attending classes and participating in the activities that I put forward.

The students who have always been part of my universe ranged from 18 years to over 40 years old. Depending on the college schedule, they were younger or older.

One question has always remained in my teaching practice: how to make my students enjoy teaching as much as I enjoy? We know that motivation cannot be taught, that no student or teacher will ever be motivated during 100 to 210 minutes of class. We know also that they learn both theory and practice on how to be a teacher by observing how their teachers deal with them.

I have always taught the same class of students more than once. The terms were alternated, but I have always ended up teaching for the same students a little further into the faculty, either in the Faculty of Languages, my first training, or now, as a professor of Psychology in the Faculty of Education. What I have always wanted to continue when I taught for a class which I had taught before, is the way to perceive teaching and the possible ways to teach a subject.

I try not to assess them the same way, as well as to return the evaluation to the students in order for it to be further developed; I allow them to consult with whatever they wanted in what they called test; sometimes I gave tests which would be returned 3 classes later. Over time I came to realize that I always focused more on the process than on the end product, and that this kind of evaluation, even though it was handful for me, because it demanded much time for corrections and re-corrections, it ended in better results and, most importantly, in better learning, which I could see when I would later teach the same students again.

To this paper I bring an experience with a class which started their journey with me in 2010, in the first morning term of the faculty of Pedagogy. These students were most of them women, young, ranging from 19 to 25 years old, with a few exceptions. I had around 58 students in a small classroom, hot - with no fan or air-conditioning - and the building under constant maintenance work, since I teach in a Palace listed by the Brazilian National Historical Patrimony. This meant there were planks and scaffolds for the workers to reach the wall of about 8 meters, inside the classroom.

Anxious, still with high school habits, the students have always asked me about the day tests. There was a tension in going from High School to College education. They always asked me to use the board and to repeat what I had said in order for them to take notes. My job with them was to open the doors into college world, to make them think critically, since in some of their essays I found paraphrases of what they had read in the reference texts.

This specific class had a characteristic: most of the students enjoyed the faculty of Pedagogy. During the first term, I worked with them on the subject *Developmental Psychology.* I proposed as evaluation a group activity of thematic redesign i.e., to have a starter question presented to the students from combining a *stimulus*, which would trigger a discussion in class (a video, a group dynamics, an essay, an activity, an image) with the question: “what have you learned from what I intended to teach you?”. It was the duty of each group to decide which *stimulus* they would use and how they would make their classmates discuss and redesign their understanding of the content searched and taught in the class. In this final evaluation the materials used are usually absent within the university, such as modeling clay, ink, puppets, material for posters.

My job task was to supervise their work, reading and watching previously all the material and checking that there was no possibility of mistake in the interpretation made. What the students and I experienced was the composition of a series of games and activities which led the class into a ludic review of the subject, an exchange of experiences and a discussion of theory and practice, which were very interesting.

Figure 1

Figure 2

Figure 3

In the second term, I taught the same class the subject *Psychology of Learning*. I used the same ludic methodology both in the first and second evaluations. Now that they were already used to this kind of work, the class expected beforehand some activity that would get them up from

their chairs and make them move. In the first evaluation, the groups were asked to create *stimuli* from the theory that was studied, and these had to be visual, preferably comics, short videos or parts of films, starting a debate about the theme given to the group. What I experienced was a very creative and no repetitive collection in the video *stimuli* about the themes.
The final work was a *contest* among the groups. Each group, starting from the same principle of work, has formulated a question with one *stimulus* about the themes previously purposed and all the questions were put in a pillowcase. I made a raffle of questions and the first group to lift up a sign with their group number could answer and score or not. The one who decided if the answer was or not correct was the group that wrote it. These questions were written and answered previously and I had already corrected all of them. In this experience, we had a lot of laughter and fun, we lost the track of time in the class, and there was a deep exchange about the Psychology of Learning authors.


Figure 4

In the first term of 2011, I taught for another class in the evening with older students, ranging 28 to 50 years old. This class was different from the one which I had taught the year before. They found a huge difficulty in accepting the ludic space as an evaluation option as well as they could not understand the question task fully: “What have you learned from what I intended to teach you?”.
For this class, to which I taught *Psychopedagogy and Education*, I created a game, called *The Witch Asks,* as final assessment. There were two groups of cards in this game: one with the number of themes, which the group could keep or change it; and the special cards, which had different commands as *give another example*, *oppose to the answer*, *expand the answer*, and *give an opposing example*. There were five witch cards in this group.
The groups created one question for each theme taught and answered it. The question should have a trigger *stimulus* of the issue and the group had over 4 weeks to create the questions and the answers. I have revised and adapted their answers as many times as were needed. I gave the same guarantee to this class that I had given to the 2010 class: there would be no mistake in the answers and they did not have to fear being exposed to the class. If I suspected that someone had cheating the rules – such as exchange of questions among the groups - or someone that did not participate in creating the questions and answers, I would play the *witch card*, being the one to ask the question. (Fortunately I did not have to play the witch card to any group and when it appears in the special cards, they asked me to not question them, and I did it).

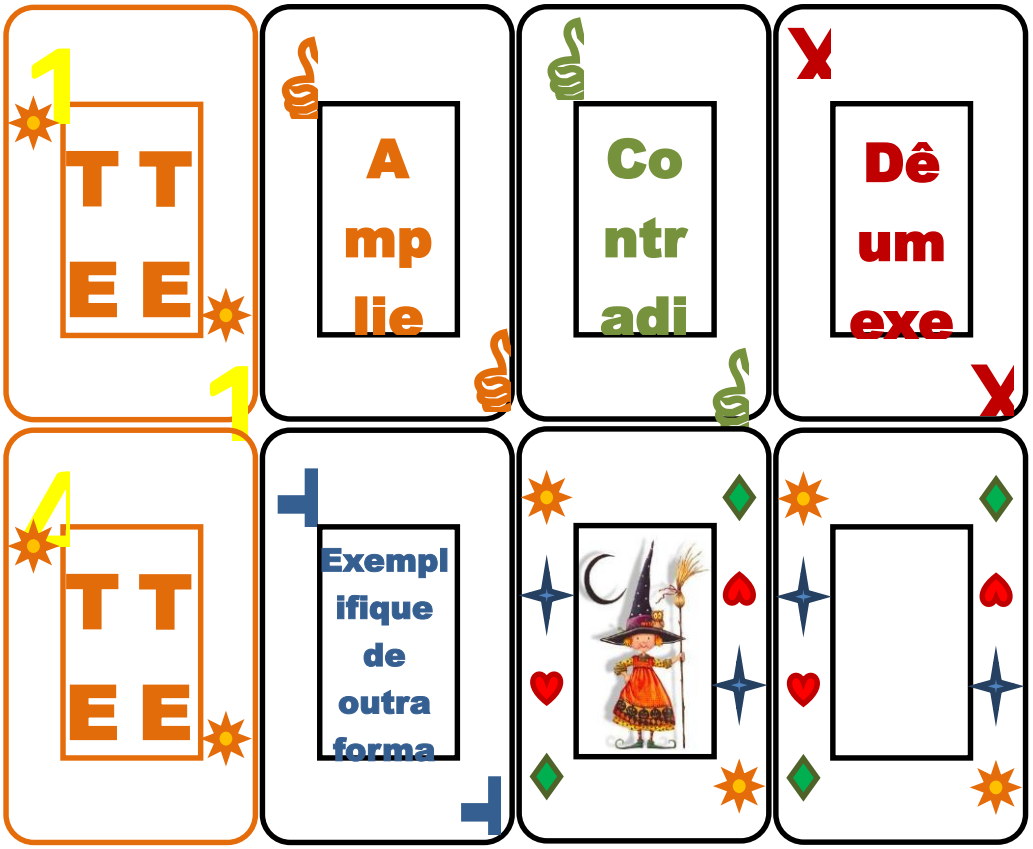

Figure 5

What I experienced with this class was something remarkable. At first they all panicked. How would they be evaluated without tests? How to create questions and answers that could not be closed questions and that had to lead into reflection about the theme? “Games are not a way of teaching or to evaluate someone!!” many said.

At the day of the games presentation, I felt a strong resistance from the future teachers on playing, sitting on the floor, laughing and trusting the teacher who had assured them of what would happen during the game was a thematic redesign. At first, no one sat on the floor, and they chose a representative to do so. During the game *The Witch Asks,* one by one sat on the floor and the class, which was supposed to end at 9:40pm, only finished at 10:20pm due to the janitors’ intervention. The question that remained was: How could students who would deal with teaching, not know how to play if the ludic space is the main space for learning?

The game *The Witch Asks* became popular among the students. All the other classes asked me for playing this game with them, besides wanting to create other games to explain the subject that I was teaching. Upon the experience with the class which is subject of this study and the class from the evening term, I decided to record how the students dealt with the ludic proposal and how I used it as a view and a methodology in the classroom.

In 2011/2 term, I taught the subject *Conceptions and Practices in Child Education*. The class was the same which I taught during 2010. I proposed to the class that we would create a course of “Practices and Conceptions”, i.e., from their experience we would put together the theoretical framework for the subject.

Therefore, I prepared the work *Building Panels*, where images were used in order to show what they understood about what is the meaning of to care and to teach. All of them took various materials, including paint, cotton, glitter, bronze powder, crepe paper, markers, colored pictures and edges for the panels. We stuck them to the walls and the student made a guided tour around

the images, saying what they see in each panel, with an afterward comment of the group that had created the panel. We realized a point that should be considered: why did all the panels follow the same pattern? If we wanted to work within the ludic with children from 0-5 years old, how could we work with formatting space?

Figure 6

The second work developed in this term was called *Weaving Knowledge Nets*. Each group had an author from the area of Child Education. They were supposed to create a ludic way to teach the main aspects of the theory of their authors to the class, which had not been taught by me yet. The works were not supposed to show the same aspects of the same authors. What I saw were works that captured the essence of each author and of how they could work with their theoretical insights in the classroom. From dramatizations to paintings, from children's songs to puzzles, from games to rimes, the classroom with its chairs piled up to have room for curtains, floor and paintbrushes, became a space for exchange and multiple learning. In this context there was no teacher or student, there was teacher-student mixed together, since all of us taught and learned.


Figure 7

Figure 8

Figure 9

Figure 10

Figure 11

The third work was called *Creating and experiencing practices in Child Education*, in other words, each group should pick a tool: modeling clay, children's story, dramatization, painting, sculpture, body movement, etc, and link it to the authors studied. The group should equally develop a proposal and apply it to children of their acquaintance. What we saw were original ideas for Child Education classes, as well as the real understanding of the theory and its applicability. The children got recorded, pictured or filmed by the students. These showed us that the children were having fun and pleasure in doing the activities required of them. When they showed some difficulty in performing the activities, the group discussed the reasons why that difficulty came up and how they would solve it.

Figure 12

Figure 13

During the experiences with my students, an instigating question arose: if the students accepted the play as a work option, why had my peers gotten surprised when they had seen students seated on the floor or becoming witches or Froebel-role? Why had it been strange for them that we were dirty from playing with paint or sweating from running and playing? Why had they looked at the classroom and wondered where the teacher was, when they did not find me standing in front of the board or behind the desk?
From all that was experienced, the feeling that remains, even though the play is discussed as a vital option for learning since Child Education this privilege is given to just a segment of Primary Education. The play is postulated as the main means of work of an educator, but after we grow up, we are not allowed to play anymore. Playing is no longer a serious and necessary thing and it is mistaken for non-teaching and non-learning.
At the end of each term, I usually ask my students to show me both negative and positive points of the course that they experienced. Here I quote some of the answers from this class so that the results that I postulate as valid for a Higher Education methodology would be supported by the speech of some who had an experience with learning-by-playing.

"The course of Developmental Psychology was, in my opinion, excellent. I loved the way the subject was approached, we had an opportunity to interact with the teacher and experience what was taught to us. I liked very much the way we were assessed because we were able to show how we had understood the subject, which at times could have been more difficult to write down all that I had learnt." (12/07/2010).
"I enjoyed the contest very much, because we had to create questions and I had never done such an activity. I thought it was very interesting that you provided us with this experience. The activity with films was also very creative, because we had to do something ludic and relate the films with the subject studied." (06/12/2010).
"I did not find any negative points during the course of the subject Conceptions and Practices in CE. On the contrary, I had the chance to get to know a new way of working where theory and practice can be used and done in a ludic way. But not the ludic in which we do it just because we are supposed to, but that which brings learning and growth." (09/12/2011)

Why to believe and defend the play as a methodology option in Higher Education?

In a survey at Brazilian academics works in the last five years, using as Keywords play and Higher Education, no thesis or dissertation was found. We do find many studies when we survey about Child Education and playing or ludic space.

Therefore, if we are committed to the play as a space and a work methodology, we need to look for authors who can support such practice. Among the authors researched, we picked D.W.Winnicott from Psychoanalysis, and his studies about playing in order to give us base for the relevance of playing in the formation and the subjectivity of the human being. To support our use of games and play-toys as a form of work inside the school and, in our case, inside the university, the presuppositions of Huizinga (2007) and of Aizencang (2005) were useful. In order to build a mediating work and construction of a process in learning and teaching as a methodological priority, we are supported by the assumptions of Psychopedagogy. In order to study and validate mediation and significative assessment in the process, we have looked at Vygotsky's and Piaget's theories; the first tells us about the zone of proximal development and the importance of experience exchanged among peers; the second in his studies about games and mainly his clinical methodology, in which he postulates that we should always question and start only from the point from which the student is able to build his thought with his own structural resources and move forward, making it more complex.

According to Winnicott (1975), what is important in the issue of knowledge, of learning and playing is exactly the potential space, one of the main ideas in order to think about the issue of teaching and learning from this perspective. The play area is similar to what Winnicott calls potential space. The potential space opens, in a person's internal world, the capacity of symbolization and, thereafter, of culture. For Winnicott, culture means everything that the human being can originally create and is connected to the experience.

Playing is established in the transitional area, in the potential space, in the ludic area. The transitional object shows "both the first use of the symbol by the child and the first play experience" (Winnicott, 1975, p.134). Therefore, "playing is an experience and it always is a creative experience, an experience of space-time continuum, a basic form of living" (p.75). Why would playing be a basic form of living? The play area provides the children with the possibility of developing expression and being prepared for life. In playing, the child acquires experience (Winnicott 1982). This is an experience of developing social contacts, since playing provides an organization for initiating emotional relationships outside the mother-child relationship. In playing, the children "make friends and enemies, whereas they do not easily make friends apart from play" (p.163). By means of playing, the children let out "the hatred and aggression" and such possibility is something vital in childhood play. The play area includes, among many expressions, the game. The ludic activity can be considered as a mediating tool for the appropriation of various habits and social and curricular knowledge.

If we analyze the experiences with the class of Pedagogy of the three terms reported here, we can see that this group, as well as the Psychopedagogy group, by means of playing, was able to appropriate pieces of knowledge which were out of their initial cognitive scope and in a significant way. In other words, if by playing we acquire experience, these students, more than the content of the subject, acquired ways of dealing with the classroom, with new knowledge. They generated ideas and different methodologies for themes which their classmates would also present. A traditional test could have had different results, but it definitely would not have led the students to share their doubts, knowledge and experiences because the tests would have been individual, and the reflection would end in the moment they handed the test back. There would not be mediation or collective construction of knowledge and, mainly, there would not be laughter, ludic exchange or use of the body to express their knowledge.

Huizinga (2007), when studying and rescuing the history of the *Homo Ludens*, traces the history of the game as an element of the culture. This author highlights that "in play there something

at 'play' which transcends the immediate needs of life and imparts meaning to the action. All play means something (...). However it is considered, just the fact that the play has a sense implies the presence of a non material element in its essence" (p.4). It is interesting to see how the view of this author is consistent with Winnicott's (1975), when this author locates the potential space as one which provides the onset of the ability of being able to know the symbol and, also, as a space *between*, of transitions and of the creative astonishment and of the creator. In this space the language lives, whether it is gestural, imagery, spoken, written.

Equally, "the situation of the play always opens a space for invention and for the initiative of the player; it brings the need for searching for alternatives and building possible answers for the situations that come, the ones that are considered free and original inside the limits of the rules that were previously established" (Aizencang, 2005, p.26). Therefore, the play or game area allows invention, wonder, creation, originality, and metaphors of the world which suspends the everyday world for a time so that it can symbolically be what it is not: the representative function of the play.

Inside an everyday universe, in the play area, Huizinga (2007), as well as Winnicott (1975), emphasizes in what concerns the transitional or potential space, there is the suspension of this scenario and the momentaneous creation of a astonishment and enchantment world, the play space, and, also, of a different time, which is limited too, having a beginning, middle and end.

In summary, Huizinga (2007, pp 16-24) describes the main features of a play, and such features are very similar to what Winnicott calls transitional object. According to this author, some features are specific to the act of play and of the play itself. He tells us that the play is exterior to the ordinary life; it is able to absorb the player in a intense and complete way; it is an activity disconnected with every and any material interest from which it is possible to make a profit; it is practiced inside its own space and time limits, according to a certain order and certain rules; it promotes the forming of social groups with tendencies to surround themselves with secrecy and to highlight their difference from the rest of the world by disguises and other similar means; generally speaking, its function may be defined by two central aspects which we find in it: a fight for something or the representation of something; it has, in its nature, an unstable environment. At any moment it is possible for the "everyday life" to reaffirm its rights, either because of an exterior impact, which might come to interrupt the play, or because of a breaking of rules, or coming from the inside, because of a loosening of the spirit of the play, of a disillusion, disenchantment.

That is why I chose the play as the main work tool with these students, but I did not get stuck to games with rules. I worked with the students' creativity and we went from board games to scenic plays. I propose to bring to the university scenario the pleasure in learning when I ask young adults to just play for a few days. Why having pleasure in learning? Would there be pleasure in learning in the university space?

Therefore, if playing is part of children and adults' life in its various forms, and the play develops the creative potential (Winnicott, 1975); if playing is not just a pleasant activity, it is important for the development because it takes the child above the possibilities of her age (Vygotsky, 1998), we should ask ourselves: why has the play been forgotten as an important resource for motivation, methodology and training during a person's academic life? In spite of the work of many theorists, does the myth still remain that play is not something serious, or that the space of the Academy is not a space where playing experiences are to be provided for future teachers? What I perceive and I hear from students is that lectures and essay tests, texts that are read without debate, turn learning into something repetitive of a process which they already know. Searching a pleasant space in the play means to bring to the classroom the time these same students had when they were younger: the laughter and the joy in playing.

However, we must be aware of the studies that question whether the ludic and the play, when getting into the school area, would not change its features, becoming a mere vehicle of

pedagogical transmission. Aizencang (2005) discusses this issue. In her book *Jugar, aprender y enseñar,* this author shows the tensions which are expressed in the implementation of the play in the practices of teaching. This tension is very evident not only in basic education, but mainly in college education. She starts from the most common point of analysis of the play as a resource for teaching and learning in the classroom: that it leaves a small edge for spontaneous and voluntary action from the individual, and that the playing will be convert itself into a teaching tool for the appropriation of curricular objectives. When the play enters the school area, says this author, this would preserve very little of the spirit of the playing challenge.

In order to oppose this idea very widespread about the play space and the game in educational instances, Aizencang (2005, pp 90-92) introduces to us the writings of Barbara Rogoff. For her, the play allows a participatory appropriation and it refers to the "transformation process which passes through the individual, product of his commitment to cultural activities, which serve as a preparation for his future participation in related activities".

When analyzing the potential of the play and of the space established by it, which we here call ludic, Aizencang (2005, p. 82) is in line with the other authors already mentioned, that this "is a social space for this transformation process and it also is an instance which promotes the subjective development". Thus, in the "ludic activities, the individual transforms his understanding of the reality and also his way of involvement with his peers group by means of his own participation".

Within the idea of participatory appropriation, Barbara Rogoff (in: Aizencang, 2005, p. 89) says that the players take on active and interchangeable roles interdependent among themselves, communicating, sharing and changing "their decisions, at the same time developing practices and processes which result in a ballast for their social and cognitive development". Thus, the active exchanges require from the individual to think, re-think, represent, rebuild and plan many alternatives, with "the transformation of his actions and arguments in order to get involved and adapt to a new situation, in an appropriation process that is produced by means of his own participation in the play".

Conclusion

From this theoretical basis, we can assert that the ludic activities and the games developed by the class of Pedagogy of three terms are supported and must be analyzed as a methodology proposal for Higher Education. Even though all the authors mentioned do not work with this side view, we defend that the play, the ludic space and the game are vital work tools and spaces to bring the future teacher to a practical experience that is necessary for his future teaching job. It is exactly these active exchanges that will cause the constitution of individuals that are critical of their way of being an educator. It is by having to work in group that social relations are called into question and must be solved in their predicaments.

The difficulties that we find with this type of proposal are numerous; we will list just a few that are significant. First comes the issue of the deconstruction of a form of learning or a shape of learning which most students bring with them when they enter at University: traditional teaching, assessment of contents, the vertical class frame. To re-signify this process takes time and sometimes it is not enough in order to cause an effective change of thought and attitude. However, we believe that if the student is not just once exposed to the process described here, if the play is an option used by many university professors, this student will leave University having another view to learning and teaching.

Another evident difficulty is the students' resistance to such a work that will always demand group work and meetings outside the classroom. There will not be just one single evaluation, but instead, a process, in which the whole group will participate. This is another source of conflict which demands work from the mediator-professor. Rebuilding the idea that "group

work does not mean that one person does the job and all get the grade" takes time and, as mentioned before, time is short.
The third difficulty is the space for works where the body will not be seated on chairs, rooms where 58 people are able to move, a pleasant and cool environment. Most of times, these activities are "noisy", it disturbs other professors and, in this way, we have to close doors and windows, staying in a place where it gets to 42 degrees Celsius. Our schools are not prepared for ludic works, not only in higher education but also in basic education.
The fourth difficulty is the time that the mediator-professor has to dedicate into creating different games, propose ludic activities according to each class and each subject and the numerous corrections required by these types of activities. We do not always have time or are able to dedicate time to be available for the students at weekends in order that the students' final result would be actually ludic, without fear of making mistakes or getting a low grade. The grade that comes from the zone of proximal development comes from the process, and it becomes a process when we can evaluate it several times, and this takes work.
Despite all the difficulties listed here, we believe that the most important achievements are to see students who are willing to be in class; to notice, in each work that is done again, that some things gets improved and gets better; to perceive the creativity, the inventiveness and the originality of the students' authorship of thought, students who feared to speak up in class, and now speak so much that we need to ask for silence.
Everyone's active participation comes from an internal motivation more than external. Noticing that, at the end of the term, what really matters is not the grade, but the play or the activities which are experienced by all, including the mediator-professor. Success is to hear or read the evaluations at the end of the course saying that before they did not think that playing was important. Equally important is to read that if they were afraid to play, now they have lost this fear or embarrassment, and that such experience has changed their practice inside the classroom, since many of them already work as teachers in Child Education.
I believe the message of this article is the words *boldness* and *enjoyment*.
Boldness when having both theoretical and practical coverage is an advantage in teaching. Teaching, as well as learning, has a risk, a risk of scratching ourselves when we scratch our lesson plans on paper; a risk of the marks which we leave, and the risk of making mistakes and having to change along the way.
Enjoyment, because a play space is created only when the class believes that you are there because you actually enjoy it and not because you are supposed to be there. Enjoyment, because creating all these activities for adults is work with their dislike a priori, until they are able to feel the same pleasure than you fell doing this. Enjoyment, because they fell that you believe in it and that you are there to lead them into reflecting over teaching starting from learn-by-doing and from the play.

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THE PORTRAYAL OF WOMEN IN ISRAELI ARABIC TEXTBOOKS ON DRUSE HERITAGE

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Abstract
Teaching heritage to a nation is important. The Israeli Arab curriculum on Druse heritage helps students connect religion with modern society. The textbooks that are still used were written in the end of the 1970s and do not reflect the changing reality of Druse women. My research shows that women must be portrayed in more diverse roles in textbooks and there must be more articles written by women. If teachers are to prepare pupils for the future, they must have more current material. If not, teachers have the obligation to model new ways of seeing women so that young Druse women can achieve equality in work and education and lead modern lives, and so that young men will accept and encourage their advancements.

Keywords: Druse, women, heritage, curriculum, gender

Introduction

The textbooks used in the Israeli Arab curriculum on Druse heritage are outdated and focused on boys and men. The textbooks portray girls and women in limited ways. They do not show how women's roles have changed within Israeli Druse society – and how they should continue to change. I researched these textbooks and have devised new strategies for teachers who use these textbooks so they are aware of the textbooks' limitations and how they can teach students.

Theoretical framework

Two public committees were appointed in the 1970's to examine the state of the Druse sector: the Ben Dor committee was headed by Professor Ben Dor, and the second was the Shechterman Committee headed by MK Shechterman who was then the Head of the Education and Cultural Committee of the Knesset.

In two government meetings in June 1975 and in October 1976, it was decided to accept the recommendations of the committees and a committee was elected regarding Druse issues.

1- Loton,O,(2005), Henokh lashevion megdary.The Kenessit of Israel.p8.

The Ministry of Education and Culture was the first to apply the government decisions, and set up an independent department for caring for Druse education57, and a headquarters in the head office called "the Committee for Druse Education and Culture", headed by Salman Falah who was appointed over Druse education in Israel.

There was opposition to learning about the Druse heritage two bodies by some Druse religious leaders who feared that the secrets of the religion would be exposed. Other critics were concerned that emphasizing the uniqueness of the Druse heritage would lead to distancing Israeli Druse from the national Arab heritage. The textbooks were written despite the opposition. For the past 40 years, the same textbooks have been used while at the same time Druse women have made enormous advancements within Israeli society. There are now Druse

2-Falah Salman, (2000). The Druse in the Middle East, Ministry of Security Press, p. 195.

women dentists, doctors, lawyers and professors. The curriculum, however, does not reflect women's changing roles. Therefore teachers using these textbooks had no available material to educate pupils to prepare for current reality and the future. The question remains, how can research into the Portrayal of Women in Textbooks on Druse Heritage Help Teachers Develop New Strategies to Encourage Equality in Work and Education within the Druse Community?

Methodology

In the "Druse heritage" curriculum material was included regarding the sect, its culture and uniqueness, principles of belief, religious and historical figures. A series of books was published on Druse heritage for grades 3-12. The Druse students who learn in Druse schools must take a matriculation exam of one compulsory and one elective unit in Druse heritage58.

The books I researched are:

Min Bustan Torathi (From the Orchard of my Heritage), for 3rd grade(1993), Haifa
Jikayat Min Korana (Stories from Our Villages) for 3rd and 4th grade1982) and 1995
Min Adabana Wa'adatna (Manners and Customs) for 5th grade (1986)
Kiyam Wtakalid (Values and customs) for 6th grade (1978)
Min Al-Salaf Al Saleh (Our Wise Grandfathers) for 7th grade (1979
Min Al Torath Al Shabi (Primary Heritage) for 8th Grade (1996, 1997)
Min A'alam Al Druse (Famous Druse)for 9th Grade (1980)
Min Oyonn Torath Banee Maruf (From the Springs of Druse Heritage) two parts for high school (1987)
Min Torath al Mowahidin Al Druse, for high school (1993)
Al Aid (Holidays) for all grades (1979)
Teachers' Guide (1979)

The texts were examined to research:

Stories about women
Images of women in the textbooks
The images of Druse women in the textbooks
The frequency of Druse women versus that of men

Four representative books were examined, the first book of the series for 3rd grade, the second for 7th grade, the third for 9th grade and the last for high schools. The results are seen in the table below.

Findings:

The First Book "The Orchard of my Heritage" for 3rd Grade

Lesson Name	Pg.	The Female	Action	Role
In the name of god and thank god	16	Grandmother	Do not eat this way. Wash your hands Wait for grandfather who is at work	Moralizing
Holiday	19	Mother	mention the name of the holiday	social holiday
The Oath	26	Mother	My mother swore for my brother	swearing for a son
The Halwa (prayer hall)	28	Women	There is one room for men and one for women in the Halwa	information
Religious and Secular	35	religious and secular	--	--
Al Nekab (Covering the head)	43	Grandmother Mother and sister	Grandmother wore one Mother and sister did this	Wearing a Nekab White kerchief

3 -Ibid, pg. 165.

Lesson Name	Pg.	The Female	Action	Role
Eating what is prohibited	54	mother	Mother asked: where are the grapes from She said: did he give permission Mother is angry: do you know that eating these grapes is prohibited	Moralizing
Eating what is prohibited (2)	56	Mother	Gave a present to mother. She said: it was prohibited because it was stolen	education
The Kosher Money	58	Yasmin	Counted her money and gave the seller his money back	Honesty
Wrong and Mistake	63	Freda Mother Teacher	 Not nice girl hat is not allowed	 Moralizing Education
Giving back the treasure	78	Girl	The judge ruled: the man will marry the girl	no role
Help and cooperation	88	Queen of doves	We must fly together	Wisdom
Reward and Punishment	91	Kamla	Kamla traveled with her father, she was sad	
Exercises for heritage lessons	108	Rafika Salha	She returned the pencil that she found Salha goes to pray twice a week	Honest Religious
		Salwa	Salwa does what he mother asks	Obeying

The first book includes 39 lessons and only 14 of them mention females, only 35.8%. Six times the image was a mother out of 20 female images. 30% of the time the mother appeared, the grandmother appeared twice and a sister appeared once.
Six girls appeared: Yasmin, Freda, Kamala, Rafika, Salha and Salwa - also 30%.
There were only two who had a role (10%):

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There were only two who had a role (10%):
The teacher explained that what they said was not nice and prohibited.
The queen of doves was wise and saved the girls.

Men appeared in many forms: religious, wise and religious, Emir, Wise Sheik, Rich man and a judge (Kadi). The men were authoritative.
Famous men also appeared: Al Amir Al-Si'id, Sultan Al Atrash, Al Sheik, Al Fadel, Alexander of Macedonia, Abraham the Father, Eben Adham.
Many boys appeared, they were active, thinking, and drew conclusions, such as in the book on the land on page 105-6.
The six girls who appeared were:
Yasmin: honest
Freda: receives a moral
Kamla: sad
Rafika: honest
Salha: religious
Salwa: obeys
They were passive and they obeyed. Three were the heroes of the lesson: Yasmin the honest; Freda who was educated and Kamala who was sad.
The message for girls in third grade: you must be religious and obey, honest, and if something happens you can be sad.
Pictures and drawings: in the lesson on the holiday, there is a picture of boys and girls playing. In the lesson on the holy place, there are girls playing. There is a picture of girls visiting a holy site, a girl with a kerchief on her head and next to her there is a little girl (5-6 years) with a short skirt.
In the lesson on the head covering (p. 42) there is a picture of a woman in traditional garb, and on pg. 44 there is a picture of a woman in traditional garb.
Out of 36 pictures of people in the book only four pictures appear of girls and women (11%).
Min Al-Slaf Al Salah (Our Wise Grandfathers)4
This is the fourth of the heritage books and it is aimed at seventh grade.
The book begins with the introduction: "Dear students: This is our fourth book from among the Druse heritage books and its topic is our wise grandfathers. The book tells the story of the lives of good men..."459
In fact, the book deals with the story of the lives of seven good believing and religious men. There is not one mention of women in the book. Are there no women who were believers who dedicated their lives to belief and to good works? I think that they do exist.
In the book, Min Alam Al Druse (Famous Druse)60 for 9th Grade there are 140 individuals mentioned and only one women is mentioned in the titles, this is 0.071%.
The last book that I investigated was Min Tarthi al Muhdin Al Druse, for high school61. This book includes material for the matriculation exam in Druse heritage. The material is varied: wills, speeches, sociological article related to the Druse, education, history, individuals, literature, poetry, philosophy, etc.
There are 24 lessons (topics). The last lesson in the first unit (number 14) is called "The Druse Woman", by Dr. Nejala Abu Ezaldin. The article is seven pages long and discusses the special status of the Druse women in religion and religious law. The article gives examples of women who ruled such as Jonblat, and women who were religious and believers such as the mother of

[59] Min Al-Salaf Al Saleh (1985). Ministry of Education, the Committee for Druse Education and Culture, Jerusalem, p. 9.
[60] Min Alam Al Druse (1980). Ministry of Education and Culture, the Committee for Druse Education, Jerusalem.
[61] Min Torathi al Mowahidin Al Druse (1993). Ministry of Education, Haifa University, Departmetn of Curricula, Haifa.

Ali Fahri of the Lebanese Shuf62. Finally it mentions Druse women who are famous, all of them from Lebanon.
At the beginning of the second unit there is an article again by Dr. Nejala Abu Ezaldin "Morals among the Druse". The article discusses the seven principles of Druse belief, and it is a three and a half page article.
There are two articles written by a Druse woman among 24 articles (0.083%), and one lesson (article) discussing the Druse woman.

Findings
Teaching heritage to the entire nation is important. Hershkowitz claims that heritage is a synonym for culture, and culture is "a group of behavioral elements that separate a certain society"63. If heritage is a culture that separates a society and separates between it an other cultures, why should we not be familiar with it?
The problem among the Druse is difficult. On one hand the religion is secret and a non-religious individual may not know the secrets of the religion. On the other hand, there must be something that sets the members of the sect part from other sects in Israel9. Every other religion learns about its special customs and laws.
The problem with the curriculum is the status of the woman in the study material. Of course the material that is taught in schools affects the education and behavior of students.
Four out of 10 books were examined: In the first book women and girls appear the most from among the four books - 35.8%. The mother and the grandmother play the role of moralizing and educating. The girls are passive, and obey or they are good (honest). In the second book, there is no mention of one good female.
In the third book one out of 14 individual mentioned is a female - 0.071%.
The last book aimed at high school has an innovation as there is a woman doctor who writes two of the articles, one about Druse women. There is almost no mention of educated or religious women or leaders. The ratio between men and women in the book is 8.77% women versus 92.33% men.
As mentioned above, religion calls for equality between men and women and even scientific equality, but the facts in the field are different.
The following are the findings:
The percentage of appearance of girls and women in the text is very low - 8.77%.
Most of the girls that appear in the texts have passive traits, and lack initiative.
No intellectual women are mentioned.
Most of the texts were written by men aside from Nagila Abu Ezaldin.
The purpose of this paper is to help teachers improve their teaching skills in the following ways:
1. To take the research as an example for the discrimination of women and girls in the academic curriculum
2. To learn to improve different academic curriculum reflecting women's current reality in society
3. The impact and effect of this discrimination on both male and female students and the way their character development is impacted because they adapt to the discrimination and therefore perpetuate inequalities within Druse society
4. Teachers can learn from this research and then work on improving their teaching methods to counter the inequality in the texts that they teach
5. To become aware and make certain they are not discriminating against girls inside class

[62] Ibid. p. 109
[63] Ika Holtakratz,(2009),**Dictionary of Anthology and Folklore Terms**, Egypt.p.24
9 kasem-falah, S. (2012),**Alkotwa Alola ledoroz Esraeel**.Alsaadee:Akko.p.67

6. The discrimination effects female students' achievement because they then perceive from the texts that their future is to be at home and be a mother and wife and that it should not concern them what profession they have or their social status and rights
7. Examination of the research helps teachers decide whether to use or abandon texts and to implement language that is appropriate along with appropriate illustrations
8. The research will help experts write academic curricula to emphasize women's roles

Summary:

Learning tradition can contribute much to promoting the status of the Druse woman as well as learning texts written by women.

Learning about the life of religious women, politicians, intellectuals, writers, etc. is crucial to society's development.

Teachers can learn from this research and then work on improving their teaching methods to counter the inequality in the texts that they teach. Teachers with an awareness of the bias in textbooks will be able to instruct their students to believe that women deserve equal rights. They will be able to transmit the idea that religious beliefs can be incorporated into modern society.

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Teacher education and professional development of teachers

TOWARDS PROFESSIONAL GROWTH BY TEACHERS´ PEER-MENTORING PROGRAM

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Abstract
In recent years teaching has become more and more hectic in all schools. Beginning teachers especially feel perplexed and lost in front of expectations concerning both their employment and performances. A novice teacher will find it important to be allowed time and scope to reflect on him/ herself, his/ her attitude to work, learners, work community and educational organization.
Ministry of Education and Culture started a project of teachers´ peer-mentoring in Finland. Oulu University of Applied Sciences, the School of Vocational Teacher Education designed a peer mentoring program for a multi-disciplinary group of teachers. The "Oulu model" which will here be presented consisted of 88 hours of contact teaching between August 2010 and November 2011 plus 4 x 2 hours of supervised peer mentoring practice in spring 2011. The education was accredited 15 ECTS credits and could be attained during working hours. The mentors and mentees represented 9 vocational secondary institutes. This study concentrates on describing the building of a pilot program for the peer-mentors-to-be and evaluating the outcome.

Keywords: community, engagement, interaction, tacit knowledge, teacher identity

Introduction

Lifelong learning at work means that skills, knowledge and competence should be dated continuously. Work life changes set challenges to develop one´s competence throughout the career. It is not realized only by doing professional work from day to day, but it needs flexible opportunities to express experiences, reflect on them and give them meanings. Tacit knowledge and metacognitive skills must be paid attention to as well.
Since work is a more and more important environment of learning, new methods for supporting personal development in work places are needed. Experienced teachers can share their contextual knowledge and competences with newcomers in peer- mentoring. In this process mentors become strengthened and mentees heard. Peer-mentoring aims at solving professional problems, setting future goals and supporting the growth of personality.
The nationwide training of peer-mentors started in autumn 2010 and is financed by the Ministry of Education and Culture. The project includes all teacher education organizations in Finland and concentrated in the first phase on secondary teachers. This research will first present the principles of building the peer-mentors´ pilot program for a group in Oulu region and then shortly illustrate its realization and evaluate its success.

Who are experienced expert teachers?

People often think that a long career makes a teacher an expert. Still it has been stated in many contexts that there are experienced expert teachers and experienced non-expert teachers (Tsui, 2009). A mere experience does not develop, but a reflected experience will do that. In addition to continuous reflection, a teacher has to have an integrated, holistic conception of his/ her work, develop his/ her situational sensitivity, ability to problematize the unproblematic, look for

challenges, engage in experimentation and exploration, theorize the practical knowledge and interpret the theoretical knowledge in practice. In general, an expert will engage in the kind of learning that extends one´s competence (Tsui, 2009, Nissilä, 2006).

Learning from experiences is based on subjective experiences which we have interpreted from our own viewpoints. Thus we remember events, once our minds have become aware of them and attached meanings to them. Since recollecting experiences can only take place in our consciousness and since recollections are abstract, they can be given different meanings at different times and situations. This means that the same or similar experiences may have different meanings in different situations and life phases. It is typical of people to continuously seek for meanings in their lives.

Personal self is the result of questioning meanings and rearranging them. Meanings bring forth attitudes and expectations concerning the environment, the self and personal action. However, it is difficult to know exactly how the information that people achieve through their senses becomes an experience in the human mind. Experience is the result of a process which will hopefully lead to understanding. Interpretation and giving meanings are part of the process. These, again, are formed on the basis of earlier observations and expectations due to earlier experiences. Besides facts, the quality of experience is colored by images and beliefs (Toskala, 1989.) Every experience prepares a person in one way or another to later experiences and thus leads to growth, continuity and new meanings of experiences. The process from observation to understanding is presented in the following figure (Fig. 1).

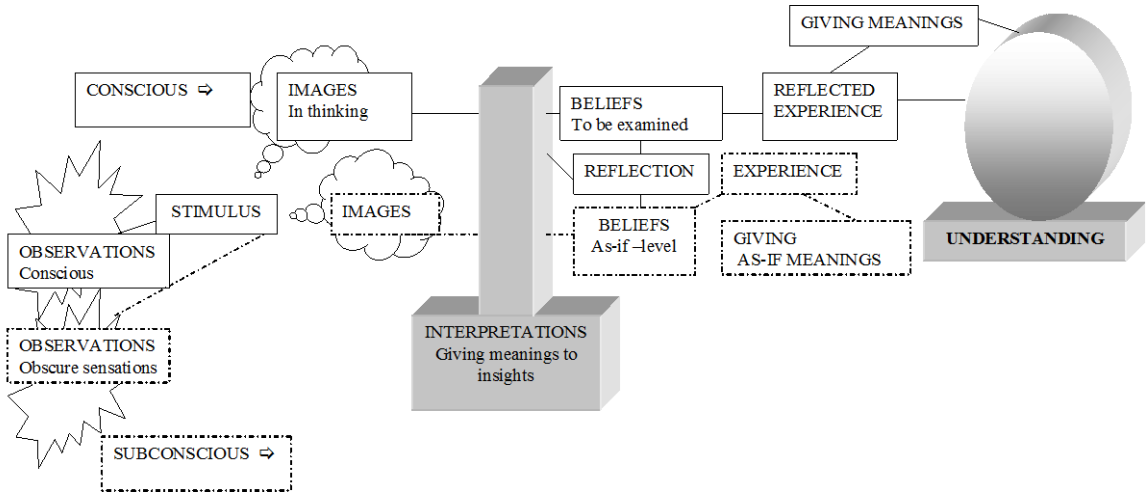

Figure 1. *From observations to conscious experiences and understanding (Nissilä, 2007).*

Beliefs that are connected to experiences will emerge continuously. They can be examined only when they have become conscious. Until they become conscious, the beliefs are on ´as if´ -level and people tend to conceive them as truths. When examined they are liable to become more trustworthy. When one becomes aware of his/ her beliefs, conscious thinking and intuition will be connected.

Teachers´ practical theory tends to be experiential and is preserved as tacit knowledge. It has many sources from biographical events to integrated values. How they get integrated into a person is defined by the learning situations and their interpretations. They filter the gained knowledge to the conceptual frame of teachers (Eraut, 1994). The change of conceptions will be conscious, if the process is supported by thinking, reasoning and theoretical knowledge.

Experiences are preserved in the form of images, as the visual elements of language. Images are situated between external or internal sensual observation and personal internal life. Typical of

them are holistic memory tracks of experiences which can be received again mentally (Turunen, 1998). Images will never be exact copies of the events or things, but are rather interpretations. We can be vaguely conscious of certain pedagogical ideas, but only becoming aware of what our experiences mean and how they can be verbalized, can vague ideas change into conscious thinking. Giving meanings to experiences is connected to becoming conscious of them. Emotions connected to experiences influence on the given meaning. They can be seen as creating a large interlocking and coherent system into which various domains of the mind neatly fit. Moreover, the bulk of our emotional experience is constituted by conscious feelings that derive from social, cognitive, bodily, and discourse-pragmatic factors (Nissilä, 2006.)
Giving meanings to experiences is important in the present project of educating peer- mentors. The meanings bring forth attitudes and expectations concerning oneself, one´s environments and action. When one becomes conscious of one´s possibilities and limitations, it is easier to understand oneself and the others. The process can be carried out for instance through activities in which the peer- mentors can deal with their experiences, verbalize them and give them meanings. This is important for several reasons: the participants can practice their skills of dialogue, listening and telling. Narratives are equipped with various other tasks than only oral expressions. The participants draw, discuss, ask, answer, summarize in groups and make plans. A great attention is paid to collective reflection.

Experience, interaction and reflection

A process of critical reflection will often start due to a surprising experience which is found to be difficult to interpret on the basis of earlier experiences (Courtenay et al., 1998). Reflected experiences seem to increase motivation, self-understanding and self-efficacy (Ruohotie, 1996). The benefits that follow from reflection are a greater understanding of one´s beliefs and values and generating new knowledge. We can compare a reflective practitioner here to both an actor and a critic of a drama: performing and analyzing the play. There is a reason to suppose that significant experiences of learning, though important for the rational skills, are even more important for emotional competencies, personal growth and social development (Nias, 1991). As contributors to professional development, emotional competencies are considered more important than pure intellect, knowledge and expertise (Goleman 1999, Nissilä 2006).
Experiences are instrumental in reconsidering beliefs and practice when they encourage conflict and reveal otherwise concealed contradictions or “myths” (Barthes, 1972; Feiman-Nemser et al., 1985; Guskey, 1986; Engeström, 1994; Ojanen, 1996). When the experience or belief is verbalized and conceptualized, the conception supports and promotes understanding (Figure 2). Peer-mentors´ self-regulation appears when they reflect on their observations and experiences in life and learning. Key concepts in it are meta-cognitive, motivational and planning processes. They include setting goals, sketching the learning objects, monitoring, self-efficacy beliefs, outcome expectations and developing belief systems which take place when personal competence is being exercised in action (Ruohotie, 2005b).
These aspects are connected by reflection, both by individual reflection concerning personal action and interaction, and by collective reflection/ collective dialogue on shared aspects (Senge, 1990; Mezirow, 1995). Collective reflection must be practiced consciously throughout peer-mentoring education, since it will be the best asset in the mentee groups after mentor education. Collective reflection means free and creative exploration of complex and subtle issues, a deep listening to one another and suspending one´s own views. By contrast, in discussion different views are presented and defended, and there is a search for the best view. Collective dialogue and discussion are potentially complementary, but most teams lack the ability to distinguish the two and to move consciously between them (Senge, 1990).

Team learning thus involves learning how to deal creatively with the powerful forces opposing productive dialogue. The so called defensive routines on one hand protect us from threat of embarrassment, but on the other hand, in doing so prevent us from learning (Argyris, 1982).
In team learning collective reflection is for examining and becoming familiar with complicated problems. It aims at creating new horizons and models of action. It is followed by individual post-reflection (Boud et al., 1985). After the group has examined and shared experiences and feelings, the individuals evaluate their experiences against the background of collective experiences. The new knowledge which is created through various reflective phases is, hopefully, connected to the epistemic structures of the person.
To become successful, the collective reflection session needs the following three prerequisites:
- the participants must suspend their assumptions when someone is speaking
- the atmosphere must be open and the participants must respect one another
- there must be a facilitator who holds the context of dialogue.

Collaboration for professional development means sharing power and mutual interaction. It means a change in teacher culture. Reflection in this change means an interactive process between earlier experiences, actions, personal theorizing and understanding theories. Its significance is in making implicit things explicit. The following figure illustrates the process of change.

EXPERIENCE	REFLECTION	OUTCOMES
-action		
- interaction	1. rethinking of the situation	
- thinking	"What happened?"	- new points of view
	2. analysing the feelings:	
	"What kind of feelings did I have?"	
	- removing disturbing feelings	- commitment
	3. re-evaluation of the experience:	
	- connecting to earlier experiences	
	- self-criticism:	- change
	"What have I been avoiding? Why?"	

Figure 2. *Reflecting experiences (cf. Boud 1995)*

As the figure shows, recognizing and verbalizing one´s emotions is important. We cannot always communicate feelings through words in the ways that are possible through music and visual arts, for instance. Although we cannot describe the situations completely to others, we can reflect on them, gain new understanding and, consequently, change our beliefs and action.
Similarly transformation as a development strategy tends to achieve changes in problem solution models and widening consciousness leading to integration of personality (Boyd et al.1988; Cranton 1994; Taylor 1989). Mezirow (1995, 50) emphasizes the rational quality of transformation. However, most researchers argue that transformative learning is an intuitive and creative process and influenced by both cognition and the sources which are outside logical reasoning like symbols, images and feelings, when creating meanings. Transformations as well as empowerment are hopeful targets of peer-mentoring education, attained by experiencing, telling and developing.

Tacit, non-formal and explicit knowledge
As was stated above, peer-mentoring as a concept tends to shared verbalizing and adoption of tacit knowledge. Non-formal learning incorporates implicit learning that gives rise to tacit knowledge as well as reactive learning which is near-spontaneous and unplanned. Tacit knowledge is important for professional work.
Tacit knowledge can be tacit understanding, routine action and wordless rules behind intuitive decision making. They are linked when professional action contains sequences of routine actions

cut now and then with fast intuitive decisions. They are based on silent understanding of the situation and pedagogical thinking. They include four kinds of processes – reading the situations, making decisions, open action and metacognition (intuition, analytic and deliberative awareness included). The balance between these depends on time, experience and the complexity of the situation. When fast action is concerned, deliberation is needed to preserve critical control. (Nissilä, 2006.)

Peer-mentoring is based on the mentor´s personal knowledge and awareness. They include the codified – or justified - knowledge in its personal form, knowledge of oneself as a person as well as task and process knowledge, integrated in professional knowledge (Nissilä, 2006). Experiential knowledge and impressions are in the episodic memory. Skills are part of this knowledge, and they bring the representations of knowledge to the situations in which the use of the skill and situational knowledge are combined. Where the explicit knowledge is defined, personal knowledge is either obvious or tacit (Eraut, 2000).

New knowledge is gained in learning. It happens when existing knowledge is used in a new context or combination. Since this includes also creating new personal knowledge, it also contains transfer. (Heikkinen et al., 2008). This is what seems to happen in the dialogue and shared action in peer-mentoring education.

Informal learning takes place in life in general. Non-formal learning is connected to other learning situations than the ones organized for learning. Besides reflection, it is purposeful, as the following table shows.

Table 1. *Nonformal learning (Eraut, 2000, p.116).*

Time of Stimulus	**Implicit Learning**	**Reactive Learning**	**Deliberative Learning**
Past Episode(s)	Implicit linkage of past memories with current experience	Brief *near-spontaneous reflection* on past episodes, communications, events, experiences	*Review* of past actions, communications, events, experiences More systematic reflection
Current Experience	A selection from experience enters the memory	*Incidental* noting of facts, opinions, impressions, ideas *Recognition of* learning opportunities	*Engagement* in decision-making, problem-solving, planned informal learning
Future Behaviour	Unconscious effects of previous experiences	Being prepared for *emergent* learning opportunities	*Planned* learning goals *Planned* learning opportunities

Planned non-formal learning is clearly deliberative, while implicit learning can be explained resulting from accumulated experience of several episodes. There is still no conscious awareness of the memories of these episodes having been combined to form tacit knowledge base which enables future action (Eraut, 2000).

Kolb (1984) has described experiential learning in which personal experiences are stored in episodic memory and during the time are used to construct generalized knowledge structures in semantic memory. Generalized knowledge can be adopted directly from the others, as well as the event knowledge stored in episodic memory can influence directly on behavior (Horvath et al., 1996). Consequently, tacit knowledge is not a side-product, but central in important daily actions.

Tacit knowledge was defined by Polanyi (1967) as ”that which we know but cannot tell”. There are two aspects of this problem: awareness and representation. A person may be socialized into

the norms of an organization without being aware either of the learning or of what some of the norms are. It is possible to imagine that the events that trigger awareness of these norms, for example transgressions by a third party might cause negative responses which then need to be explained. When the awareness has been raised, tacit learning may lead to explicit knowledge. The opposite can also be true: explicit learning may eventually lead to tacit knowledge. (Eraut, 2000, p.118.) This can happen for instance when routine actions become implicit, e.g. in tying the shoe laces. Concerning organizations, it is important that teachers, mentors and mentees become aware of the educational system, its aims and values as well as of their roles in it.

Communication in schools is another feature to be paid attention to. It can serve purposes other than making knowledge or actions explicit. Learning to talk to students, colleagues or managers may be a semi-conscious process during which the latent functions of the discourse are not revealed and may even remain hidden from qualified professionals. Latent functions may tend to maintaining good relations with colleagues while preserving personal freedom, asserting one´s professional prestige and rendering account of it to the administration, keeping managers aware of your actions while keeping the foremen behind your back. Latent communication tends often to mislead, because implicitly acquired discourse has been developed for that very purpose. Communication is one area that peer-mentors should be able to analyze and help mentees understand its functions.

Communication supporting cross-cultural understanding is a new duty of mentors and mentees in the present situation in Finland. Turning from a homogeneous country to a multicultural one influences on education. Teachers need to understand that cultural identity is not only the way of speaking, but is connected to identities. Cultural identity, again, is the representation of one´s world view. For that reason, multicultural learning is not only language lessons, but a more complicated theme.

When teachers are asked what they learnt in a course in general, they may find it difficult to answer, if they are not used to speaking of learning in proper terms. In their answers they are more likely to refer to formal learning than to non-formal. The latter belongs to their work, but they do not recognize and interpret e.g. problem solution as a learning process. It is also difficult to make them describe their work, since many things are taken for granted, or talk of the quality of knowing and expertise (Eraut et al., 1998b)

An interview research about learning at work place (Eraut et al., 1998a) explained that the ability to talk was connected to a person´s earlier experiences about wording his/ her knowledge and was easier, if in the situation there was:

- some mediating object like a picture or a drawing which colleagues were accustomed to discussing, e.g. a video, a diagrammatic representation of a piece of equipment, a graph or a set of figures; or
- a climate of regular mutual consultation encouraging those consulted to describe what they know; or
- a training or mentoring relationship in which explanations were expected, sometimes of cultural or behavioural norms as well as more technical matters; or
- an informal relationship leading to work-related discussions of information out of hours, when more `provisional ‘and ´riskier´ comments might be made which conveyed some meaning but were not understood as pretending to be comprehensive or accurate; or
- a crisis, review or radical change in practice, which caused people to exchange opinions and experiences, sometimes also to make values more explicit. (Eraut, 2000, p.120)

  In continuing education, which peer-mentoring represents, the ability to think and talk about the work situations as well as to analyze the sequences of events is supported. The above mentioned measures have been taken into usage. The peer-mentors were provided with vocabularies for talking about the aspects of experiences and concepts and theories which helped make sense of the experiences and understand the issues and alternative

conceptions as well, and do this according to mentors´ ethical principles (European Mentoring & Coaching Council).

Tacit Knowledge of People

Much knowledge of other people is tacit: although one might gossip about them, he/ she does not often have to put knowledge of people into words unless it is a specific part of one´s job. Yet some knowledge provides the basis of unhesitating daily interactions with others. (Horvath et al., 1996.) Knowledge of another person is mainly collected from series of encounters set up for other purposes: only a small percentage of meetings will lead to getting to know that person as an objective, most often it is an incidental side effect. Knowledge of other people gathered in this way is not questioned and is not likely to be created under one´s critical control. Explicit knowledge can be created through reflection or from other sources, but is not supposed to replace the tacit knowledge which enables one instantly to respond to people one knows. This knowledge of other people is taken-for-granted, is self-confirming and includes:

- our encountering with another person which may be influenced by situational factors;
- remembering most obviously the immemorial events connected to the person in question;
- preconceptions created by earlier encounters; the sample is not constructed from genuinely independent events;
- personal constructs by people (Kelly, 1955) as the result of their life experiences; they affect people´s understanding of those whom they meet (Eraut, 1994)
- Tacit knowledge continues to influence, because it is available. It is seldom as valid and unbiased as we like to assume.

Mentors in peer-mentoring should be guided to encounter people and their situations as well as draw conclusions of them in other ways than by tacit, often irrelevant knowledge. We should also ask, if we can listen to and interpret what we hear. In the present peer-mentoring education this issue is approached through Human Dynamics (Seagal et al., 1992). Understanding and appreciating oneself and other people is actually the basis of all other issues included in the program.

Affections and identity

A significant factor in the teaching profession is personality. Good teachers are said to have convincing personalities. Something individual is involved in making the difference between a teacher who merely does the job and a good teacher. This personal feature marks the professional self, the core of which is, supposedly, a hierarchy of values, goals and standards which the individual has developed in order to make decisions.

Empathy and self-esteem are intertwined. Kalliopuska (1994) claims that only the persons with sound self-esteem can adopt the other's role and see the situation from the other's point of view. Emotion, especially empathy (Hautamäki, 1996) is the natural habitat of moral and ethics. Because mentoring is strongly linked with a teacher´s own identity, only the teacher who is conscious of him/herself and has self-esteem can stand for diversity, insecurity and get along with contradictions. The work identity of a mentor is composed of:

- mental models;
- explicated values and attitudes
- intra- and interpersonal domains such as self-concept, identity and realistic self-esteem, self-efficacy, self-direction, self-reflection;
- emotional intelligence (i.e. intra- and interpersonal skills, adaptation, perseverance and general well-being) (Nissilä, 2006).

Facing professional change into a mentor is not just an intellectual and rational matter of learning. It is also a question of undertaking the necessary emotional work inherent in any major changes or new professional tasks. Changes imply new attitudes, skills and understandings. In a way learning to act as a mentor may pose a threat to the teacher´s self-understanding and belief systems. It requires modifications in the beliefs and assumptions of the role identity. (cf. Kohonen, 2002).

A professional is able to combine the demands from outside, his/ her own expectations of others and his/ her ideal self-image which she/ he can compare to his/ her real self-image. Professional development is constructed in collegial interaction through individual reflection on conscious wishes and observations. In this autonomous process personal impulses and objectively observed ideal self-image should be balanced. It will lead to understanding that the issues of collegiality and their impacts on mentors´ self-images should be dealt with in detail in peer-mentoring education.

The role of emotions is connected to professional identity in two ways: they shall be recognized and the knowledge must be included in self-knowledge. Emotions can become either an obstacle of development or the power of change, and in this way they reveal the multiple construction of teacher identity and the situationality of emotions (Kelchtermans, 1996). Emotions are indispensable even in rational action. Kasl et al. (2002) states that in order to be successful in learning and constructing identity the teacher has to integrate four sub-areas of the psyche: affective, observation, cognitive and practical sub-areas, which come together in reflection. Heikkinen (2000, p. 10) sees a reflective teacher as a problem solver, not a technical rationalist (`bricoleur`). This is also what a peer-mentor will have to do.

Deleuze et al. (1987) sees the identity as incomplete and dynamic. A shared dynamic process in a community emphasizes the affective aspect, when recollecting and giving meanings to experiences are central. Emotions as such are not, however, central in the formation of individual and collective identities but the importance is given to the understanding of the roles. Narrative ways of completing the identities serve well in mentoring education (Estola et al., 2003). It is important to become confirmed that the mentors are offered means to deal with experiences, strengthen self-images and get free from such conceptions that do not support a personal and professional process of growth.

Building the peer-mentoring program

Combining all the aspects explained above the “Oulu model” of peer-mentors´ education was built. It starts from the centre of the circle, from “me and you” and identities proceeding via communication and interaction skills to communities, colleagues, and coping at work, to networking and substance & pedagogical competencies, to values and ethics, to meeting diversities and planning lifelong learning, to keeping up professional competence as well as to systemic understanding of organizations. The model is presented in figure 3.

The themes of training were constructed so that enough time was left for discussions, sharing experiences and solving everyday work problems. Because all the teachers were competent professionals, the focus was on professional growth. The themes were chosen to give the mentors tools for analyzing the possible problem cases of the mentees and understanding the situations. They were also reminded of the ethical and practical rules of mentoring (EMCC). The mentees´ program was planned jointly by mentors and mentees the corresponding groups.

Figure 3. *Peer-mentoring top (Nissilä et al. 2010, Nissilä 2012).*

Research context, methods and research questions

The program of the Oulu peer-mentoring model consisted of 88 hours of contact hours between August 2010 and November 2011 plus 4 x 2 hours of supervised peer mentoring practice in spring 2011 for 10 secondary vocational teachers, both males and females. The mentors and mentees represented 9 vocational institutes. The mentoring hours of both mentors and mentees were included in the work agreements. The groups met in their respective school units. The research questions were: 1) Which contents were felt most useful in the program? 2) What practices were most inspiring in the group? 3) What instructions would they give for designing peer-mentoring courses in general? The peer-mentors, their headmasters and mentees answered questions of their expectations in the beginning and assessed the education in the middle and after the program. The following results and analyzes concentrate on mentors only. The expectations and feedback sheets (N=10) were collected literally and orally with both structured and open-ended questions (individual answers) as well as free writing (individual or group texts). The structured questionnaires were in scale 1-5. Averages were counted, although the measuring tool is not purely mathematical. Open answers and free writing were analyzed using a qualitative content analysis, having one sentence or a part of sentence carrying one meaning as an analysis unit. The qualitative analyses were made by the researcher alone twice with an interval between, and checked by a colleague, who understood the expressions in the same way.

Results

In general the findings show that the preconceptions and attitudes were positive. The feedback in the middle and after the education showed satisfaction. Small diversities were observed concerning the themes. Important things were considered that peer-mentors were given time to share experiences, give meanings to them, strengthen interpersonal relations and learn to listen to their colleagues´ meanings, not only words. In a multi-disciplinary group peer-mentors had realized that their roles were important in all the organization and they saw themselves as developers of knowledge.

1) The contents

The peer-mentors´ *expectations* given on the questionnaires were high. Concerning the contents of the education they expected to learn self-knowledge, interaction skills and the work as mentors (4,2). They supposed that the dialogues and discussions in the group would give them support and feeling of belonging (4,2). For that reason they also wanted to become more conscious of their share in the work community (4,3) and also pay attention to their ethical perspective and that of the working community members (4,3) (Attachment 1).

The *feed-back* of the questionnaires concerning the same aspects as the expectations showed similar results. The average of the expectations was 3,95 and that of the feedback was 3,84. The reason for the different points is largely the unsuccessful adoption of social media during the course. The intention was to have a Ning e-learning base in the shared usage, but the system was not ready to be used when the education began. It had also some other problems, so other possibilities should be looked for (Attachment 1).

Open questions yielded 79 statements of the *expectations* and 125 feedback statements concerning the contents. Teachers in peer-mentoring education expected to increase their self-knowledge, and self-respect (29/79 statements), to get support, share professional aspects and enjoy collegial discussions as well as to become better aware of coping at work (6/79). (Attachment 1.) A special praise was addressed to the Human dynamics–course at the beginning of the education. It was referred to during the education and again in all feedback discussions.

2) Practices

In their *feedback* the teachers mentioned that interaction with other participants was ample and that they had numerous occasions to practice interaction skills (22/125). Support, collective reflection, discussions and peer support were mentioned as the most important results in 30 statements out of 125. Coping at work was the target of interest in many comments. The teachers stated that coping at work is in connection to the well-being of themselves and the others. They also reflected on various ways of engaging their colleagues in shared plans and activities (23/125). In general they expressed that peer-mentoring is a very motivating and enhancing way of developing one´s and the colleagues´ professional competence.

In the group feedbacks (3 groups, both oral and literal) it was felt important to preserve absolute confidentiality and to build a shared discussion forum to add to courage among the novices. The discussions should preferably be concentrated on reflecting professional aspects, development of identities and daily school practices. An additional remark to the practices concerned a "mentor-café". All hoped to be able to serve the mentees with a cup of coffee at the beginning of discussions.

3) Advice

The mentors considered it important that the timetable of the meetings should be planned with care. They also stressed that nobody should be compelled to become a peer-mentor without the personal consent, although he/she were suggested by the colleagues. The mentees should also be joined to a group of mentees on voluntary basis and/or after the initiation education of the organization.

In general the mentors said that they had gained more of the education than they had imagined getting beforehand.

The second round of the education (2011-2012) is going on. The first reflective mid-essays have already come. The present peer-mentor education can be drawn together in the following comments:

"I have found it empowering to discuss and listen to others´ experiences … That others have similar experiences seems to join us together. And odd enough, it feels nice to belong to a nice group. … A young teacher thinks more of him/herself than students in the beginning, or at least

*I did so. Later one´s own coping doesn't cause trouble, but the contact with a student is always full of questions. And people´s diversity begins to become revealed in many ways. Who understands the language of pictures doesn't understand the meaning of words and vice versa. … My empathy towards a new teacher has increased and the feeling of my own brilliance has decreased. Both things are necessary to learn." (*social and health care teacher 1/ 2012*).*
*"Thinking is important in all employments and professions. It is difficult to teach. You can share only what you have collected, sometimes I feel that it is not much. As a teacher I rely on intuition, but it can be experienced only in the classroom when you start a lesson and think hard how to start with this group. Intuition is the so called tacit knowledge the acquisition of which demands knowledge, experiences, reflection, analyzing, self-efficacy, instinct … Can these things be transferred to others? I dont know, but you can listen and ask questions, share experiences and tell which path is not worth taking … " (*social and health care teacher 2/ 2012*).*

Conclusion

The findings show that the expectations were high among all the groups concerned. The feedbacks in the middle and after the education showed satisfaction as well. Different opinions concerned mainly the themes. Important things were that mentors were given time and scope to share experiences, give meanings to them, strengthen interpersonal relations and learn to listen to their colleagues´ meanings, not only words. In a multi-subject group mentors had realized that their roles were important in all the organization and they saw themselves as developers of knowledge. They hoped that the administration of educational organizations should invest in peer mentoring and provide them by necessary resources.
The outcome of the research was also that the "top" of peer-mentoring, i.e. the model built for realizing the program was both deeply thought and practical. The first thing to be developed is to rethink of availing of social media. New solutions were already found for the group that is being trained in 2011-2012.

Discussion

The research of peer-mentoring strengthened the ideas of different modes of belonging: engagement, imagination and alignment, for identity formation takes place in the doing, in mutual engagement in activities, in constructing common understandings and in developing shared repertoire of routines. What is also important is to find sufficient financial support for peer-mentoring in schools and organizations.
Nothing speaks for the divinity of the teachers´ pedagogical ignorance. On the contrary, since the birth of educational thought, teaching has been seen as the most complex and demanding task. Clarifying the elements of successful teaching has been one of the most challenging tasks for the educational experts (Fox, 1983). Competence to teach is neither an inborn talent nor a result of expertise in a professional skill. Ability to act and socialize in teacher communities needs special support. What was the most convincing in reading and listening to the peer-mentors´ words was the thoroughgoing sense of mutual respect. The title of this report could therefore have been *sharing and caring in the school communities*.

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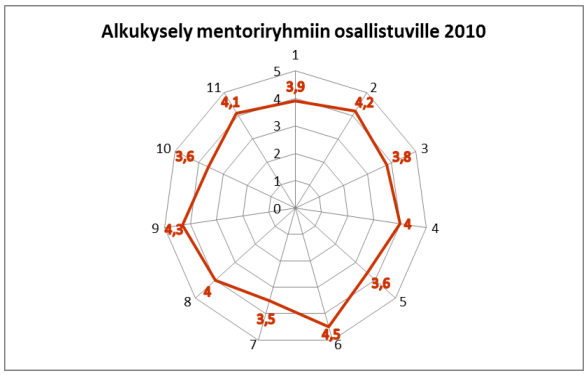
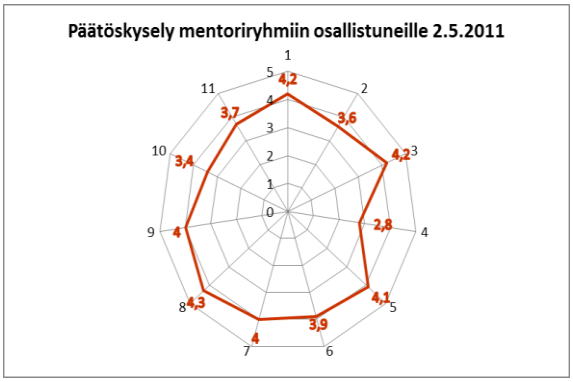
Attachment 1.





Questionnaire 1, Expectations: I expect of peer-mentoring education…

1 …increase of self-knowledge, self-respect and interaction skills	7 …shared support in developing myself
2 …new models of action and learning in the learning community	8 … discussions and experiences of how to act ethically and well as a member and representative of the working community in networks
3 …reflection on significant experiences together with the peer-mentor group	9 …discussions and shared experiences of how to take care of one´s and the others´ coping at work in different organizations
4 …learning and deepening the social media skills	10 …learning to act in multicultural and heterogeneous groups
5 …the support of the group in my professional work	11 …construction of a holistic conception of the possibilities of developing my competence and that of the others in all organization
6 …discussions from which I could learn and which would enhance me to grow as a peer-mentor	

Questionnaire 2, Feedback: Peer-mentoring education has …

1 …increased my self-knowledge, self-respect and interaction skills	7. …has acted as a community in which I can talk of the themes that I feel interesting
2 …given me new models of action and learning in the learning community	8. …helped see myself as an important part of a wider work community and pay attention to the ethical action of work community members
3 …offered me opportunities to reflect on significant experiences together with the peer-mentor group	9. …given provisions to take care of my own and the others´ well-being at work
4 …has given me chances to learn and deepen my social media skills	10 …given knowledge of meeting multicultural and heterogeneous groups
5 …supported my development as a teacher and peer-mentor during the school year	11 … helped me construct a holistic conception of the educational organization and pay attention to the colleagues´ possibilities to develop
6. …the contents of peer-mentor education have met my expectations and motivated me to develop myself	12 … helped me develop the following competences/ qualities/ aspects (freely written open answers)

COOL TEACHERS WANTED!

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Abstract
About 30 % of the differences in the performance and learning outcomes of pupils can be explained by features of the teacher and the instruction. Therefore it is obvious that cool teachers (in the sense of good and competent teachers) are needed. According to an Austrian project, COOL teachers are wanted, too. In this context COOL stands for COoperative Open Learning, a teaching model mainly based on Helen Parkhurst's Dalton Plan. COOL may also be read as COmputer-based Open Learning that can support teachers and pupils in many ways and all subject matters. Both, Cooperative and Computer-based Learning can be very effective, which is supported by neurodidactical research as well. But unfortunately, they are still not applied by all teachers nor integrated in the curricula of teacher education. No matter which meaning of COOL prevails, cool teachers are needed in any case. This paper will try to develop a profile of COOL (in all three senses) teachers and show how we can help people to become cool respectively to apply COOL. Furthermore it presents some examples for COOL teaching and reports on experiences of COOL teachers.

Keywords*:* cooperative open learning, computer-supported learning, neurodidactis, teacher education, teacher role

Introduction

The daily work in classroom with more and more "difficult" pupils as well as numerous scientific papers (Bernard et al., 2010) claim it: Teachers and teaching must change because also pupils and conditions change. COOL teachers are wanted! This means: Teachers have to

- be cool in the sense of good and competent, not only in their subject matter(s) but also in his/her behavior in classroom;
- foster COOL methods, which means COoperative Open Learning methods according to the Austrian teaching concept COOL, and
- apply COOL - COmputer-supported Open Learning.

The abbreviation COOL is taken from an Austrian teaching model of the same name - it will be described in 2.1, but in this paper the term COOL will imply all three definitions given above because they all allow brain-based or better brain-friendly and therefore effective learning.

It may be effective but it requires another type of teacher than represented in traditional classroom settings. The characteristics and qualities of a COOL teacher are described below and summarized in the COOL teacher profile.

Based on these requirements the paper will propose some contents that, in our opinion and supported by neurodidactics, seem to be necessary in the teacher education and in-service training.

Finally, we report on some COOL experiences in computer science education and two projects of the Austrian support program "Informatik kreativ unterrichten" (Teaching Informatics Creatively) that show how neurodidactical principles and brain-friendly learning can be put into practice.

What is COOL?

COOL has, as already mentioned above, three meanings that all belong to a good respectively COOL teacher.

The first and original one, the adjective cool is used as a synonym of good and competent. It describes teachers who have not only high professional competences in their subject matter(s) but also certain personal and social competences, so called soft skills. These are important because effective learning needs good relationships and, on the other hand, teachers serve also as models concerning social and emotional competences.

The abbreviation COOL, in accordance to an Austrian teaching model of the same name, means COoperative Open Learning. It has been developed starting from a project in a vocational school as a response to problems in some classes with "difficult" pupils that could not be solved by traditional methods. The COOL concept, described e.g. in Sabitzer (2011a), is mainly based on the Dalton Plan and follows the same three principles: freedom of choice, cooperation and budgeting time (self-reliance). COOL proposes that up to 30 % of the lessons should be open for free work, where the pupils work on their own following written assignments and having free choice concerning topics, time, room and methods. (COOL...) Some teachers even offer more free work phases depending on the subject matter and topic. Especially in computer science classes may be very heterogeneous because of interests and previous knowledge of the pupils. In the case of high heterogeneity open learning and free work should be the methods of choice. This form of teaching respectively learning requires other attitudes and competences of teachers and learners than traditional teaching as well as other environmental conditions and assessment methods, e.g. portfolios like it is proposed in the project described in chapter 4. (Bohl / Kucharz, 2010)

We need COOL teachers because we can observe more and more, that traditional methods do not work as well as in the past and sometimes they even fail. Starting from the authors' experiences in the classroom, positive as well as negative ones, and dialogues with other teachers and pupils we will try to explain in the following pages what COOL teachers have to know, to do and to consider for effective teaching and learning.

COOL teachers wanted

COOL Teachers are good teachers, so certainly all criteria for good teachers concern COOL teachers, too. But this is not the topic in this paper that focuses on the new role of teachers in order to adapt the changing conditions in a COOL classroom.

According to Korthagen (2004), who describes the essence of good teachers, two questions are essential in the discussion about COOL teachers:

(1) What are the essential qualities of a COOL teacher? and

(2) How can we help people to become COOL teachers?

It would go beyond the scope of this paper to list all characteristics of COOL teachers. It won't quite be possible says Korthagen (2004), who gives a good overview of tendencies describing the good teacher. He mentions that "perhaps it is even impossible or pedagogically undesirable to formulate a definitive description of 'the good teacher'". This will certainly be relevant also for "the COOL teacher". We will focus only on attributes that are really essential for teachers in our changing society and new classroom settings. New does not mean newly invented because many teaching and learning methods proposed by the COOL concept and recommended by neurodidactical research, too, are old and applied since centuries by good teachers and presenters of progressive pedagogy. New means that they are not yet considered in teacher education; and new is that these old methods can now be proved and supported by brain research.

COOL teacher profile

The essential attitude of a COOL teacher is explained in only one sentence by Maria Montessori (1870 – 1952): "The teacher has to be passive so that the child can become active." This is essential because learning is always an active process. Knowledge cannot be transferred; each brain newly creates/constructs its own knowledge on the base of the own, individual world and integrating knowledge and competences already saved in the long-term memory (e.g. Sabitzer 2011b). This is not possible when the teacher mainly follows a traditional role giving the same lectures for all and examining the same competences and knowledge. Pupils are individuals and learning is individual. This has to be considered by COOL teachers when their lessons shall be effective. And this leads to "new" methods like SOL (self-organized learning), PBL (problem-based learning), COOL (cooperative open learning), LUS (learning under self-control) etc. For further information we refer e.g. to Sabitzer (2011a), Klippert (2010), Herold and Herold (2011), Bernard et al. (2010), Bembenutty (2011).

All these methods where pupils are more active require teachers' competences and attitudes different to traditional ones on different levels. Korthagen (2004) presents these levels in the onion-model (Fig. 1):

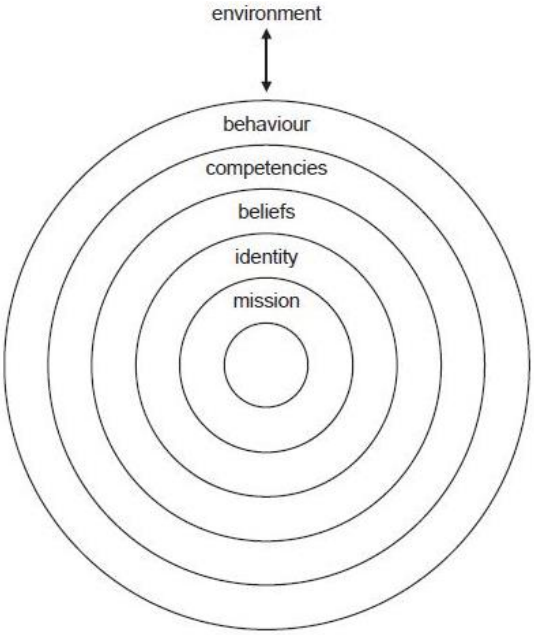

Figure 1. *The onion: a model of levels of change (Korthagen, 2004).*

It shows the various levels of people that can be seen as different perspectives from which we can look at how teachers function. The outer levels can influence the inner levels, e.g. the environment can influence a teacher's behavior and competencies can be developed by repeating a behavior often enough. An influence from the inside to the outside exists, too. The behavior can have an impact on the environment and one's competences determine the behavior that a teacher shows (Korthagen, 2004).

Herold and Herold (2011) describe what teachers need in SOL settings. They mention social competences and personal, emotional experiences as well as a systemic-constructivist comprehension of the teaching role.

Bernard et al. (2010) divide the essential preconditions of teachers applying individual and personalized learning in two features. For them teaching professionalism needs attitudes and competences. A professional attitude means

- perceiving and appreciating the heterogeneity,
- a changed understanding of the teacher's role,

- recognizing and internalizing the changed meaning of knowledge,
- the ability of self-reflection, and
- a positive self-concept.

The required competences besides the professional knowledge in the respective subject matter are:

- the competence of self-organization and self-control,
- the ability of fostering self-organization and self-control of the pupils,
- the diagnostic competence, and
- the methodical competence.

The pedagogical attitude shall be based on humanistic psychology and the constructivist theory. The personality and the teacher's attitude towards his/her pupils are central elements of good and effective teaching as it is confirmed by neurodidactics (Herrmann, 2009; Spitzer, 2002; Sabitzer, 2011a; Bernard et al., 2010).

This is supported by Jensen (2008) who postulates that "Your [the teacher's] attitude each day is as important to learning as the material you present. […] Teachers who are happier and more pleasant to be around bring out the best in their learners."

COOL teachers have to assume new tasks as described in Gómez Tutor / Kammerer (2002):

- They act as models and shall offer a wide range of activating and traditional teaching and learning methods of which the pupils may chose the relevant ones in their self-organized learning process.
- They act as learning advisor and tutor, that means, they accompany their pupils in their learning process and help or counsel them concerning learning strengths and weaknesses as well as in difficulties.
- They support the pupils in their motivation; speak with them about fear, negative expectations of success, negative pressure, and aims of learning. They encourage them and help them, shortly: they don't let them alone in their self-organized learning.

The last point is important, because open and self-organized learning is sometimes misunderstood. Our experiences and the results of a questionnaire given to teachers and pupils of a vocational school show that some traditional teachers, and pupils as well, think that self-organized learning means learning without a teacher. Certainly, for some very good pupils this may be the case, but weak learners need and get more help in COOL and free work phases than in traditional lessons (Sabitzer, 2011a).

These lessons have to be planned well, so COOL teachers shall keep the brain in mind already in the planning and design of their lessons. Sousa (2010) presents 21 questions, which teachers should ask themselves in order to plan brain-based lessons. These questions consider automatic brain-functions, the memory process, cognitive learning effects etc. COOL teacher should ask themselves e.g.:

- Which type of rehearsal should be used within this learning, and when?
- What chunking strategies are appropriate for this objective?
- How will I maximize positive transfer and minimize negative transfer?
- What emotions (affective domain) need to be considered or avoided in learning this objective?

Based on the meaning of COOL as COoperative Open Learning COOL teachers shall apply different cooperative teaching and learning methods like teamwork, group puzzles, reading circles etc. These methods may be supported in many ways by COOL in the sense of COmputer-Supported Open Learning integrating communication technologies in the classroom as well as in informal learning settings. So COOL teachers should know how to use Skype, Wikis, Facebook or Smartphones etc. This may be more interesting and therefore more motivating - and certainly cool - than a simple conversation during a teamwork session in the classroom.

All these COOL (in all three meanings) competences, qualities and attitudes of teachers allow brain-friendly and effective learning. So it is time to consider them also in the teacher education and training. Some proposals are made in the next chapter.

COOL teacher training

COOL teachers are wanted - but they don't fall down from heaven. We have to help people to become COOL. This concerns not only the education of future teachers but also the in-service training of teachers in all schools. Not only lectures and seminars about COOL teaching methods and neurodidactics seem to be necessary, but also the motivation and willingness of teachers has to be fostered. This is often difficult because many teachers don't want to leave their well-known way and try new and unknown things. Furthermore the requirements of the daily school life seem to get higher and higher because of various reasons like disciplinary problems, bureaucracy and others. This costs energy and often inhibits the teachers to "open" the classroom and to try new things.

A possibility to motivate teachers to change their lessons and integrate new methods might be a project like "Informatik kreativ unterrichten" in Carinthia, a region in the south of Austria. In this program teachers of all school types, from primary school up to higher secondary school are funded with a certain budget in order to implement creative ideas for informatics and ICT in the classroom. Two projects of this program will be presented in the next chapter about COOL experiences.

Starting from own experiences in COOL learning and our research in the field of neurodidactics we want to propose some contents that should be offered in in-service training as well as integrated in the curricula of teacher education.

For effective teaching it seems necessary to know the basics of neurodidactics and brain-based learning. The most important principles accompanied by practical ideas for computer science education are described in Sabitzer (2011b, 2011c). This contains contents like the following:

- Physiological effects on learning;
- Emotional and social effects;
- Memory system and cognitive effects;
- Brain-based lesson design;
- Brain-compatible environment;
- Assessment with the brain in mind.

From neurodidactics we know that the impact of emotional and social effects on learning may be very high. This must be considered, too, in teacher education and in-service training. Teachers should have a high level of empathic and social competence, of self-reflection and the ability to perceive individual needs. As also Herold and Herold (2011) claim the training of social competences must be reinforced during teacher education.

As response to our changing society, to increasing difficulties at school concerning discipline and behavioral problems, and a high burn-out rate among teachers it should be considered that professional and methodical training won't be enough. It would be necessary to offer supervision for teachers as it is obvious in all other social professions (Friedrich, 2008).

Teachers are no longer only purveyors of knowledge. Some phenomena of society like violence, drugs etc. make teaching more complex and difficult and teacher often don‘t know how to deal with these and other problems. This should be considered already in teacher education by integrating more psychology in the curricula in order to learn how to deal with problems and conflicts as well as how to maintain the own physical and mental health by managing the daily stress. (Official Journal of the European Union, 2008) In view of the high burn-out and depression rate among teachers this seems quite necessary (Unterbrink et al., 2007).

Herold and Herold (2011) propose SOL (Self-Organized Learning), which is a part of COOL (COoperative Open Learning) as a way to avoid these problems. SOL seems to reduce the daily

stress and disciplinary problems and should be fostered in all schools. COOL teachers talk about a certain relief in SOL-settings, where the pupils are responsible for their own learning process. This was also reported by some teachers of vocational schools in informal interviews and corresponds with our own COOL experiences, too.
The following chapter reports on two examples of COOL in computer science education, both part of the project „Informatik kreativ unterrichten“ (Teaching informatics creatively).

COOL experiences

COOL spreadsheets

An example for teaching spread sheets in a “cool” way is described in the following paragraph. Two teachers from a vocational school of commerce and tourism tried to explain basic spread sheet concepts with animations and simulations.
Normally the spread sheet calculation basics are taught by showing examples of calculations or by showing the pupils how to calculate and they imitate the teacher.
In this new method the pupils should understand the basic concepts of spread sheet calculation and should be able to transfer the knowledge from one spread sheet software (usually Microsoft Excel is used) to other unknown spread sheet programs.
In the animations the pupil is a part of a spread sheet, he/she is i.e. a cell. In the classroom the cells (pupils) are connected with threads to show the interdependence of the cells and their content. The basic concepts behind this animation are relative and absolute cell references.
The effects of the animation should be evaluated by:

- a test immediately after the animations to check the understanding of the cell references;
- a test with an example to be transferred in Apple Numbers;
- a test about three months after the animations to check “long term” understanding.

Unfortunately it is not possibly to do the long term check later because of project restraints. At the moment no evaluation results can be published.
For the transfer of the concept to any spread sheet software the pupils should calculate the following grid in Apple Numbers. Please notice that the pupils have not seen the software Numbers before.

Average mark					
Informatics			mark 1, 2, 3	Good!	
	Karl	Paul	mark 4, 5	Exercise more!	
homework	3	2			
tests	4	5			
participation	2	5	motivation Paul:	Exercise more!	
average	3	4	motivation Karl:	Good!	

The experiences made in these creative lessons based on animation and simulation of computer processes and data correspond to research findings of the project „Informatik erLeben“ (Experiencing Informatics) accomplished at Klagenfurt University: The pupils enjoyed the playful way of learning and even complex and difficult core concepts of computer science could be taught without problems (Bischof & Sabitzer, 2011).

Teaching programming the COOL way

Learning how to program has quite a lot in common with spreadsheet-education. Like with spreadsheets, programming basics are being taught by means of show-and-tell. The learners

imitate the teacher or, even worse, copy the code of a program presented to them. Very often this strategy is triggered by the programming environment in use which had been designed for professional programming but is quite inadequate for learning. Papert (1993), Resnick (2009) or Kölling (2010) pointed at principles of good learning environments for programming like simplicity of the user interface, support for easy coding, a visual representation of what the program does and programming goals that are meaningful for the learner. Logo, Scratch and Greenfoot, the corresponding learning environments, inspired a step-by-step approach to teach programming the COOL Way.

In fact, Scratch was the first choice to add a notion of COOLness to programming lessons by turning the learners from passive consumers to active producers of basic programming knowledge and programming skills. Scratch offers graphical programming bricks that are combined into programs to let an actor move around and do something inside a surrounding that can be enriched by the programmer. Hence learners can be creative by creating the actor's world and by programming the actor to do something that makes sense inside that world. The number of programming bricks is rather small, so only a short introduction by the teacher is needed before the learners can start to solve tasks quite independent from the teacher who has a lot of time to coach individual learning processes. As described in Antonitsch (2010), at first sight the learners learned about loops, variables or branching with quite ease. Furthermore, they were COoperating, had phases of Open Learning, and, of course, their learning was supported by the COmputer. But a closer look revealed that the learners did rather learn that special environment and did not create mental models for the basic principles of programming so that they were unable to transfer their knowledge to another programming environment. The outcome of the learning processes was not that COOL at all. To avoid any misunderstanding: This was not the fault of the learning environment but happened most likely because the learners were missing a guiding framework telling them what they were about to learn.

This experience and the upcoming of competence-based curricula in Austria influenced the second attempt to become a COOL teacher. In the following school year a different but quite similar learning environment, where the learners had to direct a graphic robot by means of text-based programs, was augmented by a competence matrix that defines compulsory learning goals/competences (see a snippet of the competence-matrix below).

	level of competence			
competence	**D**	**C**	**B**	**A**
2) I can direct the »graphic-robot« by means of variables, loops and methods.	I can understand and adapt code that directs the graphic robot by means of loops and methods (repetition of the 1st competence).	I can use loops and methods to make the graphic robot move (repetition of the 1st competence).	I can use loops, methods and position variables to make the graphic robot move.	I can program a sequence of graphic robot movements by means of loops, methods and variables.
	I can solve tasks 1 to 4 of task-sheet 2.	I can solve tasks 5 to 8 of task-sheet 2.	I can solve tasks 9 to 12 of task-sheet 2.	I can solve tasks 13 to 16 of task-sheet 2.

The rows of the competence matrix list the competences the learners are expected to acquire, the columns contain four levels of competence with the highest level labeled "A", the lowest labeled "D". Each cell contains the description of a certain (level of) competence in the form "I can". It is worthwhile to notice that these formulations depend on the learning environment in use, as "I can use loops and methods to make the graphic robot move." does not make sense in an environment that relies solely on input, processing and output of numbers! Each cell includes a reference to corresponding tasks the learner can choose from to train this competence or to prove that he or she already has that competence. This possibility of choice combined with predefined learning goals allows the learners to follow their individual learning paths on their

way to reach (some level of) the predefined learning goals. Such kind of learning is commonly called personalized learning. Moreover, the provided tasks contain a lot of example code so that the learners can learn the basic control structures by example, either cooperatively working together or by themselves, which allows for intense individual coaching by the teacher whenever needed.
Competences (and the corresponding tasks) usually refer back to foregoing competences (or tasks) so that the learners are repeating what they have learnt.
Besides the graphical-robot-environment further learning environments based upon the same programming language (and corresponding competence-matrices) were used subsequently, all of them dealing with the same topics, so that repetition goes on and on.
Quite naturally, personalized learning leads to inhomogeneity. Some learners reach a higher level of one of the competences, while others perform better at other competences. Consequently, the personalized learning environment called for novel forms of assessment: With each competence, monitoring of learning processes by the teacher was supported by a personalized test which consisted of eight tasks, two tasks for each of the competence levels. The learners had to read all the tasks first, to self-estimate their level of competence and to solve only the two corresponding tasks. To avoid irritations due to wrong self-estimation, the tasks were valued with points. Tasks of competence level D valued 3 points each, tasks of competence level C 5 points each and so on. Finally, the total of points was mapped onto a number grade, where only 0 points qualified for a negative grade: Acquiring some competence at what level ever was considered to be a positive achievement by the learner. This form of assessment was considered rather COOL by the teacher. It left some freedom of choice to the learners, thus lowered the learners nervousness before and during the tests and led to comparably good results. Anyway, some learners disliked it, simply because they were not used to that much self-responsibility in assessment situations.
All of these measures showed the desired success, as (most of) the learners were able to apply their competences at the end of the school year in a quite different programming environment where they had to program robots. Furthermore, programming robots was considered to be cool by the learners in the usual sense of the word, because suddenly the programs written by the learners effected their “real world”.
This encouraged the teacher to start a COOL optional subject in the current school year. The optional subject deals with programming of robots and is part of the mentioned project “Teaching Informatics Creatively”. Building upon experience, this third approach towards COOL programming utilizes a programming environment designed for didactic purposes, competence matrices for various aspects associated with programming robots and activity sheets replacing task sheets. Furthermore, to foster cooperative learning, the learners have to work in groups of three or two. But the learning group is even more inhomogeneous than during the second approach because learners from different classes at different levels mix and some learners were allowed not to follow the suggestions of the activity sheets but to start with designing and programming a “more interesting (thus more complex) robot model. To cope with that much inhomogeneity, assessment is based upon learning portfolios. The learners are expected to document their learning processes and present their (group-) portfolios to the teacher to earn their grades.
As this is work in progress, only two observations shall be mentioned to complete the experiences:
On average, those learners who already have attended courses of the second approach towards COOL programming get along much better with self-organization of and responsibility for their learning processes than the others who need much more individual coaching.

Those learners who work on the activities provided by the teacher have less problems to structure their portfolios than those who have started with their own robot project, although up till now both groups have achieved similar progress.

COOL teaching intends to care for the learner's learning by looking for ways to foster individual learning processes within inhomogeneous learning groups. The attempts towards COOL spreadsheets and COOL programming confirm the theoretical basis of COOL teaching but add (at least) two aspects that might be important for the teaching practitioner:

Turning COOL is a stepwise process, for teachers and for learners. Teachers have to discover which aspects of COOLness fit with their teaching style and personality, while learners have to get used to self-orientation, self-estimation and to taking responsibility. Both of these learning processes take time.

The major decision with COOL teaching is to find the right balance between freedom and guidance for the learners. This decision has to be made anew for each learning group and it has to be brought into question from time to time.

Summary

COOL teachers are wanted! But what is COOL and how can teachers become COOL? These were the main questions of this paper that, after presenting the Austrian teaching model COOL (COoperative Open Learning), tried to describe the profile of COOL teachers. COOL settings require other qualities, competences and attitudes than traditional methods. They are summarized in this paper based on a literature review, personal experiences and informal interviews with teachers of vocational schools in Austria. Certainly the changed teacher role must be considered also in teacher education and in-service training of teaching practitioners. This paper gave some proposals for new curricula that shall integrate neurodidactical principles as well as psychological contents and support. Finally two examples of COOL teaching, both part of the Austrian project „Teaching Informatics Creatively", are presented. The experiences made in COOL and some studies on this topic confirm that COOL teaching may be the future in our schools and a concept worth to be integrated in teacher education: School has to be COOL!

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HONG KONG TEACHERS' PERCEPTIONS OF CONTINUING PROFESSIONAL DEVELOPMENT (CPD): MEANINGS AND CHALLENGES

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Abstract
This paper presents the findings from a small-scale study of Hong Kong primary teachers' perceptions of continuing professional development (CPD) and their perceived difficulties in participating CPD. Using multi-methods methodology, the study was conducted in one government subsidized primary school where the researchers played a role as teacher educator. Two key research questions guided this study. *What are the meanings of continuing professional development (CPD) as perceived by teachers? What challenges do teachers face in their CPD participation?*. Three key teachers' understandings of CPD are categorized, including: *CPD as a continuous cycle to update and deepen professional knowledge and skills, CPD as a way for collective wisdom,* and *CPD as a ladder to career development.* Teachers' major obstacles to CPD participation included: time, heavy workload, financial factor, CPD provider, school support and personal factor. Recommendations and implications are further discussed at the end of the paper.

Keywords: teacher continuing professional development (CPD); teacher education; government policy; teachers' perceptions; teacher participation; Hong Kong

Background of study
Schools nowadays are facing complex and dynamic changes and challenges. Continuing Professional Development (CPD) is important to teachers' personal lives and career development. Much emphasis has to be put on the nature of CPD as a 'continuing' process for improvement in the knowledge and skills gained. CPD enhances their knowledge and skills and enables them to consider their attitudes and approaches to the education of children, and to improve the quality of learning and teaching. The focus of this study is primary school teachers' perceptions of CPD in Hong Kong. It is a study of how teachers understand continuing professional development (CPD) and view towards their CPD experiences. The overarching aim of the study is to explore teachers' perceptions about continuing professional development (CPD).

Continuing Professional Development (CPD) and teachers
Facing educational reforms in a more complex world, the roles of teachers have become more diversified and their work does not cover learning and teaching only, instead, they may cover school management, administration, guidance and counseling. Due to greater demands on teachers' requirements, many academics have called for a reform of professional development as a precursor to educational reform (Fullan, 2002; Glickman, 2002; Guskey, 1995, 2002; Sparks, 2002; Sparks & Hirsh, 1997). Guskey (1995, 1) notes that "every modern proposal to reform, restructure, or transform schools emphasizes professional development as a primary vehicle in

efforts to bring about needed change". At the same time, there has been a new paradigm shift of the role of teachers from being followers to leaders. The terms "teachers as leaders" (Cranton, 2000) or "teacher leadership" (Frost & Durrant, 2002; Lieberman, 1987) or "distributed leadership" (Harris and Muijs, (2005) have appeared very often in the recent literature of educational leadership and management which put more emphasis on the empowerment of teachers. Butler *et al.* (2004, p.435) clarified two major expectations are put onto the teachers, stating that:

On one hand, teachers are asked to revise practices to match shifts in societal structure, values, or resources, for example, to integrate emerging technologies into classrooms (Rennie, 2001) or to include students with disabilities in neighborhood schools (Vaughn & Schumm, 1995). On the other hand, teachers are expected to realign practices in light of evolving learning theories (e.g. behavioral, constructivist, sociocultural).

Teachers are often called upon to restructure their professional practices, across community and institutional, formal and informal, and pre-school, school-age, and post-secondary education (for example, Boudah et al., 2001; Pugach, 1999; Scott & Weeks, 1996; Stein et al., 1999; Wesley & Buysee, 2001). Hence, as CPD becomes more important to support teachers in dealing with the changing world, it is essential to understand teachers' perceptions about their experiences in participating in CPD.

CPD in Hong Kong: recent trends

In recent years, the government finally recognizes that schools should be given more responsibility for planning and organizing programmes to develop their own teachers in order to meet their own school development needs based on the overall school development and planning and be assessed by systemic evaluations such as External School Review for the quality of education (Lai & Lo, 2007). The teachers are accountable for the school development and student learning as they are responsible for providing quality education to the students whose academic standards can be achieved and educational needs can be met (Darling-Hammond, 1997). They are required to more frequently take part in professional development activities such as seminars and workshops (Lai & Lo, 2007). The Hong Kong Curriculum Development Council (CDC) conducted a review of the school curriculum during 1999 and 2000. The review aimed at achieving the aims of education for the 21st Century as stated in the Education Commission Report (ECR) on Learning for Life, Learning through Life –Reform Proposal for the Education System in Hong Kong which was launched in September 2000. The reform initiates new modes of learning and teaching and assessment. The curriculum reform "Learning to Learn" was then announced (Education Commission, 2000; Curriculum Development Council, 2001). Higher demands from the Hong Kong government have been put on the shoulders of teachers as professionals. This new curriculum reform called upon developing students as lifelong learners. In 2003, there was a turning point to CPD policy in Hong Kong. The Advisory Committee on Teacher Education and Qualifications (ACTEQ) initiated the Towards a Learning Profession: The Teacher Competencies Framework and the Continuing Professional Development of Teachers (ACTEQ, 2003). The underlying argument of this document is in line with what Fullan (1991:123) defines CPD as "the cornerstone for meaning, improvement and reform as "professional development and school development are inextricably linked." Teachers facing educational reforms are supported by this new CPD policy in which teachers' knowledge and skills in different domains are more emphasized in the Teacher Competences Framework (TCF) in order to develop teachers' capacities in their teaching context and so forth fulfill the higher requirements in the new government educational reforms.

Instead of being unstructured in nature, the new CPD policy (hereafter CPD Document 2003) (ACTEQ, 2003) is more systematic and a new CPD framework, Teacher Competences Framework (TCF), which is competency-based and structural according to domains and hours, provides a

map of generic teacher competencies for both teachers and those facilitators of teachers' learning and development. As stated by the ACTEQ (2003:24), "The basic premise of the framework is the personal growth and development of teachers". This framework includes four domains: 1. Teaching and Learning Domain; 2. Student Development Domain; 3. School Development Domain; and 4. Professional Relationships and Services Domain. Each domain contains four components.

The Teaching and Learning Domain consists of subject matter knowledge; curriculum and pedagogical content knowledge; teaching strategies and skills, use of language and multi-media; and assessment and evaluation.

The Student Development Domain contains students' diverse needs in school; rapport with students; pastoral care for students; and students' different learning experiences.

The School Development Domain is composed of school's vision and mission, culture and ethos; policies, procedures and practices; home-school collaboration; and responsiveness to societal values and changes.

The Professional Relationships and Services Domain includes collaborative relationships within the school; teachers' professional development; involvement in policies related to education; and education-related community services and voluntary work.

The new CPD policy is underpinned by six core values. They include: 1. belief that all students can learn; 2. love and care for students; 3. respect for diversity; 4. commitment and dedication to the profession; 5. collaboration, sharing and team spirit; and 6. passion for continuous learning and excellence (ACTEQ, 2003).

Besides, all serving teachers are required to undertake at least 50 hours of structural CPD activities and/or other modes of CPD activities every year in a three-year cycle, starting from 2004. The Education Bureau (formerly Education Manpower Bureau) of the Hong Kong government stated that requirements on the hours spent on CPD activities were flexible according to the schools' discretion. Schools and teachers have autonomy to design and formulate their school-based CPD plan, including what CPD activities to be counted as CPD hours in order to suit the professional development needs of teachers.

Although CPD is increasingly regarded as "an important means of contributing to the creation of more effective schools and as integral to learning organizations' (O'Brien and MacBeath, 1999:71), the CPD Document 2003 has been subject to public criticisms at the time of the current study (Ming Pao Daily, 31st January 2005). First, this CPD Document 2003 seems to be linked with the popular educational jargons such as lifelong learning, quality education, school effectiveness, school development and improvement. Second, teachers' autonomy is neglected in the process of formulating and implementing the CPD Document 2003 (Lai, 2005). Lai (2005) argues that teachers 'professional development has been increasingly controlled by the bureaucracy as the strategies for professional development are characterized by systemic requirements of teachers 'qualification standards, specialist subject knowledge and continuing professional development.

Given this context of changing CPD policy in Hong Kong over the past years, with the introduction of the CPD Document 2003 (ACTEQ, 2003), this study responds to the call for a better understanding about teachers' views upon the CPD Document 2003 and thus help for better facilitation of the process of professional development planning and enhancement of the effectiveness of the promotion of CPD activities and competencies development to the teachers in practical sense.

Challenges to primary school teachers in Hong Kong educational context

Stress at work

It is commonly heard that primary school teachers face tremendous stress due to educational reforms, new educational policies, and public assessment like Territory-wide System

Assessment (TSA) and Hong Kong Attainment Test (HKAT) (Chan, 2002; Legislative Council of Hong Kong Special Administrative Region, 2006; Luk-Fong, 2009; Sum, 2009). The work stress problem of teachers in Hong Kong has again drawn much more attention due to the increasing occurrence of teacher suicides (Lo, 2003). Jin *et al.* (2008) identified that Hong Kong teachers were at a high stress level and there were six distinct teacher stress sources, including students, others, curriculum, non-teaching duties, teaching workload, and recognition. The heavy workload experienced by the Hong Kong teachers that is directly related to the daily teaching routine tends to be the most detrimental to their health conditions (Jin et al., 2008).

Cheng (2009) has given a detailed analysis about Hong Kong's educational reforms in the last decade. In his analysis, high workload and large class size are common problems while the workload of Hong Kong teachers was found to be very high, more than 30 lessons (normally 40 minutes each) each week and the number of students in each normal class was often in a range of 35-40. It was found that the teachers in Asia generally are greater than those in Europe, North America and Australia. He claims that Hong Kong teachers had nearly double teaching load and took care of 20-30 per cent more students than those teachers in China and Taipei (Ng and Koa, 2003). Cheng (2009) named this problem of the high workload and large class size as the structural part of the "bottle-neck". This hinders the change of learning and teaching for quality education as this problem severely limits Hong Kong teachers' teaching approaches and strategies that tended to be teacher-centred and didactic teaching while lacking time in caring for students' individual differences and learning needs.'

Another work stress study by Chan et al. (2010) indicated that the stress sources of primary school teachers in Hong Kong were significantly more likely than secondary school teachers originated from pursuing further education, career instability, implementation of Language Proficiency Requirement, getting along and working relationships with colleagues, and salary cut as sources of work stress. This study also showed that teachers of primary schools had significantly higher perceived stress level than those of secondary schools. Facing high stress at work, CPD is hence seemed as an extra burden on the shoulders of primary school teachers and its effectiveness depends on school-based CPD policies and administrative arrangement.

Teacher professionalism in Hong Kong

Professionalism of Hong Kong primary school teachers has been discussed over the past decades (Lai, 2005; Lai & Lo, 2007). Professionalism has three key dimensions: professional knowledge, teacher's responsibility and authority over the development of students and their work and teacher autonomy (Furlong, 2001, Lai & Lo (2007) argue that teacher professionalism in Hong Kong remain problematic. Teachers are deskilled by the intensifying work and subject to challenges in different aspects such as greater emphasis on IT in education, innovative approaches in teaching and learning and accountability for educational quality. Teachers are also subject to the emerging schooling market. So Hong Kong teachers' work is thus a kind of confined professionalism' only (Lai & Lo, 2007).

With the release of the CPD Document 2003, a high degree of teacher professionalism seems to be advocated (ACTEQ, 2009, 1). However, teachers' choices of CPD activities are often aimed at meeting policy requirements for their job security due to reduction in the class number and cutting the number of primary schools by the government (Chan *et al*., 2010), rather than personal choices based on one's own preferences. Teachers' motivation to attend professional development appears to be a key factor in change (Smith & Gillespie, 2007). However, it seems that teachers' internal motivation to participate in CPD is comparatively not strong. In turn, the change on teachers' learning or change in mindsets may be limited and hence their effectiveness is uncertain (Smith et al., 2003). Nevertheless, the CPD Document 2003 is still potentially a significant step forward in the professionalization of teaching in Hong Kong' (Morris, 2004, p.116). This study thus aims at exploring primary school teachers' views upon this new CPD

policy and understanding their experiences in CPD participation so that a more suitable school-based policy can be adopted in response to teachers' needs.

Methodology

The aim of this paper is to unfold teachers' perceptions' of continuing professional development (CPD). One key research question guided this study: *What are the meanings of continuing professional development (CPD) as perceived by teachers? What challenges do teachers face in their CPD participation?*. The study applied multi-methods methodology, including an open-ended survey, one focus group interview with six teachers and three follow-up individual interviews with teachers working in a Hong Kong government subsidized primary school, which accommodated approximately 700 students. The study was conducted during the period 2006-2011.The role of the researcher was an insider teacher educator who was responsible for teacher development in the case school. Careful ethical considerations were thus undertaken in the study (Yin, 2009).

In order to generate common themes that could be compared with the international and local literature, qualitative analysis was carried out after the survey by the use of colour coding method. The Keywords or phases of the open-ended answers in the survey were highlighted and some key findings were generated. With the use of the key findings of the survey, one focus group interview with a group of teachers was conducted in July 2006 while three follow-up individual interviews with the teachers who attended the focus group interview were carried out in August 2010. The purpose is to examine any changes to teachers' perceptions over time.

Findings and discussion

The results of the study are reported according to the following two sections, meanings of CPD and challenges to CPD. These two sections are based on the findings of an open-ended survey with all teachers in the school (N=37), one focused group interview with six teachers and semi-structural follow-up individual interviews with three teachers.

Meanings of CPD

Teachers' meanings of CPD are mainly categorized according to their similarities and commonalities in the interview data. They include: CPD as a continuous cycle to update and deepen professional knowledge and skills, CPD as a way for collective wisdom, CPD as a ladder to career development. They are illustrated as follows.

CPD as a continuous cycle to update and deepen professional knowledge and skills

Teachers expressed that one of the purposes of CPD for teachers is to have continuous improvement in professional knowledge and skills and be exposed to a deeper understanding of teaching pedagogy. Teachers also regarded that participating in CPD activities like higher academic study is helpful to teachers to get more exposure to the subject knowledge and help them to be more adequate in their subject and pedagogical knowledge.

CPD as a way for collective wisdom

In the study, teachers regarded CPD as a useful way for sharing and collaborating with each other so that teachers are able to learn from each other and prepare for the teaching in a better way. One of the CPD activities is collaborative lesson planning and teachers regarded it as an improvising process for teaching through discussion and sharing.

CPD as a ladder to career development

Teachers in the study considered CPD as a route to secure the job or get promotion chances. They considered that getting a higher degree is more important when compared with the past.

CPD activities like seminars or workshops as recognition of a degree course is higher than other types of CPD activities. The demands on teachers' qualifications become higher and affect teachers' choices of CPD activities.

As shown above, teachers' understanding about CPD was limited and restricted to incremental uses such as keeping job safely and fulfillment of employers' requirement. This reveals that teachers' definitions of CPD are from a narrow, short-sighted perspective. In other words, teachers may lack a wider view about CPD and the concept of CPD is not embedded in their works (i.e. workplace learning). On the contrary, teachers' orientation to CPD is very likely based on a deficit approach instead of a long-term developmental approach (Ng, 2003). It should be remarkably noted that this deficit approach is criticized for being inconsistent with adult learning principles and opposed to building the conditions of shared purpose, infrastructure and domains for action that schools to become effective learning organizations (Senge, 1996) and a more developmental approach should be promoted and encouraged in the professional learning communities, i.e. schools. The needs and interests of the teachers should thus be taken into consideration in the school-based CPD planning. Mushayikwa and Lubben (2009, p.375) conclude that teacher empowerment should be fostered by encouraging them to 'take the initiative in identifying and acting on their own individual needs.'

Challenges to CPD

Teachers in the study were asked to write two inhibiting factors affecting their CPD in the survey. Six common themes were emerged according to the views from the respondent teachers. These themes included: time, heavy workload, financial factor, CPD provider, school support and personal factor.

Workload matters? Time matters? School matters?

Not surprisingly, heavy workload and time are important factors affecting teachers' participation in CPD. However, both heavy workload and time factors are seemingly interrelated to each other in affecting teachers' participation in CPD. Due to shortage of time and heavy workload, some teachers felt that it was difficult to join any CPD activities. Teachers did not feel that they could fulfill the requirements of the CPD activities. For example, one particular teacher gave an example of heavy workload and time as her obstacles towards her CPD. She pointed out her difficulty, saying that:

"Busy…so much work …at 7 p.m. I am in a hurry to go to study. On Saturdays and Sundays, we don't have time to do assignment because we sometimes need to be on duty for doing some activities like open campus days or extra-curricular activities. I am not spiritual and am physically tired" (Teacher E, female, Focus group interview, 13 July 2006).

Her busy professional life has limited her participation in CPD. Another teacher stressed that teachers were now facing changes and had more workload in the teaching life. She said, "As a teacher today, we do have a lot of work. You need to put a lot of efforts on it" (Teacher F, female, School A, Focus group interview, 13 July 2006). Another teacher shared a very similar view, stating that, "Much work needs to be done in details. There is so much clerical work to do" (Teacher J, female, Focus group interview, 13 July 2006).

Teachers in the study were busy due to heavy workload and they explained that they had to do administrative works that included different kinds of daily clerical paper work. The following teachers pointed out different types of administrative works that teachers had to handle every day. Other than clerical work, teachers also had to attend different kinds of meetings. That caused them to be unable to participate in CPD activities. For example, this teacher said:

"Lack of time. I am always busy. I have to prepare lessons. Every week there are so many activities, parents-teachers association meetings, or parents' seminars. I have to deal with lots of school work…" (Teacher F, female, Individual interview, 25 August 2010).

The above examples showed that teachers' workload mainly come from administrative work more than simply teaching work. Therefore, teachers' job is not only about teaching in the classroom but also administrative works outside classrooms that would occupy a lot of time and they thus lack time to engage in CPD in their busy school life. With thirteen teachers who regarded heavy workload as an inhibiting factor affecting their CPD participation (see Table 1), it is revealed that teachers needed to do a lot of administrative works and some 'extra' work such as making newsletter leaflets for promoting their school in order to sustain or raise its attractiveness to parents. Hence school conditions might directly or indirectly affect teachers' CPD participation.

Table 1. *Frequency of responses to perceived factors inhibiting CPD*

Factors		School A (N=37)
		No. of respondents (%)
1.	Time	12 (32.4)
2.	Heavy workload	13 (35.1)
3.	Financial factor	4 (10.8)
4.	CPD provider	3 (8.1)
5.	School factor	2 (5.4)
6.	Personal factor	3 (8.1)

Time clash between CPD activities and working hours is a common problem that teachers encountered when participating in CPD activities. According to the teachers, this is related to school factor that hinders them from participating in CPD. There were conflicting views between schools and teachers regarding CPD issues. In the questionnaire survey, one teacher wrote,

"The school suggested teachers not joining those workshops within school days, except in the case that the school recommends to do so, hence, participation in those workshops on school days is difficult." (#8, written statement in the CPD Questionnaire Survey, April 2006)

In this connection, teachers expected their schools to create more time and space to allow them to participate in CPD activities even their expectation could not be fulfilled in the reality. Teachers suggested that the school could arrange the time and workload to let teachers participate in CPD activities. The following are the examples of what they suggested for creating space for teachers.

"I hope there will be a reduction in the number of lessons. The workload is so heavy. If employing more teachers, we can have much time." (Teacher J, female, Focus group interview, 13 July 2006).

"The school has to understand and support teachers' continuing education, should reduce teachers' workload, in order to let them have much time to study and do the related research." (#32, written statement in the CPD Questionnaire Survey, April 2006).

"The school encourages teachers to have CPD; at the same time, but not able to fulfill teachers' need of time, always arrange activities that lead to teachers being absent from CPD courses." (#35, written statement in the CPD Questionnaire Survey, April 2006).

The teachers suggested that the school could provide financial support to teachers to participate in CPD by paying tuition fees of the CPD courses and there should be good management of school resources so that teachers could find it more convenient to participate in available CPD courses. The above may imply that the difference in teachers' participation may rely on principal's leadership and recognition of the importance of CPD to teachers.

Nevertheless, some teachers appreciated their school for giving them chances to join CPD activities. The following teacher added that,

"… The school has done quite a lot, like conducting talks and workshops. … We also can enroll in the seminars provided by the government or educational organizations." (Teacher J, female, Individual interview, 17 August 2010)

In short, seemingly, heavy workload, time and school factor tend to be associated factors affecting teachers' CPD participation.

Personal factor matters?

Few teachers perceived personal factor as one of the major factors contributing to teachers' participation in CPD. The teachers believed that personal factor such as their own goal, enthusiasm and belief could contribute to their CPD participation (see Table 1). Some of them suggested that health problem could also affect their participation in CPD. Some teachers also considered personal needs and interests in their consideration of CPD participation.

Although teachers found it hard to handle CPD due to lack of time, teachers felt that they could get more satisfactions from parents by applying what they had learnt in CPD activities. For example, this teacher explained that,

"Parents' praises, that's a way to recognize your work. … just like handling students' emotional problems well, parents felt that teachers used professional strategies to handle and I felt more comfortable and I could know about others' opinions. I would feel more calm and willing to use more time and efforts in handling the student problems." (Teacher F, female, Individual interview, 27 August 2010).

It seems that teachers' commitment to teaching is a source of personal interest and motivation for participating in CPD.

However, teachers also felt that there lacked a balance between personal needs and school/institutional needs. One teacher also found that, "too 'directive' (from EMB [Education Bureau] and the School) but not for self-interested CPD" (#33, School A, written statement in the CPD Questionnaire Survey, April 2006). Another teacher wrote,

"Sometimes school development needs would be obstacles to personal continuing professional development." (#25, written statement in the CPD Questionnaire Survey, April 2006)

Hence, there seems to be some conflicts between personal needs and school/organizational needs. On this point, one teacher shared her feelings about participating in CPD activities. She expressed her frustrating situation that,

"It is common to encounter those obstacles about a balance between school needs and personal needs. Everyone has different levels of obstacles." (Teacher F, female, Focus group interview, 13 July 2006)

Teachers' engagement in CPD might rely on both positive personal factors such as teacher commitment and motivation in teaching, and negative factors such as work pressure.

Financial factor

Teachers of both schools were concerned about the availability of government or school subsidies to tuition fees of CPD courses and the provision of paid leave for engaging in CPD activities. Teachers also alerted that expensive tuition fees would be the major obstacle to participating in CPD activities.

CPD provider

The quality of CPD was an important issue affecting teachers' choice of CPD. Some teachers felt that the quality of CPD courses was too varied. Some teachers regarded that the contents of CPD activities should be practical and updated. Some of them also expected that the CPD provider should accommodate their time and provide suitable courses.

As the provision of CPD activities is not regular, this causes teachers who want to participate in suitable CPD activities could not be satisfied. At the same time, when there is a lack of provision of appropriate CPD activities that cannot fulfill teachers' contextual needs, for example, when changing the curriculum, there is a need for teacher development to support the new curriculum. Teachers also considered the extent of the impacts of CPD activities on teachers and students. One teacher shared her successful CPD experience that:

"Actually the most important thing of CPD is to help benefit the teaching job. Actually you can know that when looking at student performance. For example, in the previous two to three years, the focus of CPD was on cooperative learning approach. We started to use this approach in the classroom since then. … the mode of learning has been changed with the use of a variety of cooperative learning strategies. For example, we use envoy exchange for small group presentation instead of whole-class presentation. Students get more confidence in presentation and they get used to doing presentation and they naturally become more actively involved in the lesson." (Teacher E, female, Individual interview, 25 August 2010).

This represents that teachers are more motivated to participate in CPD activities when seeing more positive impacts on learning and teaching and being able to apply what is learnt from CPD activities.

However, the geographical location of the provision of CPD activities is also considered as a factor affecting teachers' motivation to join CPD activities. The location of venues for CPD activities is an inhibiting factor that discourages teachers to participate in CPD while remote places discourage teachers to participate in CPD activities.

What else matters? Family? Relationship with others? Anyone else?

Apart from the factors of heavy workload, time, school and CPD provider factors, there were other perceived factors that could affect teachers' participation in CPD. These factors include family and relationship with others. The teachers responded that family support was important in the way that they could be free from burden and pressure in their own families. Teachers felt struggled about the choice of participating in CPD activities due to workload and lack of time. For example, this teacher said that:

"…actually my workload is really very heavy. It may not be allowed for me to do much on CPD. I need to distribute time to my own family. I have my family and my children. I have to take care of them. So we always feel that time is not insufficient, or we are too tired, we feel very tired. So sometimes we feel that we cannot deal with the work although we really want to achieve the goals. Sometimes I feel I cannot handle." (Teacher J, female, Individual interview, 17 August 2010).

These respondent teachers regarded that getting support from colleagues and friends, as well as harmony relationships amongst colleagues could help them release some pressure from having substitute classes due to participation in CPD activities within school hours.

Besides, it is also interesting to note that in the questionnaire survey, one teacher responded that government encouragement was important in contributing to teachers' CPD participation. During the interview, some teachers suggested more resources be given by the government.

On the whole, heavy workload, time, and school factors are major associated factors that affect teachers' participation in CPD. School factor tends to play a crucial influential role in affecting teachers' participation in CPD activities. However, teachers' experiences in CPD participation seem to reflect that there is not sufficient support from school in encouraging and motivating teachers to engage in CPD activities due to inappropriate arrangement of time and manpower.

Although schools are intended to be learning communities, teachers' daily teaching work provides limited opportunities for their own learning (Day, 1999). Heavy workload is considered as a common problem for public education as a result of a stressful environment that

discourages teachers from participating in CPD in their busy professional lives (Quaglia *et al.*, 1991; Day & Gu, 2010).

At the same time, time for teachers' CPD is actually rooted in commitment, beliefs and attitudes about teachers' work and buried in current school structures and policies (Hargreaves, 1994; Watts & Castle, 1993; Aeillo & Watson, 2010). Time is thus essential to the provision of planned and structured professional development activities (for example, Little, 1990; McIntyre & Hagger, 1992; Eraut, 1994). It is also critical to look for possibilities to think about, criticize and develop existing practice (Carney, 2003). The lack of time for planning, collaboration, peer coaching and mentoring, poor or misdirected leadership and the culture of teaching are all cited repeatedly as potential constraints on professional development (see for example, Lortie, 1975; Rosenholtz, 1989; Lieberman, 1995). As Hargreaves (1997, p.119) concludes,

There is no positive change without time to understand it and undertake it. Absence of time isolates teachers from their colleague when they most need to be alongside them – in teaching situations as well as talking and planning ones. And isolation, we have seen, keeps quality low.'

Releasing time is therefore important to support teachers' CPD and there should be a balancing time in and out of the classroom.

It is therefore important that schools should pay attention to teachers' lives, their learning and development needs and working conditions as well as those of the students they teach (Day, 1999). The provision of time and opportunity as well as the dispositions and abilities of teachers to learn from and with one another inside the workplace and from others outside the school should thus be carefully taken into account in supporting and sustaining teachers' continuing professional development (Day, 1999; Putnam & Borko, 1999).

Recommendations for research and practice

For school principals and school middle managers

1. In order to sustain a learning organization, school leaders must create a climate that promotes the continuous professional learning of all school participants (O'Sullivan, 1997). Collegiality among teachers should be promoted so as to facilitate cross-fertilization of ideas and experience. Encouragement from the school should be given to teachers to participate in CPD. Middle managers, including subject panel heads, department heads etc., should recognize the importance of CPD. Middle managers should be clear about the schools' and teachers' needs in continuing professional development such as the middle management in schools (Wong, 2005). There should be coordination in CPD planning and implementation across classrooms, subject departments and the school as a whole appeared so as to provide opportunities for the individual classroom to be enlarged and for the individual development needs and processes of teachers (Carney, 2003). Teachers can thus be more supported within the school's overall development agenda. Further, it should be aware that effective professional development should provide teachers adequate chances to try new ideas and strategies, with feedback on practice, sufficient technical, psychological and administrative support, and opportunities to gain a conceptual understanding of the underlying rationale (Ingvarson, 1987). A collaborative sharing and learning culture should be further continuously promoted through organizing and providing opportunities for real professional development opportunities where teachers feel their ownership of professional development and their needs are inquired in collegial interaction and support within school.

Most importantly, as reflected in the study, time and heavy workload should be taken into account in school based CPD policy-making process. Creating space for teachers' CPD is a very common term but it is not always achieved. Careful arrangement for teachers' CPD should thus be made by different kinds of supportive administrative arrangements such as financial support and resources provision.

For CPD coordinators

This study also provides CPD coordinators with fruitful data to identify where teachers are and so forth attempt to meet their CPD needs.

CPD coordinators should give immediate sensitive responses to teachers' CPD needs of the development of teacher competencies, with reference to the findings of this study.

When planning CPD activities, CPD coordinators should be aware of teachers' preference of CPD activities. Opportunities for school based CPD activities such as collaborative lesson planning activities should be given to teachers who realized that school based CPD activities are useful in helping them in supporting their classroom practice in a more direct way.

CPD coordinators should promote collaboration opportunities to colleagues in order to build up a sharing and learning cultures.

CPD coordinators should plan carefully and take the teachers' perceived factors affecting CPD in the study into considerations. They should address teachers' concerns and difficulties about their CPD participation. As noted in this study, there are urgent needs for providing sufficient time and resources for supporting teachers' participation in CPD activities.

For further study

This study used a multi-methods approach to illuminate teachers' perceptions about CPD and provide a better understanding about teachers' experience in CPD. It has provided a framework to further study about teachers' understanding of CPD and their perceived obstacles to CPD participation. Teachers and schools need to know more about how CPD help them develop teacher' professional knowledge, skills and careers and how teachers' CPD can enhance student learning. The following are recommendations for further study.

This study should be replicated with other populations to explore teachers' perceptions of CPD.

This study is a small scale study. It can be applied to other schools in Hong Kong for further investigations of teachers' perceptions of CPD in Hong Kong. The findings will be a good reference for education policy-makers and other stakeholders in education.

The relationship between some demographic factors like gender and years of teaching experiences can be further investigated in another study.

Conclusion

In closing, the above findings show that teachers' attitudes towards CPD are generally positive. However, their perceptions of meanings of CPD are bounded to be instrumental or incremental that is highly linked with school development. Teachers' experiences of CPD most likely shape their thinking about their interpretations in CPD activities. Teachers still face big challenges to CPD participation due to different factors – time, heavy workload, financial factor, CPD provider, school support and personal factor.

This "balance" should be kept on different levels in the holistic education system – that is, government policy makers, teacher education providers (i.e. tertiary institutions), school management board, school principals, as well as CPD coordinators. Teacher educators' roles are crucial in providing professional advice on government CPD policies while their advice and opinions are used for formulating the policies. At the same time, it is also important for teacher educators to raise novice or pre-service teachers to be aware of the meanings of CPD and their relationship with professional lives.

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THE IMPORTANCE OF THE SEEKING PHASE FOR INDIVIDUAL COMPETENCE RECOGNITION

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Abstract
This presentation describes the beginning of the studies and recognizing individual competences. A student is created a meaningful learning path availing of his/ her earlier acquired competences. The starting phase seems to be the most important stage in the whole system. It creates future prospects to the student about his/ her learning path and a strategy to the supervisors about the meaningful ways of acting with each student. The present article reports of the inquiry which measured the appropriateness of the seeking phase actions in the education of specialists in competence-based qualifications. The individual plans of the competence demonstrations and their realizations were followed by ongoing supervision. A well planned starting phase seems to have led to successful outcomes among the respondents.

Keywords: individualization, phase of seeking for individual competence, earlier acquired competences, learning path

Introduction

Non-formal and informal learning are significant in our development. They are especially meaningful in adult education, if the studies are defined so that they enable recognizing and validating prior acquired skills. The present article will describe pragmatically how prior acquired skills can be recognized and act as a basis of a student´s plans for his/ her individual learning path. In this presentation the individualization means pragmatic recognizing and planning outcomes which are achieved together with the students and supervisors for the demonstration of the students´ skills. Preskill and Torres (1999) describes a pragmatic method as a tool in developmental work in order to promote the participants´ reflection about their knowledge, development and goals. This article will describe a practical solution of individualizing the plans at the beginning of the studies.

In the beginning a relevant learning path is constructed in co-operation. The construction presupposes customer-oriented thinking which aims at finding meaningful ways of acting seen from the learner´s point of view (Raivola, 2000). The beginning stage is, according to many experiences, the most important in all individualization of studies. In Finland non-formal and informal learning are recognized to bring significant advantages to students and school organizations (Rehtorineuvostot, 2009, p.10; Haltia & Jaakkola, 2009, pp 6-8). At the beginning of studies the supervisors create first a shared conception with each student about how his/her learning path will go on. This shared conception is called *a student´s vision* of his/ her learning path. The measures of how to work in order to promote learning and to attain the target are also co-described. When the target and measures are thus constructed together, the *supervisors* create a thorough *strategy* of how to realize each student´s individual plans. The process described above will thus be called the first stage of individualization.

In the described context, the start of individualization is connected closely with recognition and validation of non-formal and informal learning. They are here regarded as the student´s *acquired*

or demonstrated competence. The recognition of skills is, according to the writers´ conceptions, the validation negotiated together with the student and the supervisor and bringing earlier acquired competence to common consciousness. Thus *demonstrating the competence* means numerous different, individually planned ways with which the students can demonstrate their skills in relation to the required competence. The conceptual starting point of these measures is in constructivist adult education and planning; consequently, the present educational program is planned and carried out on the basis of the students´ earlier acquired competences.
This presentation will describe the realization of the beginning stage and guidance connected to it, through the learning paths of the competence-based specialist´s qualification program. It was realized in the School of Vocational Teacher Education in a group of 67 students starting their studies in 2010 and 2011. The research material consists of the feedback collected from the students who had completed their studies (n= 49) at the time of data collection. The findings describe the students´ experiences of how the beginning stage was realized individually.
The results show that the beginning measures were successful according to the students, and the individualization of studies was mainly relevant. The results also stress the fact that online feedback and guidance have significant roles in achieving positive outcomes. Without the real-time feedback and guidance connected to the individualization in the beginning, the individual paths would not probably have succeeded sufficiently well.

Phase of seeking for individual competence recognition
Seeking for individual competence recognition is a phase during which students create their *visions and strategies*. Actual study processes and competence demonstrations are consequences of constructed strategies at the beginning of education. Various individual learning paths are planned in the beginning, depending on the students´ earlier acquired competences. Unless every student´s beginning stage is carried out systematically, the continuum of individualization doesn´t function meaningfully either from the student´s or the supervisor´s point of view. This article examines the implementation of the seeking phase among the respondents (n=49) who represented newly qualified specialists in competence-based qualifications.
During the preliminary stage, i.e. the phase of seeking for recognition of competences (Salo & Korkala, 2011, pp 18–19) each student´s work and educational histories are charted by him/ her and the supervisor. The methods of charting are a written survey, group supervision and interview. In the survey the student evaluates his/ her competences in regard to the requirements. The survey outcomes are compared to the basic requirements of the study program of vocational specialists in competence-based qualifications (National Board of Education, 2007). It describes the competences given in the diploma requirements and their evaluation criteria. Without them the seeking phase would be useless. The following figure demonstrates how the requirements and descriptions of competences have been gradually constructed.

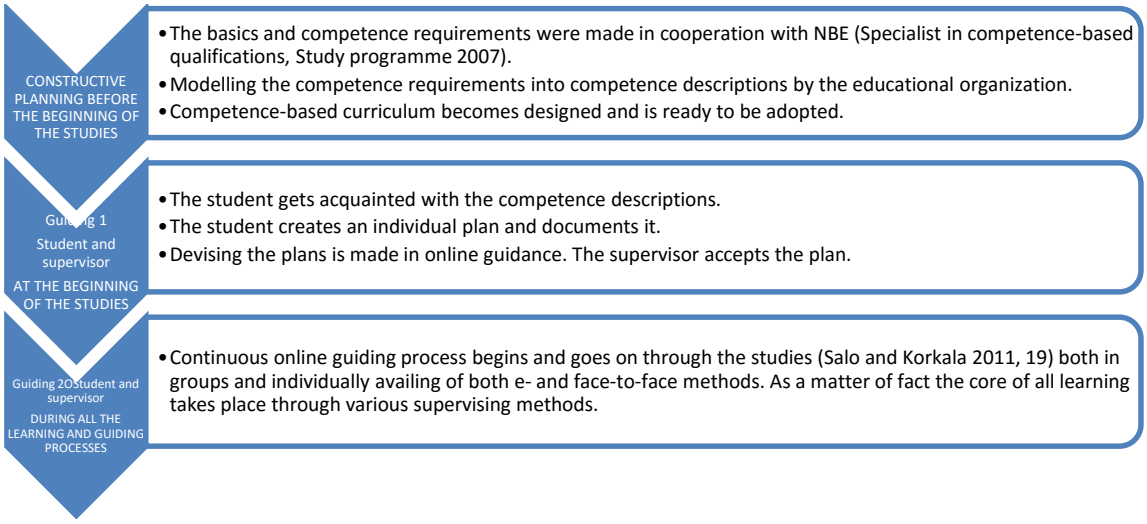


Figure 1. *The design of the requirements of competence, the visions of the student and the strategy of the supervisor.*

The figure shows how a competence-based curriculum was constructed and how and at which stage individual learning plans came out. The qualification requirements of the course program and the demanded competences (The National Board of Education, 2007) were examined before the seeking phase started. The contents of requirements were analyzed and competence descriptions created. They constitute a competence-based curriculum. In this phase there are no students enrolled, yet. The first start is actually part of organizational preliminary action of individualization and the prerequisite of educational individualization inside the organization.

When the applicants have been accepted to study in the described educational program, the actual guidance work will start in connection of the seeking phase for individual competence recognition (supervision stage 1). Successful supervision presupposes the fact that the competence requirements and competence-based curriculum have already been defined. Based on the former, the visions of the student´s learning path will be created together with the student. Simultaneously a strategy of the measures needed for the student´s progress is devised by the student and supervisors together. Figure 2 illustrates the significance of earlier acquired skills for visions of learning and their charting at the seeking phase (EAC).

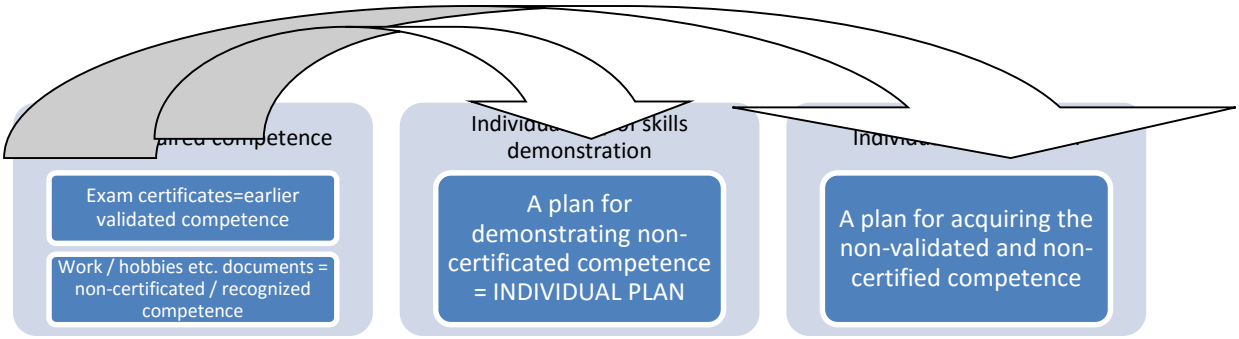


Figure 2. *The significance of earlier acquired skills in creating the visions of individual learning paths.*

For the demonstration of earlier acquired skills (EAC- stage) reliable documents are demanded and skills proved. Earlier acquired skills are evaluated on the basis of written self-assessments and various statements. The supervision clinic (Salo & Korkala, 2011, pp 18-20) and online guiding processes are continually used in recognizing the competences. Recognizing and validating competences are explained to the student in a document concerning his/her individualization process. The document contains a plan of acquiring the lacking skills, i.e. individual study plan (ISP) and of demonstrating the recognized skills, i.e. individual educational plan (IEP). The document is a student´s vision for his/ her learning path.

In recognizing earlier acquired skills of the students, the results usually reveal four different learning paths or student visions. Figure 3 illustrates four learning paths within the target group (n=67) as the result of recognized skills.

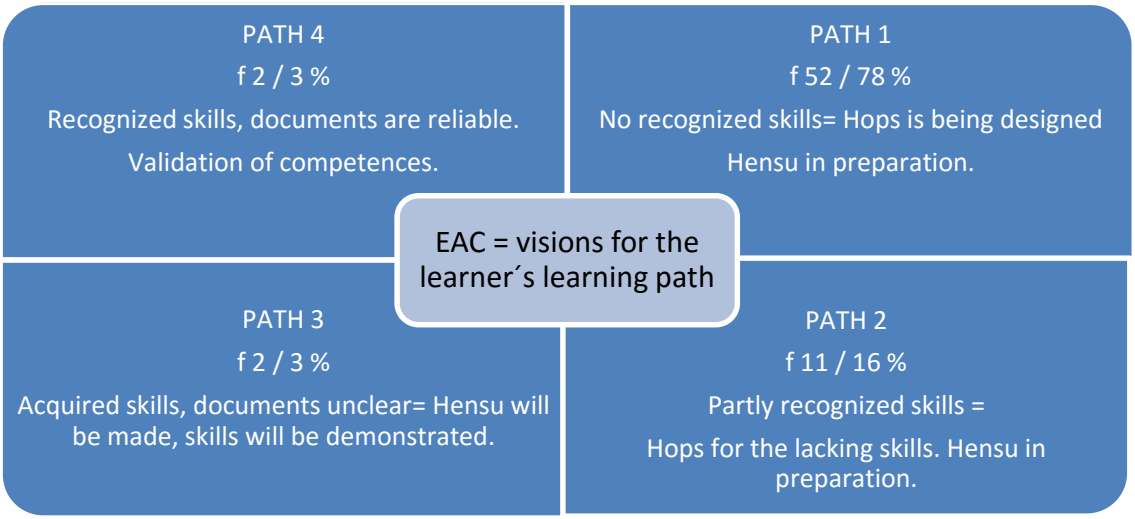


Figure 3. Various learning paths (n=67).

Path 1: The learners (f 52 / 78 %) have no earlier acquired skills in regard to the competence requirements. Together with each student an individual study plan (ISP) will be designed to show how he/ she can acquire the necessary skills. When continuing his/ her process of skills recognition the learner gradually chooses the ways, methods and actions which will meet the necessary competence requirements. At this stage the learner´s individual plan for demonstrating his skills is formed (IEP). It is different for every learner, since the process of demonstrating one´s earlier acquired skills is unique.

Path 2: Learners (f 11 / 16 %) have shown that they have earlier acquired, required skills and they can prove it through reliable documents. A reliable document can be e.g. a certificate or a part of degree which corresponds to the competence requirements. In a case like that the student can be considered to have demonstrated his/ her competence earlier.
The required competence can be in practice e.g. the following: A student has got the vocational diploma of a specialist in competence-based qualifications in 2007 or after it. He/ she has participated in the evaluation of competence-based qualifications in his/ her professional field several times. He/she has independently drawn up a contract for arranging competence-based qualifications as well as a plan for arranging the competence tests, and the assessors of competence tests or the board of examiners have entered the agreement of the organization. He has independently realized the individualization process with the learner in 3 phases, and

there is a reliable statement, certificate etc. of it. He/ she has been a member of the board of assessors in his professional field, and it has been certified.
Competence requirements are, however, very wide. This leads to the situation that the learner can demonstrate the skills only partially. In cases like that he can complete the lacking competence e.g. by studying the necessary skills. To achieve this, the learner devises him/herself an individual study plan (ISP) and an individual plan of demonstrating his/ her skills (IEP); according to them he/ she will continue towards the goal: validation of his/ her competence.

Path 3: The learner (f 2 / 3 %) can have ample skills acquired earlier for instance through work, hobbies or organizations. He/ she can for instance have arranged the tests for individualizing the participants´ competence demonstrations and has initiated assessors into the test practices. He/ she reports on these actions, reflects on them as well as on his/ her own action. There is not, however, reliable documentation available on the required competence. In a case like that the learner will first be devised an IEP and he/ she will be offered occasion(s) to demonstrate his/ her competence without preparatory education.

Path 4: The learner (f 2 / 3 %) is able to demonstrate unquestionably the competence required through reliable documents. He can also demonstrate that the earlier acquired skills are up-to-date and that the documents presented have been earlier assessed. In a case like that skills are suggested to be recognizable. The question is about a rare path type which is for instance made up of the fact that the learner has acted in the board of assessors several periods and has arranged test occasions according to the official organizing plans. He/she has also initiated the test participants and work life representatives into the details of competence demonstration tests and e.g. into the assessment. He/ she has acted as a responsible person in competence demonstration tests. Of all the actions mentioned he/ she has reliable certificates.

Target group
The target group consists of vocational specialists in competence-based qualificatons who started their studies in the School of Vocational Teacher Education and completed them by September 2011. Table 1 illustrates their age and sex distribution as well as the average age.

Table 1

NTM 2011	Started	Females	%	Average age	Males	%	Average age	Average age, all
Total	**67**	**36**	**54**	**46**	**31**	**46**	**43**	**45**

The table shows that the target group consists of experienced vocational teachers with the average age of 45 years. The distributions of sex and age are even. Vocational competence-based qualifications specialists (Salo, 2004, pp 40- 44, pp 69- 70, pp 78- 80) act as persons in charge of vocational basic exams, qualifications and competence tests realized through competence demonstrations. They are vocational teachers and adult educators with most often long experiences in the fields of their expertise, but they lack formal qualifications in the area of competence demonstrations. The reason for their applying for the program of specialists in competence-based qualifications, as well as for the adult studies in the system of competence test programs in general, may be the need to validate the earlier acquired learning (Kangasniemi et al. 2011, p. 53). On the other hand, in the background there may also be an interest in different and more varied tasks at work and need to widen one´s knowledge area (Kangasniemi et al. 2011, p. 53). Applications may also follow from the fact that the education / exam organizers want to educate their staffs to be prepared for the future, as the role of the skills

demonstration system will obviously become strengthened (Governmental Program, 2011, p.35). Also the National Board of Education (2011, p.40) recommends that at least one of the persons participating in the assessment of any part of a competence demonstration test has received the qualification of competence-based demonstration specialist.

Methods

The study aimed at finding out and describing the conceptions of the target group about their starting phases. The description is based on the collected data. The meanings of the students´ and supervisor´s experiences will be reflected on as well as the influence of the given meanings on the conceptions concerning the starting phase.

The inquiry was sent to 67 specialists in competence-based qualifications altogether. The respondents represent vocational teachers in different fields of professions in Northern Ostrobothnia and Lapland. 49 specialists in competence-based qualifications, 26 females and 23 males answered the inquiry. The percentage of the answers was 73.1 %. Tabel2 illustrates the respondents divided according to experiences of work, teaching and competence demonstrations.

Table 2. *The professional backgrounds of the target persons.*

	Experiences of teaching		Experiences of competence demonstration activity		Experiences of work in the field of profession	
	n	%	n	%	n	%
none at all	4	8.2	8	16.3	2	4.2
1 - 3 years	15	30.6	28	57.1	6	12.5
4 - 6 years	7	14.3	9	18.4	11	22.9
7 - 10 years	7	14.3	3	6.1	5	10.4
over 10 years	16	32.7	1	2.0	24	50.0
	49	100,0	49	100,0	49	100,0

The respondents owed relatively ample experiences of work and teaching, which is typical of the persons with a competence-based qualifications specialist´s background (see also Salo, 2004; 2008). 61 % of respondents had at least four years of teaching experience. Over 60 % had working experience of more than six years. The respondents had relatively scarce experiences of competence demonstration activities. 73 % of them had up to 3 years of experiences of it.

In general, the target group can be considered to have wide experiences of teaching and professional work, but not so much of competence demonstration occasions. The lack of them explains why learning path 1 is prevailing among the target group. In figure 3 its rise was explained and the probability of ending up at a certain learning path without earlier acquired competence or with non-relevant acquired competence was expected.

The research data were collected by questionnaires with the help of ZEF-evaluation tool (Vocational Teacher Education Institutions, 2008). In the questionnaire, 8 questions out of 34 questions charted the background. Five questions were targeted to explain the respondents´ experiences about the starting phase. This article will concentrate on examining those five questions only. They are the following:

Did the self-assessment at the beginning of the education act as a tool of recognizing competences?

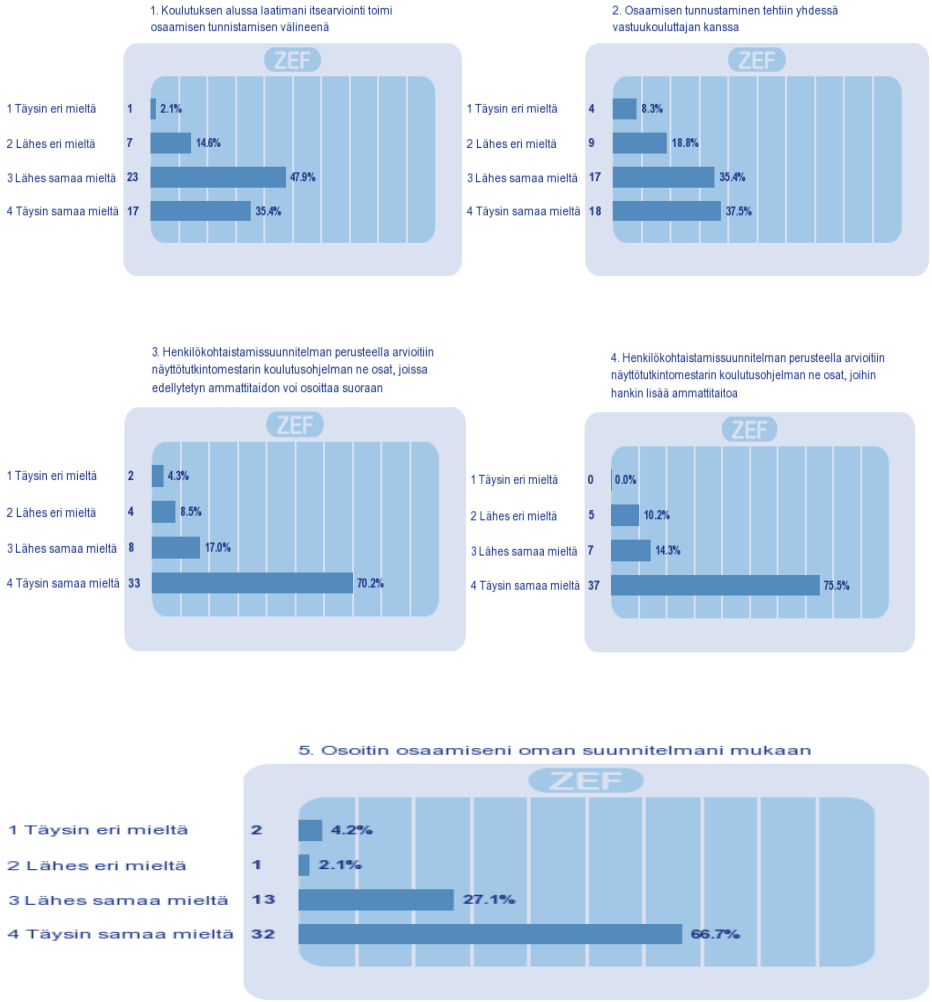
Was the validation of competences made together with the educator in charge?

Were the parts of professional competence, which could be demonstrated directly, assessed according to the plan of individualization in the competence-based specialist´s qualification education? (paths 3 and 4).

Were the parts of the competence-based specialist´s qualification education which would need more professional competence assessed according to the individualization plan? (paths 1 and 2) Did I demonstrate my own competence according to the plan that was made?

Findings

The following five pictures 1 – 5 present the conceptions of the respondents about the significance of the beginning phase in their educational path.



Pictures 1-5. *The respondents´ conceptions of the realization of the seeking phase.*

Picture 5 shows that 93.8 % of the respondents agreed almost completely or completely on the fact that they had demonstrated their competences according to the plan they had made (IEP/ Hensu). The supervisors of the education had accepted the plan before the start of the competence demonstration, and the follow-up of the realization of the plan was carried out and supported by online supervision. It can thus be noticed that the learning path created at the beginning phase was realized according to the plan. A well planned and guided seeking phase seems to have led to a successful learning outcome among the respondents. Figures 1 and 2, again, show that the respondents mainly agreed on the fact that at the beginning of education the earlier acquired competences were charted together with the respondents and supervisors successfully. They also agreed almost fully on the fact that the charting of their competences acted well as a tool of recognizing their skills. Without the charting in the beginning it is difficult

to plan relevant learning paths to the students. Figures 3 and 4 give reason to conclude that the respondents found it important that recognizing and validating their competences were made in cooperation, between them and their supervisors.

Conclusions and discussion

The phase of seeking for individualization of the program at the beginning of the education was already paid attention to. The importance of carrying out the beginning stage successfully is extremely great (Salo, 2011; Salo & Korkala, 2011; Salo, 2008), if the whole individualization process is intended to contribute to the recognition and validation of competences. The authors´ personal background concerning the findings lies on the experiences from a ten-year period about skills and competence recognizing. In order to carry out the individualization processes successfully, the findings connected to the successful beginning phase have been analyzed and concluded in the following way:

1 *The requirements of competences must be described literally in a clear way,* and it is important that they are concrete and expressed also in the terms of tasks. The requirements of knowledge are found in qualification requirements. If there are no requirements, they must be devised.

2 *The descriptions of competences* must lead to devising *competence-based curricula.* The requirements and descriptions of competences must be defined and their evaluation criteria explained. If any of those definitions is missing, the phase of seeking for individualization cannot be realized relevantly.

3 In the beginning phase when the competences are being recognized, it is recommended to avail of charting the skills through interviews. The results of the charting should be compared to the requirements of competences. *The charting will act* as a student´s personal document of individualization. The document, again, will act as a student´s vision of his/her learning path. The document mentioned above can also be called an *individual path for gaining the qualification*.

4 We have also noticed that the arrangements based on EAC action *bring us a strategy* of how we should act when choosing guiding and teaching methods to meet the student´s needs.

5 It is essential in recognizing the earlier acquired skills that we guide the student to recognize him/herself both his/her earlier and present skills. *The successful realization of the beginning phase presupposes systematic and online guidance (*Salo & Korkala, 2011, pp18-20*) as well as the student´s autonomous commitment to his/ her learning process.*

From the guidance point of view the seeking phase means a challenge to educators of how to promote the student´s learning path in the best possible customer-oriented way. As the result of the seeking phase supervisors and organizations will also have every student´s personal strategy. The strategy will in this case answer the question: "*How could every student´s learning path be most sensibly realized?*" Every student´s strategy starts from the seeking phase and guidance connected to it. *The seeking phase is the point of creating the strategy and visions. The strategy will be realized and concern every student when he/she is arranged occasions to demonstrate his/ her competence and/ or acquire the needed skills.*

The arrangements sketched here are in harmony with the observations of, e.g. Willox and Brown (2002) and Keurulainen (2006, pp 24-25). They state that the requirements of competences must be clear and written as well as understandable, and the role of guidance is significant in successful individualization. Also Raivola (2000) presupposes that all education must be relevant from the student´s point of view; it is just the student-centered approach that is aimed at, by the authors of this presentation, in the beginning phase of education.

Abbreviations

EAC = Earlier acquired competences
IEP = Individual educational plan

ISP = Individual study plan
NBE = National Board of Education

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ACTION RESEARCH AND TEACHER TRAINING CHALLENGES IN POLYTECHNIC HIGHER EDUCATION

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Abstract
Action research is a methodological approach often used in initial and continuous teacher training courses in Portugal, namely at polytechnic schools. For this reason we try to inquire: "To what extent is action research a useful methodology in training teachers in polytechnic higher education?".
The analysis of one's own experience of training in two training courses in the Viseu Higher School of Education, which took place between 2001 and 2006, as well as the analysis of the final research work developed allow us to conclude, among other aspects, that this methodology has showed to be attractive to many teachers and represents a contribution to a greater openness to change and educational innovation.
Not intending to generalize these data beyond the context under analysis, we consider they suggest the usefulness of action research in teacher training at the level of higher education and thus recommend the use of this methodological strategy.

Keywords: action research; teacher training; polytechnic higher education

Introduction

Teacher training has been one of the priorities of education systems, emerging as a strategy to address the issues of improvement and transformation of education (Cardoso, 2008). In an environment characterized by increasingly complex and shifting situations, the models of teacher training oriented by research have been asserting themselves increasingly, inasmuch as they promote the teacher's ability to analyse and question the professional situations in the various contexts in which (s)he operates (Zeichner, 2001; Baumfield, Hall & Wall, 2008).
Action research is a methodological approach that has been gaining more and more supporters in teacher education (Noffke, 2002). As it is a form of research that occurs in the place of the action, it is directed towards improving the educational practice, and directly involves participants, linking research to the teaching practice (Liston & Zeickner, 1991; Kemmis, 2007).
A classic definition of action research is presented by Ledoux (1983, p. 623): "the production of knowledge related to modification of a given social reality, with the active participation of the persons concerned". This definition highlights the collaborative nature of research, and also sets out the three main objectives of this research: the production of knowledge, the modification of reality and the transformation of actors (Simões, 1990).
The introduction of the investigative dimension in teacher training should start at the undergraduate level, in response to the demands of innovative teaching practices (UNESCO, 1996), deepening further throughout the programmes of continuous education, so that teachers are not mere critical consumers of research undertaken by others (Zeichner, 1993), but also capable of "participating in a methodically oriented way, in the construction of professional

knowledge, towards a more grounded action in class and school and therefore society" (Estrela, 2002, p.25).
Various empirical studies show the importance of action research in the initial training of future teachers, particularly towards the increment of reflective practices and openness to change (Moreira, 2001; Price, 2001; Oliveira, 2003; Price & Valli 2005; Warren, Doorn & Green, 2008).
There are also several empirical studies at the level of continuous teacher training that corroborate the usefulness of this methodology in the development of the reflexive and critical capacity of teachers, leading to a greater openness to change and educational innovation (Gomes, 1997; Caetano, 2004; Filipe, 2004; Sanches, 2005; Cardoso, Amaral & Oliveira, 2006; Warrican, 2006; Cardoso & Pereira, 2007; Garcia & Roblin, 2008).
For this reason it has been acknowledged as an important contribution to innovation and teacher training, which is why it has been carried out both in initial and continuous teacher training courses, particularly at the polytechnic higher education level. Within this context we were urged to ask the question: "To what extent is action research a useful methodology in training teachers in polytechnic higher education?"

Methodology

To address this issue we resorted to a methodology of a descriptive nature, based on the analysis of one's own experience of training in course curricular units such as Methodology Research, Seminar and Project, as well as on the analysis of the final research work developed in two teacher training courses, which took place between 2001 and 2006, at the Higher School of Education of the Viseu Polytechnic Institute.
These are courses leading to a bachelor's degree (or equivalent), in which I participated, namely: "Pedagogical Supervision and Training of Trainers" and "Complementary Training Course for Early Childhood Educators". The final research studies/monographs are kept in the library of the Higher School of Education of Viseu.
The course "Pedagogical Supervision and Training of Trainers", with a study plan covering four semesters, was held between the school years 2000-01 and 2003-04. I taught the students who enrolled in the course for the first time on the second and third years the course was running. On an individual basis, I taught two curricular units: Research Methodology and Conception of Projects in Supervision; in collaboration, I taught two other curricular units: Project Seminar and Project Development.
The first curricular unit, both of a theoretical and practical nature, aimed at providing the indispensable theoretical and methodological framework regarding the process of scientific research, as well as at developing some basic skills of research; the second one was designed to supply theoretical elements necessary for devising a research project and supporting its development; the last two curricular units were designed to monitor the implementation of the research work up to its final writing version.
The "Complementary Training Course for Early Childhood Educators", whose study plan develops over four semesters, was held for some years in the Higher School of Education. In the school years 2004-05 and 2005-06 I taught the curricular unit Project Seminar. This curricular unit aimed, on the one hand, to provide some theoretical knowledge about the methodology of scientific research, and, on the other, to monitor the development of a research project. Mostly, a seminar action research model was adopted, as proposed by Gomes (2003), the course coordinator with a wide experience in the training of early childhood educators.
According to the assessment regulation prevalent at the Higher School of Education at the time, the final research works displaying the highest scientific quality, whose trainees wished to obtain a grade higher than sixteen had to be subject to evaluation (public defence) by a jury appointed for that purpose. One of its elements could be a professor from another institution of higher education who, at the invitation of the Viseu Higher School of Education, would interrogate the

candidate (in one of the cases, we had the collaboration of a professor from the University of Aveiro). In these two courses there were six research works submitted to public defence, the minutes of which are in the School academic services.
Two final research papers were published, one in an international publication (Cardoso, Amaral & Oliveira, 2006) and the other in a national magazine (Cardoso & Pereira, 2007).

Results

The analysis allowed us to find out some data regarding teacher training in higher education. The action research has showed to be attractive to many teachers, as confirmed by the proportionately higher number of works that followed this approach, when compared to others, in both courses.
In the first course, "Pedagogical Supervision and Training of Trainers", both the classes I taught were comprised of primary teachers and early childhood educators, making up a total of twenty eight undergraduate students. In the first class, six action research projects were carried out and, in the second, eighteen projects were developed, which corresponded to about two thirds of the total number of students attending the class.
In the second course, "Complementary Training Course for Early Childhood Educators", among the twenty four educators who were included in each of the two classes, only a small part did not carry out their final study according to the proposed manner (six educators in class 1 and one attending class 2).
This preference for action research is largely justified by the interest that derives from the teachers being able to investigate a problem that emerges from their everyday school life, with implications upon their own professional development. As one of the teachers concluded:
The analysis and reflection undertaken throughout this action research study resulted mainly in a better awareness of the need to keep constantly alert, aware and therefore well informed to provide more appropriate responses to the problems stemming daily from my educational practice (Cardoso, 2003, p. 58).
Our monitoring of the action research process of these works, as well as the opinion of the teachers involved, allow us to state, in general, that this methodology represents a contribution to a greater openness to change and educational innovation, based on the recognition of gaps in the action itself and on the discovery of renewed forms of teaching/learning. As stated by one of the teachers:
I think this study was, for me, extremely fruitful (...) because I was a research teacher, I was innovative, dynamic and one of the "fruits" harvested and immediately displayed was the enthusiasm shown by students (2nd grade of Basic School Education) while writing their journals by using the computer (Oliveira, 2004, p. 34).
Also worth adding is the importance of the training provided with the appropriation of knowledge, both at the scientific level, with the deepening of areas related to the issues under review, and at the methodological level, with the acquisition of investigative techniques. In the words of one of the teachers:
The contact we had with the theories of several authors we studied and the shared reflection we made about them, allowed us to integrate this knowledge into our private theories (...). Thus, the theoretical knowledge that led us to develop an investigative attitude, allowed us to apply these theories (know how) in the classroom environment, taking into account the contexts and the individual and unique characteristics of learners (Costa, 2004, p. 161).
Also noticeable was the development of attitudes of distancing and questioning concerning pedagogical teaching practices, as well as the search for their theoretical basis. According to one of the educators, "the action research carried out is a major contribution to a more conscious and therefore more appropriate approach to the tales for children" (Mata, 2005, p. 83).

The involvement of external elements, namely more experienced researchers, has proved to be an advantage regarding the development of the research process, while, at the same time, it gave teachers greater security for them to face problematic situations.
As one of the educators concluded, “we develop capacities of self-analysis, the confront of our personal practice with that of other professionals also becoming important, towards a shared, constructive enrichment and growth” (Faria, 2006, p. 95).
Noteworthy, too, as a recurrent finding encountered while teaching these courses, was the demystification of the idea that the research activity is something inaccessible to the teacher. This was evident, especially with regard to teachers who had taught for more years, generally without training at this level, for whom the research world was something distant that only "experienced scientists" could accomplish.
In the words of one of the participants, the researching teacher is one who is "able to find adequate answers to the problems he faces, thus endowing his students with similar characteristics to his/her own" (Cardoso, 2003, p. 59).
However, we can´t forget that any scientific work presupposes a set of logistic conditions and compatible methodological training that are difficult to bring together/provide for in a short period of time. If we consider the three purposes of action research, we easily conclude that the objective of "knowledge production" was, at times, less successful, due to the demands inherent to the research process and the practical constraints that emerged during its fulfilment. One of the difficulties found, most notably in the “Complementary Training Course for Early Childhood Educators”, is precisely related to the need for a deeper understanding of research methodologies.
We must also acknowledge that, generally, the research focused on teachers’ problems confined them, as a rule, to classroom environments (and the study of very small samples), not involving the school or educational community. Few studies are exceptions, such as Cardoso (2003), involving parents and the Parish Council itself, which culminated with the mobilization of the community to create a space for leisure activities for children who did not have any kind of support outside the school, not even from family.

Conclusion

Action research has an important contribution to make at the teacher training level. Through it, teachers become protagonists in the investigation of their practices and have the opportunity to acquire essential methodological tools for systematic research of the educational reality.
As we have seen, it is an attractive approach for teachers, which contributes to a greater openness to change and innovation in education and also to the development, on the part of teachers, of an ability to investigate problems that they come across in their everyday practice.
However, investment is needed in the teaching of research methodologies, both at the initial and continuous training levels, because the methodological training is a prerequisite for carrying out rigorous and credible scientific research.
Not intending to generalize these data beyond the context under analysis, we consider that they suggest the usefulness of action research in teacher training at the level of higher education and recommend the use of this methodological strategy as a way to increase both the personal and professional development of teachers in response to the challenges and innovative requirements of the present.

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ACTION-RESEARCH AS A TRAINING STRATEGY OF CONFLICTS IN THE CONTEXT OF EARLY CHILDHOOD EDUCATION

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Abstract
Conflict situations are a daily issue in Kindergartens. This paper reports on a work in progress about a collaborative action-research project in which the author worked with a group of kindergarten teachers in a social care institution in the center of Lisbon to investigate the occurrence of conflict situations among children. The practitioners used observations, group discussions and reflections to share experiences and improve practices. The analyzed data only refer to the final reports and they revealed that kindergarten teachers mention four main themes in what concerns to a general evaluation of the whole process, they are: *Teacher Education Process*, dealing with the needs felt when initiating the process and how the investigation was carried out throughout the process as well as the ways of collaboration among teachers; *Effects on Teachers* (different areas), in what concerns with knowledges, action, reflection and constraints; *Effects on Teachers* (levels), related with deepness in terms of integration/differentiation but also to extension of the change in space and time; and *Effects on Pupils*, about their well being, safety, skills for managing conflicts and autonomy. The teacher education process contributed to a greater involvement between kindergarten teachers from different valences (day care and preschool). Kindergarten teachers have a different way of perceiving, reflecting and acting towards conflict situations and some even were able to transfer that knowledge from their professional sphere to their personal sphere and some other mentioned a self transformation in what concerns to deal with their own conflicts.

Keywords: teacher education, collaboration, childhood education.

Introduction

The aim of this communication is to present the results of kindergarten teachers final reports concerning a collaborative action-research project about conflict management.

The majority of children establishes their first social experiences in educational environment with other children and adults besides their own family, allowing them to have "(…) different views and positions, therefore, experience conflict situations" (DEB, 1997, p. 37). We believe this occurrences may have a destructive or constructive result, depending on how they're managed. The authors Katz and Chard (1997) underline the fact that "the cumulative effects of long-term social difficulties in childhood may be responsible for the recursive cycle phenomenon" (p.55). Therefore, adults (parents, educators, and others) who nurture and educate children – in particular, kindergarten teachers who spend (often) about 8 hours a day with children – should lead them throughout progressive acquisition and development of social skills, such as *solve problematic situations and manage conflicts* (Cachapuz, Sá-Chaves & Paixão, 2004), so they can *learn to live together* (Delors et al., 1998). Therefore, kindergarten teachers, should pay special attention to the prevention and conflict resolution among peers, reflecting and guiding towards a "constructive (committed, non-violent and positive), creative (inventing new paths, formulating original ideas and opening our mind), cooperative (recognizing,

revaluing and dialoguing with others) and critic (fair, transforming and peaceful) management" (Boqué, et al., 2005, p. 11) of the conflict situations using the mediation process. This process implies that instead of facing conflict as a negative phenomenon we should face it as something *natural* (Fernandez, 2001; Jares, 2001, *inherent* (Burguet, 1999; Fonkert, 1999) to individuals and even *mandatory to the change* as individual and group or organizational (Ferreira, Neves & Caetano, 2001); and it's always trying to reach a positive result to the parties involved in the conflict. Even because it is believed that "the sooner the personal relationships' learning takes place... and from the conflicts that arise from them, the easier it will be to neutralize the violent and uncontrolled responses" (Sastre & Moreno, 2002, p.52).

Having this in mind, we've tried to create a kindergarten teachers' collaborative group to reflect on performances when leading with conflicts and find solutions to everyday problems. Hargreaves (1998) refer that "collegiality and collaboration among teachers are important not only to improve their *morale* and satisfaction (…) they're also absolutely necessary if we want the school has more greatness… Both are needed to ensure teachers' benefit with their own experiences and continue to grow throughout their careers" (p. 210).

Through the collaborative work, the teacher has someone to talk to about problems and obstacles, have someone to learn (with whom can learn), someone who works in achieving goals and helps improving pupils learning. This relationship increases confidence with the other, develops skills and helps facing uncertainties and risks with security.

Theoretical framework

The many education reforms have led to increased educational bureaucracies (filling written documents required by the Administration and Inspection), with the constraint to decrease the time that teachers engage in critical reflection of the specific educational processes.

The assumption of a reflective attitude can lead to a change in the educational practices, leading to professional development. For the professional development also contributes the continuous teacher education, which is a way to update, enhance knowledge, skills and abilities, in other words, it's an improvement factor of the teachers professional performance and (likely) the consequent results in student learning, which is directly related to the learning that teachers do to become better.

It is well known that several heads think better than one and Fullan and Hargreaves (2001) also said that "nobody is an island. We cannot develop in isolation, but through our relationships, especially the ones we keep with those who are significant to us. These significant others work as a kind of mirror of our personal development" (p. 71). The authors defend the existence of collaborative cultures in schools instead of an individualistic school culture. Here also lies the problem of this investigation, as it stills common to hear teachers talk about a certain professional loneliness, which can and should be overcome through interaction with others, sharing experiences and building new knowledges.

Collaboration is also encouraged on the Teaching Career Statute, a document that provides indications for the teachers (approved in November 2006 in the Council of Ministers): "In the Programme of the XVII Constitutional Government reaffirms the concept that kindergarten teachers and teachers are key actors in school education. Organized labour of teachers in schools is certainly the main resource available to the portuguese society to promote students' success, to prevent school dropouts and improve the quality of learning". It is therefore necessary to "... promote cooperation among teachers and reinforce the coordination functions, since their work, in order to produce better results, can not be atomized and individualized."

One of the ways that teachers have to meet the current required profile is to integrate collaborative work groups so that, through dialogue and reflection, overcome difficulties and achieve purposes which, individually, would be more difficult to achieve. Even when dealing with

researchers, a collaborative research allows both – researcher and teachers, together – to experience, test and discuss new ideas. Therefore, it becomes a potential more critic research: critic about the practice informed by theory and critic about the research informed by practice. Day (2001) challenges teachers to actively involved themselves in researchers, in processes that he named "metacognition", of gathering data, description, synthisis, systematic data analysis and evaluation. Researcher must consider the teachers' emerge questions as relevant, understand their needs and search possible answers. Above all, in order to have an effective search, the researcher has to walk beside teachers (Boavida & Ponte, 2002), meaning that should highlight the investigation *with* rather *about* teachers (Blond & Webb, 1997). However, in this particular research we had to took both sides and as so, when investigating *with* kindergarten teachers we had the following questions, raising up from practice problems:
How to intervene towards a child who's constantly bitting the peers?
What to be done when facing the constant dispute for the first place in the train queue?
How raising family awareness to this issue?
How to involve other adults in conflict resolution?
How to optimize strategies for conflict resolution in the context of early childhood education?
And when investigating *about* kindergarten teachers, or better, *about* the teacher education process the questions were:
What are repercussions of teacher education processes in collaborative action-research when it comes to the kindergarten teachers' conceptions and practices?
How can kindergarten teachers equate the development of collaborative action-research, as a formative process able to make a change?

Methodology

The study had followed a qualitative methodology, within the interpretive research paradigm. The investigation method selected was the *case study* and the methodological strategy was *action-research* in a collaborative context. According to Elliott (1978a, cited by McKernan, 1991), action-research is characterized by the usage of the case study methodology as a way to understand what is happening and how the events are related. Action-research includes the so called applied research, which seeks results that can be used at the level of practical decisions of certain aspects of people's lives and the researcher has an active involvement during the investigation, it is a process that develops in a spiral made by cycles of four interrelated and complementary phases: planning, action, observation and reflection.
In this teacher education process, we've constantly tried to find answers to everyday problems. The investigation developed in two continuous moments based on a critical reflection about (day care and preschool) kindergarten teachers' performances when facing conflict situation among peers. The first moment (from March to June 2009) consisted on a study circle training about *conflict mediation* and the second one (from October to May 2010) was informal sessions. During the process we used a variety of methods and research techniques, among which: self and pairs observations (observations and reflections' analysis), interviews (focus group and semi-direct), document analysis and field notes (summaries of the sessions, of readings, sessions' synthesis, and final reports). This last ones – final reports – are now here analyzed through a process named *coding theory* (Flick, 2005). In this particular process, the text interpretation aims to reduce the textual material, categorizing it and the strategy used in the texts treating was the encoding of the material. The encoding process is therefore an assignation of codes, initially very close to the text and then, in a progressively way, more abstract.

Findings

Proceeded to the analysis and interpretation of the final reports (total of 6) were found various issues related to the route taken during the teacher education process. The themes emerging

from written reports of the kindergarten teachers were the *teacher education process*, the *effects in kindergarten teachers – areas and levels of change* and the *effects in children* (see Tables 1, 2, 3 and 4, respectively).
The characters ED and EP stands for day care and preschool educator, respectively.

Teacher Education Process

Therefore, not all the teachers manifested appreciation due the subject – conflict management. However, most refer that it was *frequent* in a daily basis "it's a subject in the everyday life of a kindergarten teacher…" (ED5). Kindergarten teachers mentioned aspects related with the *needs felt* (by them): *of proper action* and *of reflection* because "we are facing too much violent behaviour in an early age and we must reflect about it, kindergarten teachers and families" (EP2). The reflection that they made was related with *data interpretation* and *critical questioning on ways to act*: "during the training I did some reflection through my observations" (EP3) and *on conflict occurrences*: "… it makes me reflect in the way of trying to understand which are the best intervention forms for the different types of conflict and the influence that intervention will have on the child behaviour" (ED5).
According with this, Day (2001) states that "... teachers who reflect in and on action engage in a research aiming not only to better understanding of themselves as teachers, but also with a view to improving their teaching" (pp 47-48).
There is also reference to the investigating act, particularly to the observations made, which are seen as something that also helps to reflect on the role of the teacher, identifying effective strategies and to contextualize "we made several observations during this 'study' in order to reach a conclusion. The conclusion is that we cannot be rigid. Each situation requires an intervention form. It is required to observe each situation independently" (ED5).
The practitioners also mentioned that they've improved acting by trying new strategies and by testing them in context "… it was very important the sharing between teachers allow us to know new intervention strategies, different from those already used" (ED5) and "we've tried some of the solutions suggested by other persons that have had similar conflict problems and many of them had result extremely well" (EP1).
Theory was as well an unavoidable aspect regarding documentation in specific tasks such as reading texts, sharing texts and mentioning several authors "(we) always talk and read about several authors…" (EJ2), to have different perspectives and try to link "… theory and practice…" (EJ3).
Collaboration among teachers was the high-priority category on the teacher education process theme. Teachers refer to strengthening of the *relationship among teachers* "one of the most positive aspects of these experience was the possibility of being together" (EP1) and have a strong feeling about the idea of *sharing experiences* "... sharing was always an excellent option in this dialog with other kindergarten teacher, we shared experiences that we have had before concerning equal or similar conflicts" (EP8). Other aspects that were appreciated by the teachers were the *planning* and *reflecting together* "the fact that we work and reflect together, we realize that we all have moments of great tension, it helped me a lot defining strategies in a more effective and efficient way." (ED1), because that leads to solutions (*finding solutions*) to each and everyone of the group "this sharing allows us to expose our doubts, fears or frustrations and together we all tried to find answers to all" (ED5) in a sense of collaborative work. This one, as Roldão (2007) states, "essentially structured as a process of joint work and think together, to help you achieve the best desired results" (p. 27).
Still, in the teacher education process, it was mentioned the fact that the *collaboration among teachers-assistants* created *dialogue on what strategies to use* facing a conflict situation among peers, *sharing knowledge* about the subjects debated on teacher education process and that together have to *act consistently* "throughout these sessions I understood the need to talk with

my teacher assistent, in order to share the knowledge that we acquired and also that both had the same strategies and so we would go in the same direction, so that children feel safe when they encountered with a conflict" (EP8).

It was also commented the *collaboration teachers-parents* that was a brief disclosing of the collaborative work, and both, teachers and parents had a space and time to *reflect on the subject* and *share experiences*: "the action training with parents was, for me, one of the best moments of this teacher education process because we were able to discuss, share and reflect with people who trust us with their children and somehow feel that this art can help education in conflict situation" (EP3).

Table 1. *Teacher education process*

Theme	*Categories*	*Sub categories*	*Indicators*	Codes
Teacher education process	Needs felt by teachers		Of reflection	**PFNEr**
			Of proper acting	**PFNEaa**
	Theme		Frequent	**PFTfq**
			Appreciation	**PFTv**
			Non appreciation	**PFTnv**
	Forming investigator		Organizational skill	**PFIFco**
			Communication skill	**PFIFcm**
			Availability	**PFIFd**
			Positivity	**PFIFp**
	Individual reflection	Critical questioning	On ways to act	**PFRqcfa**
			On conflict occurences	**PFRqcoc**
		Data interpretation		**PFRid**
	Investigation	Observation	Help to contextualize	**PFIoc**
			Help to identify effective stratagies	**PFIoee**
			Help to reflect on the teachers' performance	**PFIora**
		Data analysis		**PFIad**
	Acting	Innovation	New strategies	**PFAine**
		Testing	Simulating in a session	**PFAtss**
			In context	**PFAtc**
	Theory	Documentation	Reading texts	**PFTdt**
			Sharing texts	**PFTdpt**
			Mentioning several authors	**PFTdava**
	Colaboration among teachers		Relationship among teachers	**PFCEee**
			Finding solutions	**PFCEso**
			Sharing experiencies	**PFCEpex**
			Reflecting together	**PFCErc**
			Planning together	**PFCEpc**
	Collaboration teachers-assistants		Dialogue on what strategies to use	**PFCEAdeu**
			Sharing knowledge	**PFCEApc**
			Acting consistency	**PFCEAca**
	Collaboration teachers-parents		Disclosing collaborative work	**PFCEPdtc**
			Reflecting on the subject	**PFCEPrt**
			Sharing experiences	**PFCEPpex**

Effects on teachers – changing areas

The kindergarten teachers wrote about the effects of the teacher education process on themselves, in different areas - about declarative, procedural and metacognitive knowledge and to each correspond the following statements *on conflict conceptions* "the truth is that due to this teacher education process I'd start to face the conflict of a more serious, but also as natural and essential to development" (ED1), and *on how to act as a mediator* "there are some techniques used by us to mediate in conflict situations: separate the children, observe the situation and see if children can solve by themselves the situation, ask the child to calm down, explain the perspective of the parties A and B… ask children to make peace…" (ED1) and also *on self regulation* "these teacher education made me stop, think and reflect on the several conflict types and had more attention towards them and to the several ways of teacher intervention" (ED5), respectively. Also the reflection and action degrees, due strategies used by the teachers in a conflict situation among pupils, some were effective but some other were ineffective "often the strategies taken from the sessions to our classrooms were very effective with some children, but others did not show much effect" (ED5).

There were also some references to the *constraints*, the major and only one pointed was the *lack of time* that didn't allow the record observations and projects "our participation, perhaps was not always been the most desired. At least in the children's observations, not due the lack of interest but for lack of time to register the various events related to the theme" (EP1).

Table 2. *Effects on teachers - changing areas*

Theme	*Categories*	*Sub categories*	*Indicators*	Codes
Effects on teachers – changing areas	Carer knowledge	Declarative	on conflict conceptions	**EESEdcc**
			on conflict situations	**EESEdsc**
			on conflict mediation	**EESEdmc**
			on pupils	**EESEdal**
			on strategies' effects	**EESEdee**
		Procedure	on how to involve families	**EESEpef**
			on how to act in a conflict situation	**EESEpasc**
			on how to act as a mediator	**EESEpamed**
		Metacognitive	on how to organize thought	**EESEmop**
			on self regulation	**EESEmar**
	Reflection		on conflict occurences	**EERoc**
	Action	Strategies used by the teacher in a conflict situation among pupils	Effective	**EEAeue**
			Ineffectives	**EEAeui**
Effects on teachers – changing areas [Note: not mutually exclusive]	Constraint	Lack of time	No recording observations	**EECftno**
			No projects	**EECftnp**
			Stablished routines	**EECftro**

Effects on teachers – levels of change

Starting by saying that there were teachers that assume they felt *no change* regarding the forms of adult intervention "… I do not think it brought me anything really new since they were practices that I had adopted as an educator" (ED5). In the other hand there were teachers who underline different areas of change and their discourses oscillate between different levels of one category, for instance some teachers started to *questioning* "it raised me many questions to which I'm still looking for answers…" (ED1), some other show their *flexibility* "… the desire to learn more about this issue and other will certainly be higher…" (EP1) and there were others who gave attention to the *innovation* towards action "we've learned various forms of mediation, to reach an agreement between the parties, think about it, finally reaching an understanding" (EP1), all three (indicators) showed a kind of turbulence that teachers went through. The same with *commitment* demonstrated in different ways such as *appreciation*, by their *attitudes* towards the conflict and to the recourse to a consistent and systematic practice every single time a conflict emerged "… using permanent and consistent dialogue" (EP3). The most remarkable note was regarding *transference*, the acknowledgment of integration between the professional self and the personal self "I graduated a little more, made me grow as a wife, mother and kindergarten teacher" (ED1).

Table 3. *Effects on teachers – level of changes*

Theme	*Categories*	*Sub categories*	*Indicators*	Codes
Effects on teachers – levels of change [Note: not mutually exclusive]	Turbulence		Questioning	**EEMTq**
			Flexibility	**EEMT**
			Innovation	**EEMT**
	Contextualization		Investigative	**EEMCi**
			Collaborative	**EEMCc**
	Transference		Integration of the professional self and the personal self	**EEMTipp**
	Commitment		Appreciation	**EEMCv**
			Attitudes	**EEMCa**
			Consistent and systematic practice	**EEMCpsc**
No change				**EENM**

Effects on children

Very few statements were given towards the effects on pupils, although the teachers recognize that their own action influenced children. The teachers were concern about providing children's *well being* "[… I think that with this teacher education process…] I was able to provide well being to the children" (EP8) and *safety*. Some even refer consequences rising up from the conflict situations "it carries children to know more about her/his self, about her/his relationship with others and with the surrounds" (EP3) as well as children's accomplishments in terms of *skills for managing* conflicts, such as the empathy or the messages in the first person "… there was some change, in the way they start to 'explain' they're points of view" (EP1) and the development of their *autonomy* "this work had a positive result since from the beginning of the year children become more autonomous when facing conflict situations" (EP8).

Table 4. *Effects on pupils*

Theme	*Categories*	*Sub categories*	*Indicators*	Codes
Effects on pupils			Well being	**EALbe**
			Safety	**EALs**
			Skills for managing conflicts	**EALcgc**
			Autonomy	**EALa**

Conclusions

From part of the collected data – final reports – and their analysis, we have reached important information that can contribute to give response to two of the investigation questions.

The first "What are repercussions of training processes in collaborative action-research when it comes to the kindergarten teacher' conceptions and practices?". The practitioners (teachers) assume that there were changes, regarding their conceptions towards conflict situations, the mediation process and particularly towards the concept of conflict and consequently led to their performance also had changed or at least allowed the expansion of knowledge about the mediation process. I believe that due to the reflection process carried out on their own conflict situations in which teachers intervened, resulted in the fact that they started to pay more attention to both, the conflict situation and to their own performance even before take any action.

About the second question: "How can kindergarten teachers equate the development of collaborative action-research, as a formative process able to make a change?" the practitioners deal with the fact that the teacher education process enable the existence of moments in which all kindergarten teachers (day care and preschool) got together, providing a greater involvement of all teachers of the institution, a joint reflection on the conflicts and modes of action towards it, sharing knowledge and joint problem solving in everyday life. The acquisition and application of new strategies into practice, leaded either to grips with the success or failure depending on the ability to be attentive to the situation, that is, attempting to contextualize each occurrence of conflict in order to act accordingly.

Despite the reference to *no change* also present in the statements of some teachers, the dimension of *change* is to be emphasize, because it's present in the already mentioned declarative and procedural knowledge. One of the aspects that best relates the actual existence of significant change is what some teachers said about the ability to transfer knowledge of their professional sphere to the private sphere, incorporating what can not be disintegrated: personal self from professional self (of education).

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KNOWING HOW WE THINK AND LEARN: A KEY COMPETENCE IN TEACHING

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Abstract
This paperwork analyses and discusses the validity of the teaching practices which take into consideration the way knowledge building and thinking happen in the human being, taking the data collected in a field research as empirical basis. Therefore, it is developed in five parts: the first part makes considerations about as the individual of knowledge is constructed. The second part evaluates the networks of thinking articulated with the Problem-solving strategies. The third part describes a specific didactic propose – the Educational-instructive work with projects**.** The fourth and fifth parts present the methodology of research carried out and a critical discussion concerning this empirical material. Finally, the conclusions confirmed the validity of the didactical method analyzed, reinforcing the need for teachers to have in their training, in addition to knowledge of what is taught, knowledge of how thinking and learning come to be.

Keywords*:* competence in teaching, construction of knowledge, thought and learning, problem-based teaching proposals

Introduction

A single day doesn't go by without news which questions the reliability, the accuracy and the truth of the pieces of information that come to us through many Medias, mainly via Internet. In the unending flow of these contents, not always filtered by the user, things end up being taken in as true, when they are not always so. All of us are, to some extent, subject to this, but, surely, young people are more vulnerable to this situation. In this case, society expects teachers to be decanters of the news and advisors for their students, which raises some investigative questions: Nowadays, when information happens in an ever increasing pattern and in surprising speed, should teachers remain in their position of "subject supposed to know" as full-on referential to their students? Or does the current situation require another training considering these changes?

The knowledge on how children think and learn are basic conditions to develop teaching proposals effectively promote a real construction of knowledge as and which would take the children into autonomy and into scientific, critical and creative thinking. So, among teachers' knowledge, besides solid knowledge of what is taught, do teachers need to have, during their training, the knowledge on how children think and learn?

Based by these questions, this paperwork analyses and discusses the validity of the teaching practices which take into consideration the way knowledge building and thinking happen in the human being, taking the data collected in a field research as empirical bases.

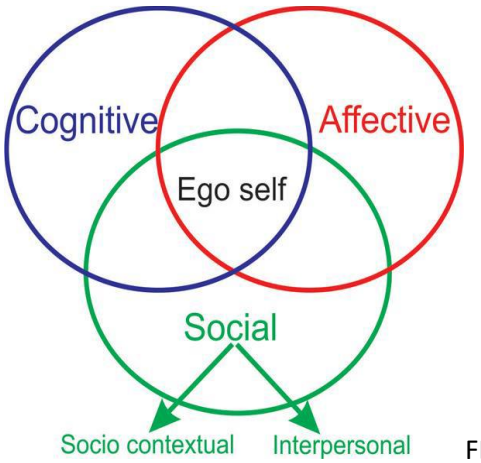
Building the individual of knowledge

Considering that man is a social being whose development - from conception until death - is built by successive exchanges with the outside world, we realize that learning has its meaning structured and confirmed by the cultural code of the environment where it happens. The cultural environment is defined as the surroundings which build the structure of the individual and determines his actions, leaving a unique mark of his time and his place.

Different scholars as Elias (1990), Geertz (1995), Certeau (1995), Jimenez (1996), Guattari (1998), among others, defend the importance of the context in human identity and knowledge construction, influencing and changing them. The relationship of man with his cultural environment is a reciprocal relationship, as well as the relationship among his peers is and will always be a relationship of trades.

The culture provides a link between what men are intrinsically capable of becoming and what they actually, one by one, become. To become human is to become individual, and we all become individuals under the direction of the culture patterns, systems of significations historically created in terms of which we give shape, order, objective and direction to our lives. (Geertz, 1989, p. 64).

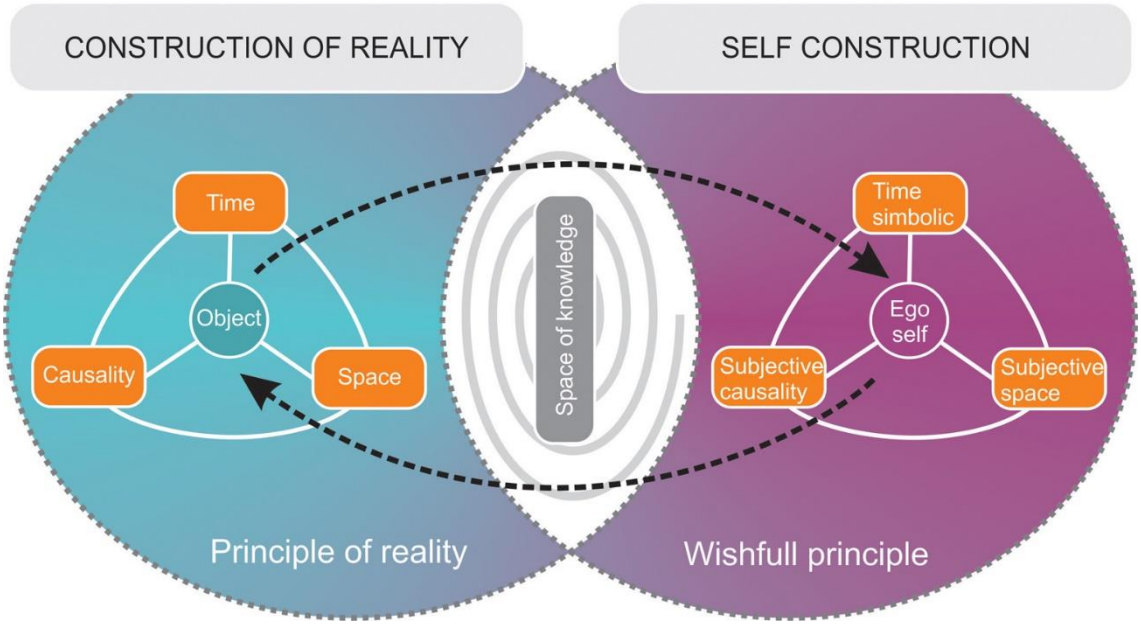
When we speak of individual, we are talking about a concrete individual, with a physical structure (body and organism), a rational structure (thought and cognition), a desiderative structure (motivation and affections), located in a specific historical-political-social context and living a specific moment of his life cycle. That's why the educational work only makes sense if it takes place considering how the different dimensions of this thinking being constitute and integrate themselves: the rational dimension, the desiderative dimension and the social dimension, where the last one unfolds itself to contextual and relational dimension. Also it is necessary to consider that the cognoscente individual is established in the intersection of such dimensions, always following the principle of pleasure and the principle of reality.



FLOWCHART 1

So, when we speak of knowledge construction, we are speaking about something that happens in the intersection between the construction of the real and the construction of SELF, which actually always operate at the same time. Thus, the entry of information is processed inside this intersection which is the actual learning space, which operates as the processing center between these two constructions and defines the behaviors which this person will have in the world.

For consequence, the individual of knowledge emerges right in the intersection of the dimensions and in the constitution of the cognoscente being, but one cannot be mistaken by the other.



FLOWCHART 2

As we can see in the flowchart, the construction of the real inside the psychic space develops itself by the interrelation of four constructions expressed by representations: the construction of object, the construction of time, which is objective in this case, the construction of space and the construction of causality (Piaget, 1995). We should take note of the fact that the construction of object is, in this case, not only of the physical world, but also the representation of our body in this physical environment, in this contextual environment. The four representations are connected among themselves, making up structures of operation that follow the principle of reality, one of the principles which rule the psychic space in the objective dimension.

On the other hand, the construction of the individual, which is parallel and homologous to the construction of the real, articulates itself among the constructions of SELF, of the symbolic time, of subjective space and of subjective causality. These four representations do not follow the principle of reality, but the principle of pleasure, which rules the psychic space in the subjective dimension (Paín, 1996).

The networks of thinking articulated with the strategy of *problem-solving*

First of all, it is a fact that the thought operates in associative networks. Therefore, the act of thinking requires a organization support - in this case the psychic organization - which, as we discussed, is constituted as a system of representations of internal impulses, of the objects and bonds perceived in the real world, of the experiencial moments and the actions of the individual himself, all of which is received as information by the psyche, registered in it and given meaning by it.

Actually, the psychic system performs two jobs: it transforms perceptions, both external and internal, in images and mental operations, integrating them to the record set which has been structured beforehand, and at the same time it modifies its own operation structures, according to the constant information input in the system (Mamede-Neves, 2004). .

The thought is, therefore, much more than just information processing. It is, above all, analysis, judgment and critical analysis, involving the constant articulation between reason and emotion, a dynamic process which, at every moment, faces the need to pick one of the paths of its networks. To this end, the psychic system counts on the possibility, after receiving the

information, to register it, give meaning to it and store it. It works with mental representations of the external reality, whether visual, motor, tactile, language and movement, organized in structures of operation which are able to put mechanisms of anticipation into action, which might be the most important feature of its functioning.

According to Damásio (1996, p. 13), we are confronted with the uncertainty, when we want to make a moral judgment, decide the future of a personal relationship or plan our life which lays before us. The emotions and the feelings, together with the hidden physiological machinery behind them, help us in the terrifying task of making predictions concerning an uncertain future and planning our actions according to such predictions.

Damasio's statement rises not only the role of the uncertainties, but the role of the error in cognition. Error and truth are part of the same psychic field and they happen in a series which goes from complete forgery to absolute truth; they are part, too, of the cognitive strategy, result of an instance which decides when the knowledge is true or when the suppression of it is necessary. This is only possible through the constructive function of the error, which allows the thought to go through what had been processed before, find the missing link and restore the associative chain which gives it meaning.

Thus, in such complex system, the thought, as a huge associative network in constant metamorphosis, goes beyond the perceived, creating associative networks that do not necessarily exist in the real world. It shows as a process of forming significations - also known as semiosis or sign process - through which something (sign) represents another (object), in some way or manner (interpretant), for a individual (interpreter); series of functional and structural features of the representation connected to a knowledge related to a specific object (Eco, 1987; Mamede-Neves, 2004). The thought operates whenever there is a state of imbalance in the system, requiring the search for possible exits for the impasse, in other words, for a problematic situation. (Wertheimer, 1959; Polya, 1944).

Problem here is regarded as concept that has the starting point of any inquiry which arises as initially undetermined. It is each and every situation in which the relation among its elements is not completely understandable or clear, and therefore, it deserves an inquiry or several attempts in searching for its solution which is found not to have just one single meaning. Through productive thinking, as proposed by Wertheimer and accepted by Polya, we see the action of the cogitative thinking and critical thinking, articulated, making up the reflexive thinking, able to explore all the connections in a critical manner, making the reflective abstraction possible

Educational-instructive work with projects

In my experience as researcher of the teaching practices, I have been experiencing the relevance of teaching with, besides other teaching methodologies, what I call Educational-instructive work with projects (EIWP), developed individually or in small peer-groups, in which there is a great emphasis on comprehending how the child thinks and learns. In this work, generic practices are not spoken of, but the work is centered in the children's formulations, in their acting and describing how she reached specific results, why she acted that way, etc.The *modus faciendi* of this specific work with projects was designed and initially implemented by Maria Lucia Fraga, master of Education (PUC-Rio) and I.

This conducting-the-learning-of-contents teaching method have shown itself to be very productive, allowing the students to go beyond what is taught, intensely motivated and much more prepared to properly use the structures of knowledge.

But, in fact, this teaching style is not completely new. It has its roots on the propositions of Decroly (1922), based on the possibility that the student has of guiding his own learning and, thus, learn to learn. To this form of pedagogical conduct, other theoretical inputs were added, such as the concept of insight (Gestalt), of Problem-solving (Polya), the concepts of operative

structures and the proposals of the clinic method by Piaget, and the theory of conceptual fields by Vergnaud (2000, 1990,1983), without forgetting Sara Paín's contribution (1996) concerning the articulation between objectivity and subjectivity.

I agree, also with the gestaltists, that the basic structure in the act of learning is the perception, and that such act includes concrete objectives, ideal objectives and, above all, the organization of the parts. Without that, there is no learning. There is no doubt that the formalization of knowledge comes to "give more accuracy to the gestural speeches which Descartes meant when he advised that craftsmen should be observed when they are at work in order to find "the order" in spatial experiments" (Certeau, 1995, p.127).

If such working style is not new, why am I bringing up data and considerations that are the result of pieces of research which accompanied the adoption of this methodology in individual form or in small peer-groups?

First because this pedagogical practice will always be based on the content that shall be taught. The thesis that the teacher has something to teach is argued and, therefore, the curriculum, the agendas and the contents are not seen as repressing to the creative processes, but as the necessary limits that need to exist in order that school life and life itself would succeed. The flexibility of such limits must be defended, as well as and, mainly, the attention that should be given in order that the student's interest might not be lost and that value might be added to knowledge the students, certainly, already brought to the school.

Secondly, the EIWP always uses a significative language to the student and it offers the possibility of cooperative learning, multiplying the sources of knowledge, because they are not strict to what is taught in the classroom. In this sense, it goes beyond the limits of the classes, it reaches out to other sources of information, it uses the media devices, it browses the infoways.

Finally, and most importantly, because its use allows the learner (and the teacher) to always be working on the (re)construction of the path of his learning process. And more: thinking over how he came to the conclusions that were presented. That is why, in applying the EIWP, the practice in specific situations is associated to "thinking schemes", which for us make an inseparable dyad.

Upon which teaching premises is EIWP based?

It is said that the teaching practice only makes sense if it is carried out under the strict dependence of how our SELF is constituted. If we intend for teaching quality, we first need to think about whom we are as individuals of knowledge and how the representations of the real world and the representations of SELF articulate inside of us, between the human objectivity and subjectivity.

In its objective performance, I agree with Piaget's ideas (1978) when he tells us that it is necessary to "do it to understand it, understand it to do it". Piaget argues that, during the sensorimotor stage and even during the preoperational and beginning of the concrete operational stages, first the child executes the action concretely, and she will only think about what and how she did it afterwards. Only by the gradual construction of the formal operational structures is it possible for the child to progressively get unattached to this need, and start having the comprehension of the action first and perform it afterwards. Such position is present in the theory proposed by Vergnaud (1990) that prioritizes the experience with concrete situations in order to reach knowledge. According to the author, "everone loses when we do not use the research in practice. It is only when we know how the students learn that teaching is possible. It is only by knowing how the students learn that teaching is possible".

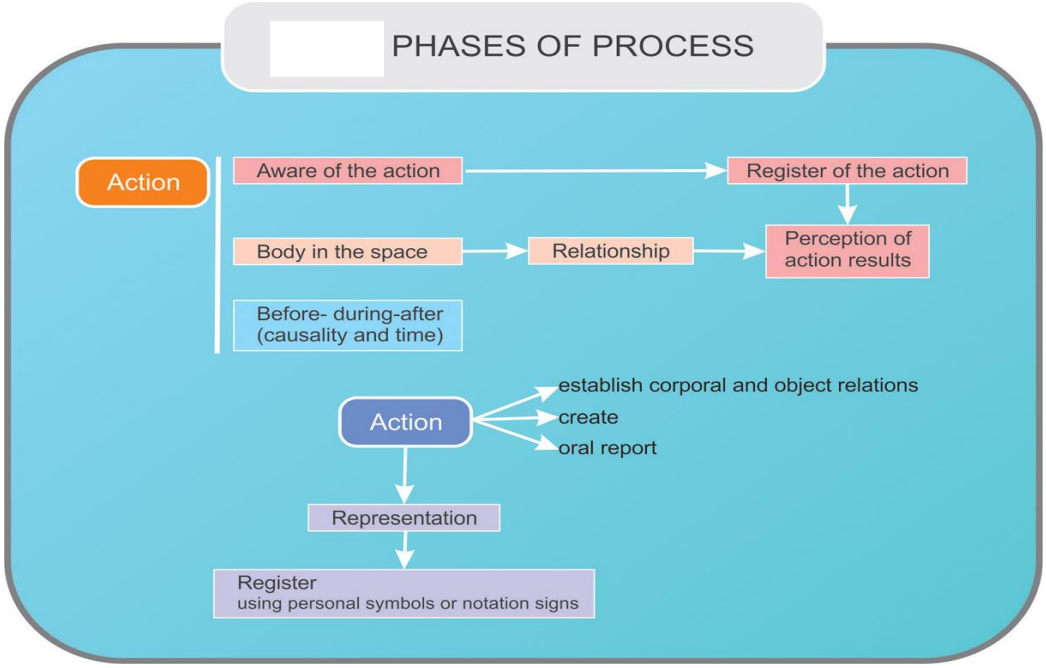
In adopting EIWP, we try to incentive the student to an awareness of action, i.e., to the perception of the moments of action, of the paths taken by the action. "Knowledge is organized in conceptual fields which are only mastered by the individual after a long period of time, through experience, maturity and learning… It is useless to try to get around the conceptual difficulties; they are overcome as they are found and faced, but this does not happen at once". (Vergnaud, 1982, p. 40; 1983, p. 401).

The EIWP encourages the child's awareness of the action by her account about how a certain situation in the project was conducted. However, we know that, as Certeau said, "the oral speech was, among the French writers of the 16th-17th centuries, the primary reference, and the writing was its trace in paper, (but) … a new cultural behavior begins and expresses itself with paper being allocated as the written language and the oral in the content of teaching" (Certeau, 1995, p. 128).

Therefore, besides the speech, it is important to encourage the students to record this walk, 'the way they can', being incited to review the process, fix what they might find is wrong and, above all, to (re)plan the following steps.

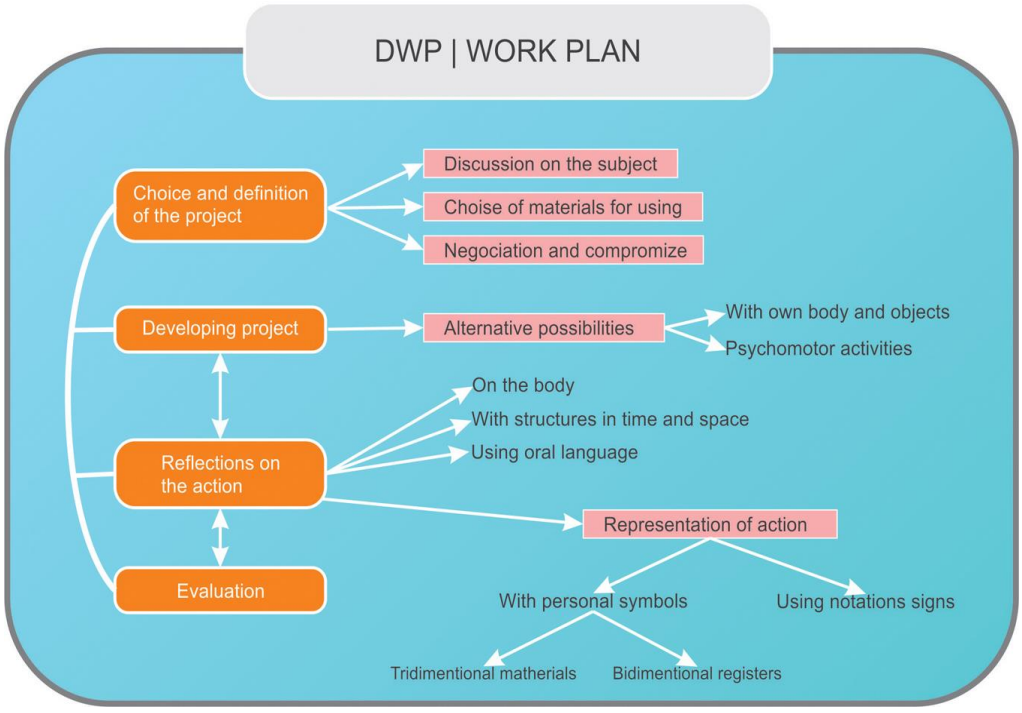
When I say that 'the child will record the way she can what she carried out and how she thought about the step', I'm considering that the recording can be done with different ways as three-dimensional materials, drawings, or using her own recording system or using written language, logical-mathematical language, etc.

However, there is no rush in reaching signic records, if such thing is not intelligible to the child, even if the goal of the EIWP is to reach such level. The scheme above will explain better the steps in knowledge construction with the use of EIWP:



FLOWCHART 3

But, in fact, as all these ideas are operationalized in the implementation of the proposal? What are the stages of execution of the EIWP?



* The Educational-instructive work with projects Fraga / Mamede-Neves

FLOWCHART 4

From the perspective of its execution in practice, of course it begins with the choice, definition and suitability of the theme of the project as chosen by the children or adolescents, all together with the teacher. The themes are discussed, materials are chosen (from concrete materials to different sources of consultation, either printed or digital), and then a commitment negotiation is done. Each one is responsible for some part or arrangements of this project.

Thereby, being supported on alternatives built to perform what was discussed, chosen and thought of, the execution of the project begins always having the support of a critical discussion on the organization of what was proposed.

According with the conceptual basis of the EIWP, these executions of the projects may include from activities with the body and with other objects to construction that might articulate various types of knowledge, the use of verbal and/or logical-mathematical “tools”, intertwined with considerations about the suitability of the props and of the laws that are being followed.

The following step is that in which the children or groups, in more than one moment while developing the real project, will be encouraged to think over the executed action and express it, as stated above, through an oral narrative with, simultaneously, the teacher encourages a reflection about the executed action and, consequently, a evaluation of the effectiveness or not of the process.

The enforces to record the actions is done not only because the execution of the project will take some time, but mainly because it is in this possibility of recording that Vergnaud’s schemes in action are expressed.

The methodological paths of the research

Considering the relevance of going to the empirical world in order to directly observe the effects of adopting the EIWP, I coordinated an investigation under the form of research-in-action, using as tool the participative observation. Initially, it was observed a group of children with learning difficulties, severe school failure, successive repetitions, at NOAP (Educational Psychology

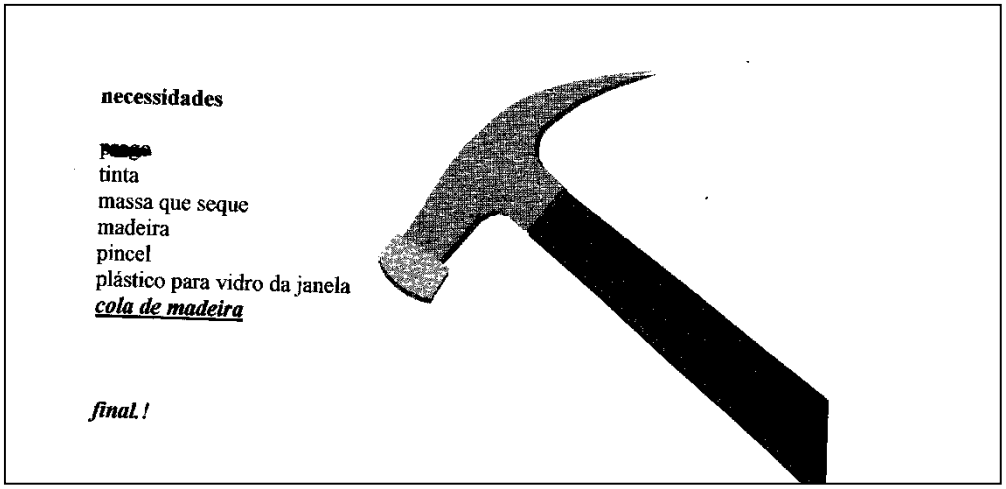
Service) of PUC-Rio (Mamede-Neves, 1993). The success of the proposal led NOAP to expand the horizons, reaching groups of teachers in over 40 public schools in Rio de Janeiro seen at NOAP during the 90's, being adopted to this day not just in the university, but also in Specialization Courses in Educational Psychology in Rio de Janeiro, Salvador and Brasilia in Brazil, as well as in Lisbon, Portugal.
The data which was collected over more than 10 years of observation and formative evaluation of the proposal, within the assumptions of research-in-action, formed a huge data body which allowed us a critical analysis and a confrontation with the theoretical basis of this work style.

Findings
From the data body of the research, I chose as good examples, the detailed investigation of 2 children in their learning process using the EIWP, for the purpose of drawing more conclusions about this Pedagogic proposal.

Student P
7 year-old boy from the second year of elementary school. He had low yield in general, always being ranked in the lowest quartile in the ranking of grades of his class. Without interest in studying, he was resistant to reading and writing ande showed low level of argumentation and of developing solutions to any math problems, even the most trivial ones. His answers to the propositions were inconsistent, showing poor argumentation. In his reports, the logic of the propositions was broken many times in the same paragraph, without him being aware of such breaks.
Facing the proposal of the EIWP, he got interested in building a country house where his Pokemons[64] would live. These were the toys he loved, and he had an endless collection of toys, in different evolutionary stages, which had been given to him by his father, who made no restriction to the desires of his son.
In the first talks, he wanted to bring many Pokemons from his collection, but there was an agreement that the limit was 10 toys. After being reluctant, he finally accepted to commit to that limit, but in the agreed date, he brought 30 toys! It is interesting to see that, when he was questioned about the reason why he had done so, he said that he had actually brought just 10, as it had been agreed upon, because he brought 10 Pokemons, each in three different evolutionary stages (!!). P, in order to assert the supremacy of his own desire, was able to solve the problem posed. As Polya says:
Your problem may be modest; but if it challenges your curiosity and brings into play your inventive faculties, and if you solve it by your own means, you may experience the tension and enjoy the triumph of discovery. Such experiences at a susceptible age may create a taste for mental work and leave their imprint on mind and character for a lifetime. (1957, p.5)

In carrying out the construction of the 'Pokemons' House', he had to use hard materials, consistent with his weak motor skills for more elaborate work. He chose the hammer as the best working tool. We can see the first commitment for the work as recorded by the child.

[64] ***Pokémons***, an abbreviated form for what is most known as ***pocket monsters*** were created by Satoshi Tajiri in 1996, with 646 fictitious species of *pokémons*. Each of the species have special powers that vary according to the 17 basic kinds of each one.



Translating…NECESSITIES; PIN; TINT; MASS FOR PLASTER; WOOD; PAINT BRUSH; PLASTIC FOR WINDOWS; GLUE FOR WOOD
IMAGE P1

He could not find solutions for some of the most simple situations in the construction, but he was happy, feeling important, because his Pokemons drew attention to his project from his classmates, giving him prestige. Also they helped him stay within the boundaries that were agreed upon initially.
Here, we confirm that the affective, relational and cognitive structures must be worked together, because a useful cross-fertilization happens between them.
P, in later stages of this project, was able to build the house, using simple calculations of the size of the materials, rough test planning for the following steps, using oral language, and bring the camera for filling their difficulty in writing. However, in the final phase of this experience, he can admit that he knows how to write and he enjoyed writing the names of all of the chosen Pokemons and, at the end, he built a dense narrative of the history, which was dictated to the teacher. Later, he agreed to type part of it on the computer, copying what had been written.


IMAGE P2

Finely, the third one shows the house with removable roof.

IMAGE P3

It is worth noting that this last stage shows a great qualitative leap, since, in order to get around the limit that was agreed for the height of the productions, he was able to solve the problem by creating a removable roof, built through many concrete size trials, which, later, evolved to using the ruler as a measurement and the construction of a sketch, albeit primitive, before the execution of the roof.
In the report of P's path, three steps are present out of the four steps proposed by Polya (1956, pp 5-12) for the use of the *Problem-solving* technique, which are:

The first one is *Understanding the Problem*: In this step, the solver is encouraged to find the unknown, gather the data and separate the data into parts.
The second one is *Devising a Plan:* "Find a connection between the data and the unknown. You should eventually obtain a *plan* of the solution." In other words, in this step, the solver is encouraged to make connections to previously solved problems.
The third one is *Carrying out the Plan*. In this step, the solver is encouraged to check each step along the way and think of ways of proving its accuracy.

Although it was in a primitive way, P greatly advanced regarding these 3 steps.
Finally, here is a photograph of P's work, in which a photo taken by him shows a Pokemon with the caption of its name; in fact, an act that P repeated in many Pokemons used, marking the start of the most common use of conventional writing.

IMAGE P4

This work with P's project took 2 months and, although weakly, it represented a significant breakthrough in his learning; with the decreased egocentricity, he improved his relationship with his peers and adapted better to the canons of school life.

Student T

11 year-old boy, attending the sixth year of elementary school. By our observation and by his parents and teachers' reports, T had been progressively decreasing his grades as he ascended in his school years, having actually succumbed in the use of this sixth year, with very poor school performance, being ranked in the last quartile of his class.

T's teachers thought that he lacked operative structures required for learning the contents of this school stage, preventing him from progressing, especially in mathematical knowledge.

During my initial observations, the data were confirmed, and besides I verified that T tried to avoid at all costs to take any notes, or write essays. It was noted that the boy also showed unsociable behavior, he spoke very little, always looking tense and showing signs of anxiety.

He was not excited with the idea of working with the EIWP, but, even so, he accepted the proposal. In his first production (performed individually) his theme was "Fantasy Island", in which, at first, all seemed wonderful, but, in the course of its construction, it was concretely changed, revealing itself to be a dangerous island, where a murder had happened and the murderer turned out to be the inspector who was investigating the case.

IMAGE T1

By observing the material presented, namely the cavern where the murder happened, we can see a construction with poorly defined relations among the elements of its production, having mixed colors and shapes, which reveals the strong presence of emotional content which, in our hypothesis, might have been compromising the necessary balance among the affective, social and relational, and rational dimensions.
However, in the following projects, T progressively started to strive very much, developing many projects over the months, increasingly elaborate, changing his behavior, where he was very shortsighted and acted as though he wanted to get rid of a cumbersome task, to now showing more focus, interest, lingering on project planning before executing it, even though it was in a very elementary way for his age. Thus, in this way he began the project of the castle, although still very elementary, started building from the floorplan.

IMAGE T2

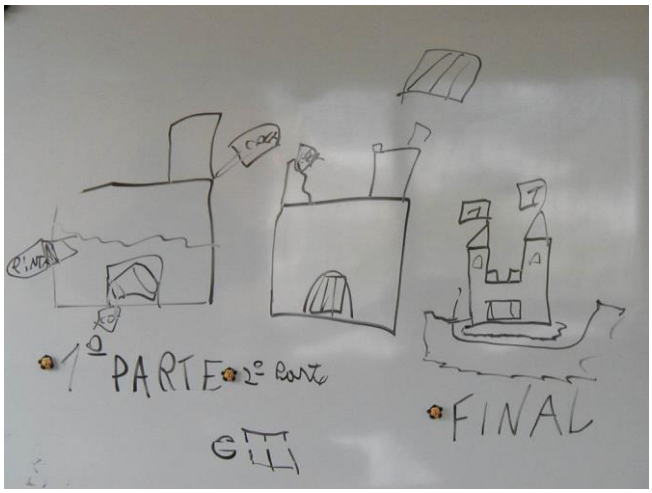


IMAGE T3

In fact, the construction of a medieval castle, which cost him 2 months of work, was his great qualitative leap, during the use of EIWP in his class.
The link among the knowledge, which were necessary for accomplishing the activities, led T to get interested in History, Geography, having verbalized, at a given moment, that he 'had discovered Mathematics'.
At this stage, it was very interesting to observe how much T refined his project for the lifting gate of the castle, making calculations, getting interested in Physics knowledge about how pulleys work. Also he projected the plan for the second floor, within the height limits set in class.


IMAGE T4

At a later stage, but during the same project, we could to observe that the construction of the top of the castle tower had been made from a plan which demanded math calculations and the use of geometric tools, before any attempt to build it. The plan on how to build the top of the tower is showed above:

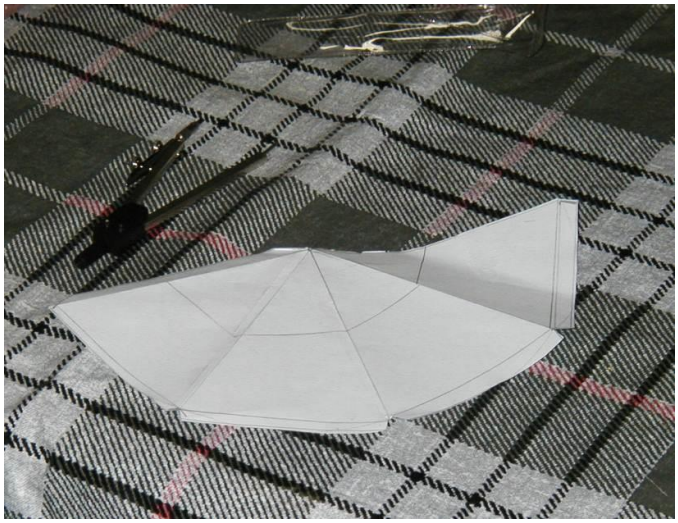


IMAGE T5

However, the effective construction of the tower showed a mismatch between the lower and the upper parts, because the measurements of the lower part were not well taken.

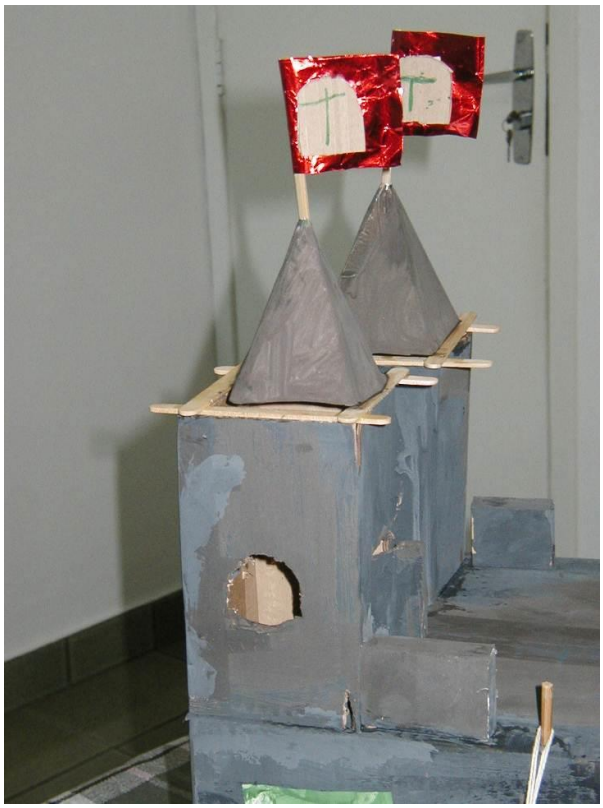


IMAGE T6

T resolved the deadlock, by putting a wooden structure between the tower and its top which, somehow, gave them balance. However, this “error” was faced by T as a warning so that “in future constructions, the calculations would have to be much more precise”. (sic)
We believe this quote by T is directly related to the fourth step as proposed by Polya, which he calls Looking Back: "Examine the solution obtained...In this step, the solver is encouraged to

check the result, think of other methods to solve the same problem in order to have better results". (Polya, 1957P.12) This is exactly what happened to T.
Months later, he proposed another construction to the class, taking home the proposal already planned in floor-plan, with front view, side view of the construction of a mock-up of part of the Sahara desert in Egypt and one of the pyramids. He informed that, for this proposal, he asked an engineer who is friend of his family for help and explanations, and with his History teacher he saw samples of plans of pyramids, formation of desert soil, Egyptian customs, etc.
This moment of T's work confirmed the value of partnerships in collaborative learning and a very clear view of the possibilities offered by EIWP to teaching.
Ultimately, in 18 months of follow-up of his productions, I observed T climb to the higher grade ranking position of his class, being called to be part of groups, provide "advice" in other classmates' projects. T achieved a prize in History for a report produced after long search for information on the Internet, about the Resumption of Paris during World War II. He remained, however, with very poor writing skills, but he made use of scanning and the feature of Word to review grammar, which became, in itself, an open door for grammar lessons.
Thus, from the set of empirical data, of which both P and T are examples only, the entire research team was able to comprehend much better how knowledge construction happens, how the networks of the thought show when put into narrative and how concepts are built.

Some conclusions

From the intersection of the theoretical frameworks with the empirical data, this paper offers important subsidies to the thesis that the process of the human thinking happens in networks, supportive of the development phases and the culture which surrounds it. And more, that effective learning can only happen if the learner actively participates in its process.
Another important point raised is the confirmation that the insights are always something peculiar to the one who learns and, therefore, a teacher will never be able to offer an insight to a student. He can, however, offer conditions in his class for the student to have many insights. In this case, the best way for a teacher to lead the class into effective learning is by discussing the contents, making the students think about how to build their knowledge, leaving behind the idea of offering content that is ready, even if it is instructive and well organized.
The methodology of teaching by "problem solving" is, therefore, a teaching practice which turns the student into the actual builder of his own learning. Additionally, we found that, depending on the context which generated the knowledge construction (immersed in concrete cultural practices) and on the characteristics of the object to be studied, the individual uses different strategies (including reading and mathematical operations) which are alternate and adapted according to his experiences, previous knowledge, needs and interests. A complex and expanded approach seems to spring from the dynamics of this process, reinforcing the value of the personal construction of knowledge and formation of critical thinking.
Furthermore, the proposal of the Educational-instructive work with projects (EIWP) offers, at least, in the groups that were observed for more than 10 years, the opportunity to combine the elements that are related to the construction of the rational dimension, in total articulation with the affective-emotional and the social-relational dimensions. The study reinforces the need for teachers to have in their training, in addition to knowledge of what is taught, knowledge of how thinking and learning come to be, and also the possibility of developing problem-based teaching proposals, aiming at students' autonomy and critical thinking.
However, for that to happen, we have to face the re-signification of the teaching practices, undertaking changes of mentality in the dyad teacher-learner. We must effectively move on from the rigid vertical relation between the parties of the education system to, as a metaphor, the mobile structure of the seesaw, which sometimes weighs on one side, sometimes on the other.

In this model of balance, the movement only happens by mutual cooperation, since both sides need to break paradigms: the student by leaving his comfortable position as a recipient of contents that are ready although not interesting at all and, on the other side, the teacher by taking in horizontal teaching styles which certainly do not take him away from his greater job - to teach and to orchestrate his students' learning.

In my own experience, I'm quite sure that only in this way, teachers will be prepared to deal with the new modes of teaching-learning, which incorporate, increasingly, the network navigation within the web, increasingly homologous to the structures of thought.

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IMPACT OF EXTERNAL EVALUATION OF SCHOOLS: AN EXPLORATORY STUDY

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Abstract
The aim of this study is to make an analysis of the impact of the external assessment on the improvement at the professional and organizational levels of the schools under the intervention of the General Inspectorate of Education, in the area covered by the Regional Delegation of the Centre in 2006/2007.
It deals specifically with the measures taken by the schools in order to overcome the weaknesses mentioned in the reports of the external assessment and with the outcome of those measures. If no measures were taken, it was important to know the reason for this lack of action.
The target population includes thirteen schools.
The weak points were thus categorized: lack of articulation, deficient supervision of the teaching practice, bad school results, inefficient organization, not enough self-assessment, absence of a plan for teacher education, problems with information and communication technologies and little co-work.
All the schools tried to act according to the different demands, doing their best to overcome their weaknesses.
The results show the improvement at the professional and organizational levels of the people and the institutions involved in the external assessment of schools.

Keywords: impact assessment; external assessment of schools, professional and organizational development.

Introduction

This work is a research into the impact of the External Assessment on the professional and organizational improvement of the schools under the intervention of the General Inspectorate of Education of the Centre of Portugal in 2006/2007. In order to carry out this investigation a questionnaire was specially made for each school.
The aim of the research was to get information about the importance attached by the school directions to the data provided by the reports of the external assessment and to know what measures were being taken to overcome the weak points mentioned in those reports. In case no measures were taken it was also necessary to know the reasons for this lack of action.
The final results were very fruitful mainly as far as the pedagogical action and the co-work among teachers are concerned and this was naturally reflected on the academic success of the students.

Contextualization and goals of the study

The report of the External Assessment of Schools at nationwide level carried out in 2006/2007 says that "it has contributed to great improvement in the learning process and in the results achieved in the schools" (IGE, 2007, 6) as it "provides elements for the organization or the remaking of plans for the development of each school in articulation with administration agents and the community where the school is located" (p.9). Also in Climaco's opinion (2005, quoted by DRC/IGE, 2007, 10), these reports should contribute to "improvement and development

leading to a culture of demand." However the measures taken by the school directions after the reception of that report were not known.
This research appears in this context: the importance of analyzing the changes that took place in the schools after their external assessment and the fields in which these changes happened.
Its specific goal is to make a study of the impact of the external assessment on the professional and organizational learning of the schools under the intervention of the General Inspectorate of Education, in the area covered by the Regional Delegation of the Centre in 2006/2007.
The aims of the research were:
(i) to contribute to a consequent reflection of the report of the external assessment on the work of the school directions;
(ii) to get to know the plans for improvement after that assessment;
(iii) to analyze the contribution of this form of assessment to the improvement of the professional and organizational performance of these institutions.

Methodology

Procedures used in the selection of the schools

The nineteen schools under the intervention of General Inspectorate of Education in the area of the Regional Delegation of the Centre in 2006/2007 were the target population. However, due to the unavailability of some school directions, one third (about 30%) of this target population was lost. Thus the final number of schools used in this investigation was reduced to thirteen.

Tools used for gathering information

At first different approaches were thought of. The use of a single tool for gathering the required data seemed limitative, since it allowed only one approach to knowledge (Warwick, 1973, quoted by Amado, 2001.
However, considering that the target population was spread over a large area, an alternative was found: to use a questionnaire. It was specifically made for each school and included closed-ended questions, open-ended questions and mixed ones.
Among the whole set of questions the fifth one, which deals with the weak points of the schools, must be stressed. These weak points differ from school to school in quantity and type. In this question the schools are asked for feedback information about the improvement actions carried out in order to overcome those weak points and about the results already achieved or, in case no measures were taken, the reasons why this had happened.

Analysis of the findings

Forms of participation

The most common form of participation in this program was through application; only in two cases the schools were selected.

Reasons why the directors of the schools applied for the external assessment

Two main reasons led the school directions to participate in the process of external assessment: on the one hand there were issues connected with self-assessment, on the other hand there were aspects related to the improvement of their schools.
As for the reasons connected with self-assessment, some schools stressed their will to consolidate a culture of internal assessment. Other schools looked upon the external assessment as an opportunity to compare the results of these two forms of assessment and thus decide on the pertinence of the internal assessment they had been carrying out for some years.
The schools that considered improvement as the main reason for their application focused on the importance of improving the teaching-learning process and the pedagogical action through the development of strategies for consolidation of good practice.

Weaknesses pointed out in the reports of the external assessment

Types of weak points

After having analyzed the weak points mentioned in each of the reports of the external assessment of the schools under study and considering the pattern and frequency of the answers a categorization of those weaknesses was done:

- Lack of articulation;
- deficient supervision of the teaching practice;
- bad school results;
- inefficient organization;
- not enough self- assessment;
- absence of a plan for teacher education;
- problems with information and communication technologies;
- little co-work among teachers.

The first three categories were the most frequent ones. The two first weaknesses were found in 77% percent of the schools and the third one in 69%. The other categories were not so common: not above 30, 7% for matters connected with inefficient organization and all the others below 25%.

In short, it can be said that most of the weak points were found in the pedagogical area.

Improvement actions and results achieved

It was now necessary to find what measures had been taken to overcome the weak points detected.

None of the schools neglected this subject. On the contrary all of them did their best in the attempt to tackle their problems.

The next stage was the analysis of those improvement actions and the results achieved by these measures.

Lack of articulation

Different improvement actions were carried out to tackle this weak point:

Meetings were organized (sometimes in spaces created for this purpose) to intensify co-work; new procedures were defined for periodical coordination and supervision involving the heads of the general and the specific departments, and all class teachers; there were meetings with members of different schools for planning the school subjects and for establishing the links between the different school cycles including elementary school and pre-school education.

Documents for school organization were produced or altered, namely those concerning the internal guidelines. Procedures for the inclusion and registration of activities in the school's education project were reformulated and the preparation of documents was more carefully done.

Teams for pedagogical articulation were formed. This articulation involved pre-school and elementary education.

Timetables were readjusted. The hours that should be used for pedagogical articulation were taken into account in the teachers' timetables as well as the time necessary for extra help mainly in subjects that had a final examination at nationwide level and those with poor results.

Although some of these measures couldn't yet be assessed because the process was still going on, those responsible for these actions mentioned the positive effects that could already be felt as a consequence of the attempt to overcome the weak points in question.

I would say that there was improvement in many fields. This progress in the pedagogical area could be seen in the adaptation of some curricula, in the advice given to students to attend

courses more adequate to their capacities and skills, in a deeper awareness of the school's weaknesses and in the development of remedial work.
An effective co-work among teachers was implemented. Grids with vertical and horizontal articulation were made and it's important to say that the atmosphere in the work groups was reported as a very pleasant one.
No doubt the steps that were taken had positive effects which can also be seen in the students' school results. As a matter of fact there was an increase in school success: in some cases the failure rate decreased from 40% to 14%.

Deficient supervision of the teaching practice
Several schools developed improvement actions concerning mainly two aspects: reinforcement of coordination and supervision and reformulation of procedures.
This reinforcement of coordination and supervision was conducted both by the heads of the schools and by intermediate structures. Different problematic situations, development of new projects, teaching practice, extra pedagogical help and teachers' training were the main targets of their concern.
As for the reformulation of procedures it was assumed by the schools that some attitudes and habits had to be altered: several working tools and documents were adapted to the new demands and there was a serious reflection on the school results and on the causes behind them. Assessment criteria were defined and test papers with a common grid were applied .Peer teaching was established.
I would say that these measures were really fruitful mainly as far as the teaching practice is concerned, since it became more effective and efficient. This progress was reflected on the students' school success. In fact their marks in the intermediate tests were above the average. Even the students who had been integrated into the various extra help activities had a high percentage of success.
On the other hand the increase of co-work led to a careful organization and reformulation of materials that could be shared by all the teachers. These procedures made the school activities more visible and therefore a better control was possible.

Academic results
All the schools did their best to overcome this weak point. In department meetings as well as in various teachers' meetings they reflected on the causes of the lack of success.
In an attempt to make a regular analysis, so as to be able to draw comparisons between former and present school results, goals were set and new tools were introduced to gather information, as well as to control, supervise and systematize the students' academic results.
Making the most of the human and material resources available, the school directions opened study rooms and included in the teachers' timetables some classes for direct support to students with the aim of helping each of them to choose the most appropriate way, assuming, when necessary, the role of tutors.
Besides, more time was used to prepare new and diversified teaching materials in order to improve the quality of the teaching /learning process, always having in mind the horizontal and vertical articulation.
Other strategies were also adopted : the students' individual files were more carefully organized, the intermediate test sent by the Ministry of Education were applied in all the schools , and the range of training opportunities for teachers became wider.
It can thus be concluded that the improvement actions carried out by the majority of the schools had two main targets: the supervision of the students' results and the readjustment of teachers' timetables.

The rate of success in the majority of these schools had a significant increase. The comparison of the results of the final examinations in the present year with those of the previous years is clearly a confirmation of this progress.

Inefficient organization
The improvement measures in this field started with the production of new documents and the reformulation of some old ones. Afterwards other steps were taken: articulation of different objectives and reformulation of administrative procedures that could cover the needs of the greatest number of students.
Other criteria of a different kind were also defined such as the implementation of a tutorial system with a careful choice of the teachers to be appointed for that task.
Also in this field the positive effects of these measures were clearly seen not only as far as the academic results are concerned but also in aspects related to organization.

Other categories of weaknesses
As for the other categories of weaknesses the same effort was made in order to overcome the negative points. The majority of the schools claims to have achieved positive results after having taken the adequate measures to tackle the problems that had been detected.

Conclusions
The aims of this research were fully achieved.
After the analysis of the reports of the external assessment concerning the thirteen schools in study eight weak points were categorized. According to these reports the three first ones (lack of articulation, deficient supervision of the teaching practice and bad school results) were more frequent than the others.
As these weak points are closely related to the pedagogical area, it could be concluded that this was a fragile area and therefore a lot of work should be done in this field. (According to Senge's "mental model" (1999) only by changing our way of thinking is it possible to change ideas and long- rooted practices. However, changing mentalities has always been difficult and very often an obstacle to innovation).
Among the other weaknesses the point "inefficient organization", must be stressed. It showed a frequency of 30, 7% which, since management and administration are included in this point, shows a positive performance.
It can also be concluded that the intervention of the inspection was not in vain. The schools were not indifferent to this intervention, since none of them neglected the weaknesses mentioned in the reports. On the contrary, a lot of effort was made in order to cope with the demands of the situations and the most adequate measures to overcome their weaknesses were provided.
All the thirteen schools considered the external assessment very useful and in the opinion expressed by 77% of them i.e. ten out of thirteen, this assessment made them aware of their weaknesses and therefore enabled them to improve their performance. Therefore I would say that the external assessment led to an effective learning at the professional and organizational level made by the people and the institutions involved in this process.
As for the results achieved by the measures that were taken, it can be said that were very fruitful mainly as far as the pedagogical action and the teachers' co-work are concerned and this was directly reflected on the academic results. As a matter of fact the rate of success in the final examinations was much higher than in the previous years, which can easily be confirmed in the records of the national examinations.
Considering the limitations of this study, it must be said that this research covered only the area of the regional delegation, thus reducing the sample of the work. This situation and also the loss

of schools that meanwhile occurred led to some hesitation, but on second thoughts two thirds of the possible participants were considered a sufficiently representative sample.
As far as the implications of this study are concerned it is believed that it will be beneficial to the schools that from now on can count on former examples of good practice, as well as to the General Inspectorate of Education and the Ministry of Education thanks to its present relevance. As a matter of fact it is a consequence of the external assessment, which is a still ongoing process.
Insofar it can be said that this study strengthens the fieldwork that the General Inspectorate of Education has been carrying out, for it was really a supervision of the External Assessment of Schools, the always necessary meta assessment.
The purpose of this research was not to evaluate the school itself, but to make a study of the assessment that was being made (as J. Lang said in one of his speeches in 2000).
This work can be seen as a new research proposal and serve as a basis for further studies that may follow or deepen this theme. Therefore I dare to suggest that further nationwide studies on this subject should be carried out.
There is also some ambition to encourage the necessary and continuous improvement of practices, both at professional and organizational levels, aiming at the excellence of the Portuguese Education and enabling all its agents to change the course of negative situations such as the ones mentioned in this work.

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INITIATING A DIALOGUE ON LEARNING AT A CONFERENCE DURING CURRICULUM RENEWAL AT A DUTCH TEACHER TRAINING COLLEGE

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Problem statement and methodology

The core business of a teacher training college is learning. Intentionally or unintentionally, all activities that a teacher trainer undertakes have to do with the teacher trainee's learning. To teach at all, teacher trainers have to know about how others learn and how to teach, and they need to integrate a growing body of knowledge on learning into their teaching practice. Unfortunately, not all teacher educators are motivated to acquire this knowledge and to make it their own. So, on December 13, 2011 a conference took place to expose students and institute-based and school-based teacher educators at Hogeschool Utrecht to ideas about learning and to help them see how to apply them during the school's curriculum renewal. The college is redesigning it curriculum to be more in tune with new national testing standards and the needs of the high schools in our service area. The main topics of the conference were second order teaching and learning preferences, which were addressed by two presenters Anja Swennen and Manon Ruijters, respectively. After the presentations, the listeners shared their initial reactions to the new ideas during discussions in small groups that were shared with the whole group. The goal was to start a dialogue on learning that can lead to more effective teaching. If teachers are aware of when and how students learn, they can design more effective courses and differentiate materials and formats for a better fit with learners after the courses begin.

Description of the practice

Two guest speakers presented their latest work on learning and teaching. Dutch researcher on teacher training Anja Swennen explained how second order teachers model and reflect on behaviors and practices of educators for their teacher trainees. First order learning happens when the trainee learns about the subject area, and second order learning occurs when the trainee learns about teaching itself, directly by studying and practicing teaching methods--or indirectly by watching role models and critically reflecting on learning environments. Second order teachers then are constantly aware of how students learn about teaching and learning, not only in theory and practice but also through example, osmosis, and reflection. Second order teachers know that teachers inadvertently teach trainees additional lessons beyond subject content--about appearance, presenting, teacher roles, student-teacher interaction, and a host of other matters. While a first order teacher teaches a subject in a classroom, a second order teacher is aware that teacher trainees also learn other important lessons in and outside class about learning and teaching. During the second presentation, educational consultant and author Manon Ruijters explained how knowing learning preferences can lead to more learning taking place. Manon Ruijters sees five main learning preferences,

five ways that we may like to use to learn, by imitating a model, participating in a group, acquiring knowledge (mainly through reading), practicing a skill, and discovering while doing (2006). When the content is offered in a way that fits the learning preferences of a group or student, then more learning and less resistance to learning takes place. Knowing learning preferences can help a curriculum developer make educated choices on what formats, activities, and assignments to use for learning and testing.
After the presentations, the participants had the opportunity to discuss the following statements:
1. All teachers in a teacher training college should be second order teachers.
2. The most important prerequisite for creating a productive learning environment is teacher educators who know their own learning preferences inside and out.
Participants talked about these ideas in a relaxed café setting. While enjoying drinks and snacks, they wrote down their initial reactions on beer coasters and their conclusions on tablecloths, as they tried to reach a consensus among five to eight people. After 15 to 20 minutes, each table in the café shared their views with the whole group with the help of a moderator.

Description of the activities
During the World Café twelve groups took part in the group discussions for about 15 minutes before reporting back their findings to the whole group. Although one attendee wrote that second order learning was not necessary on a beer coaster, no group had that view when groups shared their findings after the first round. The spirit of the discussion is better reflected in a comment in which an attendee thinks out loud about the second statement:
No, I do not think so. It is good that they know something about [learning preferences], but it is not their main job. I think that there is more involved than just teaching. On the other hand, now that I am writing I change my answer into a Yes.
For some attendees, the focus on learning was common sense. One wrote on a beer coaster that “To be able to educate learners, one needs to learn how learners learn.” Most groups had formed some consensus, although not all groups agreed with each other. The conference had the intention to stimulate teachers, educators, and even students to see that the content of the new curriculum would be learned more effectively if everyone paid more attention to the ways people learn in and out of the classroom.
A few examples suffice to create an impression of the process during the discussions. Notes made on a tablecloth give some insight into how one group discussed the new ideas on learning preferences. According to the note taker, a teacher needs to use learning preferences for four reasons:

1) To know their own learning preferences so that they can see them in others,
2) To vary their learning preferences so they can help students,
3) To imagine and connect with the learning preferences of students, and
4) To understand their student’s different levels of education and kinds of experiences so they can mentor them more effectively.

For curriculum developers, seeing the multiple uses of learning preferences prepares for a broader dialogue that could help shape the teaching methods and setup in the new

courses. Designing new curriculum happens continually in education, but the extensive curriculum renewal at our school this year has created a major opportunity for teachers to reimagine their roles and the place of learning itself.
The need for teachers to be a fount of knowledge was a point of contention during the discussion and in the notes. The focus on learning seemed to undervalue well-prepared subject teachers among some attendees. For example, on a beer coaster one attendee describes a feeling of dread for the "vakidioot", literally "the subject idiot" in Dutch, meaning a teacher who is incompetent in the subject being taught:
We need to be aware of the fact that these students will become teachers and the role that transferring knowledge of the subject plays in the process. No, a teacher really needs to have a solid grasp of the subject matter. A teacher with a deeper grasp of the subject can really play an important role here.
Although no one used the provocative term "vakidooit", the sentiment was expressed more subtly during the general discussion.
On the other hand, many pointed out that a teacher can be both knowledgeable of the subject and sensitive to learning preferences while also modeling effective teaching and teaching about teaching itself. Notes on one beer coaster brought all the loose ends together quite concisely: "There are really three fields of study: the content of the subject, didactics, and teaching students how to teach pupils." Notes on one tablecloth also see the need for persistence as teachers with a thorough grasp of their subject may be less effective if they cannot adapt the information to the learning preferences of students. Taking learning preferences into account seems necessary even if teachers know their subject well. In the same vein, some conference attendees connected learning preferences with a major challenge for Dutch teacher trainers: Dutch teachers need to be able to prepare students for university, professional, and advanced vocational education. Teaching all three groups requires knowing how to adapt materials and methods to fit various learning preferences within each group of pupils. This challenge was noted as a major concern.

Lessons learned, next steps

A dialogue was initiated about second order learning and learning preferences at a time when our college is redesigning its curriculum on a large scale. The discussion did not lead to a homogenous view among 100 people in such a short time, but participants were able to form opinions about second order learning and learning preferences. Attention to learning can help shape the content of the new curriculum so that teacher educators consider various materials and formats for their courses that appeal to diverse learning styles and preferences. In addition, educators could imagine possibilities to adopt roles, habits and attitudes that are helpful to see modeled by their teacher trainees. Given the fact that the conference was in December 2011 and the new curriculum will be instituted in September 2012, it is too early to know if the conference made a measureable difference in the setup of the curriculum and, more importantly, in how educators approach teaching their courses. However, as one of the planners explained in an email after the conference.
It was a suitable moment to step into the process of changing the curriculum, to create common ground and concern, and to link them to the practices of a learning

organization. With that a seed has been sown that can grow and root itself in the coming year throughout the school. Teachers *are* gardeners.
Note: All materials and comments have been translated from Dutch into English.

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A HOLISTIC APPROACH TO IN-SERVICE TEACHER TRAINING: CONNECTING INTERNAL AND EXTERNAL EXPECTATIONS

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Abstract
To improve the quality of primary school teachers in Ecuador, the Ministry of Education is currently investing in massive and mandatory in-service teacher training. We propose that training should attend not only the external but also the internal image of a good teacher. While the external image is mostly concerned with competencies and behaviour, the internal image reflects teachers' mission and identity. With a focus on the use of inquiry in science teaching, we explore the behaviour, identity, and mission of 20 in-service teachers from 13 public primary schools in the province of El Oro. This holistic approach provides us with training implications to balance what is externally expected from the teachers with what they personally consider important.

Keywords: in-service teacher education, training design, holistic approach, elementary school teachers, developing nations.

Introduction

In 2009 the Ministry of Education launched, for the first time in Ecuadorian history, a national evaluation of public primary school teachers. More than 45% of the teachers were ranked in the lowest category ("unsatisfactory") for both content and pedagogical knowledge. (Ministerio de Educación del Ecuador n.d.). The National Science Curriculum Reform recognizes that primary science education is centred on memorization and concept overload and demands the use of inquiry. We want to find out to which extent "inquiry teaching" is actually being implemented and second, we want to define the internal factors that play a role in this implementation. In order to drawn important conclusions for teacher training, we try to explain teachers' behavior in terms of their mission and identity. More specifically, we will examine teachers' images of a good teacher in contrast to their actual behaviour and the externally expected behaviour. The results will allow us to outline a training intervention that combines both internal and external aspects of teaching.

The good teacher

Traditionally teacher training has intended to adjust the person to a fixed profile. We believe there is no standard profile of the "good" teacher. Given the diversity of factors that could be taken into account and the variability of such factors according to the context, it is too ambitious and "pedagogically undesirable to formulate a *definitive* [italics added] description of the 'good teacher'" (Korthagen, 2004, p. 78). Ornstein explains it as follows:

Teaching is a complex act, and no single factor can entirely explain or describe the qualities of a "good" of "effective" teacher. In fact, what works in some situations may not work in other school settings with different subjects, students, and goals. Because we are unable to define precisely what a good teacher is, we can define good teaching in any way we choose – so long as it makes sense" (Ornstein, 1985, p. 27).

We propose that in-service teacher training should take into account the characteristics teachers desire to develop to respond to their environment. This is important if we recognize that they are the experts and know best what fits them and their classroom. It could be added that teachers should be at the centre of in-service teacher training and not the other way around. These statements are based on Rogers' humanism (1951). Current authors, like Beijaard, Meijer, and Verloop (2004), claim that teacher education should bring closer the 'personal' and the 'professional' aspects instead of separating them. "What is found relevant to the profession, especially in light of the many educational changes currently taking place, may conflict with what teachers personally desire and experience as good. Such a conflict can lead to friction (…)" (p. 109).

Combining the internal and external aspects of teaching represents a challenge. It might be easier for traditional training to focus on the lack of competencies and impose the profile of the ideal teacher from above. Nevertheless, transfer often fails when training does not take into account teachers' internal characteristics (Grion & Varisco, 2007). "Many people asserted that the greatest part of knowledge provided during professional preparation was nullified and replaced by the whole of experiences, role models, needs, routines that constituted the beliefs of teachers" (ibid, p.272). Influencing the deeper levels is considered important also for the sustainability of innovations (Korthagen & Russel, 1999). These levels are represented in Korthagen's onion model (Korthagen, 2004; Korthagen & Vasalos, 2005; Meijer, Korthagen, & Vasalos, 2009; Korthagen & Vasalos, 2010). Resembling an onion, the onion model is made up of layers. From outside in these layers or levels are: environment, behaviour, competencies, beliefs, identity, and mission. At the core of the model, identity and mission reflect what teachers expect from themselves. Identity is how teachers see themselves; the meaning they (and others) attribute to their profession. Mission refers to their utopian, visionary or spiritual inspiration to be in the world.

In a first application of an approach that combines internal and external expectations, we set up an investigation in the context of science teaching and, specifically, on teachers' use of inquiry.

Teachers' inquiry behaviour and types of questions

The adoption of inquiry in the teaching of science requires in the teachers that they adopt specific didactical strategies, including the use of questions that elicit thinking. To guide our study on teachers' inquiry behaviour, we adopted King's typology of questions: review, probing, hint, connection, and metacognitive questions (King, 1997, 1999). **Review questions** assess and consolidate prior knowledge before moving on with the construction of new knowledge; e.g.: "What are the parts of the water cycle?". **Probing questions** ask for clarification or development of a given answer; e.g.: "I don't understand. What do you mean with 'condensation'?". **Hint questions** help pupils to complement or re-think about their answers without giving the correct answer to the pupil, e.g.: "Aren't you forgetting something about the clouds?". **Connection questions** are used to relate or connect ideas (comparison-contrast, cause-effect), or link new and prior knowledge. King also calls them "thinking questions" because they force students to think and "integration questions" because they ask for integration of concepts to construct knowledge; e.g.: "What is the difference between precipitation and evaporation?"; "What do you think would happen to the river that crosses our town if it does not stop raining?". **Metacognitive questions**, also called "monitoring" or "thinking-about-thinking" questions, invite students to think about how they arrived to a certain answer; e.g.: "What steps did you take to reach that conclusion?"

Types of teachers

Based on Collinson (based on Collinson, 1996, July, 1999), the images of the good teacher can be assigned to three categories: professional, interpersonal, and intrapersonal. The professional

teacher is primarily concerned with the subject matter, the curriculum and the pedagogical knowledge. The interpersonal teacher is concerned with the relationships with students, the educational community, and the local community. Finally, the intrapersonal teacher is primarily concerned with skills and values for life beyond the classroom (e.g., reflection, curiosity, creativity, problem finding and solving, dedication, self-discipline, etc.).
Building on the arguments above that call for a holistic approach and our focus on science teaching, the present study tackles the following research question:
From the analysis of teachers' inquiry behaviour, mission, and identity would it be possible to derive training implications that attend both internal and external expectations?

Method

Context and participants

Participants in this study were involved in a large-scale training project in the province of El Oro, set up as part of a national teacher training strategy.
Given the geographical dispersion of schools, we selected those that were large and located in populated areas to guarantee that there was at least one or more teachers in the 6th grade of primary school. To secure a sample for further studies, we selected tenured teachers who would not retire in the next five years. From an initial pool of 500 teachers from four cantons (Arenillas, Huaquillas, Las Lajas, and Santa Rosa), the largest group of teachers who satisfied our criteria was from Huaquillas: 20 teachers from 13 public primary schools.
In total, 50% of the participating teachers were female and, on average, 50 year-old (range 43-56). Their teaching experience ranged between 10 and 33 years. Ten teachers had 27 or more years of experience. Besides being a full-time teacher, one of the participants was also the school principal. All teachers had studied at a teacher training institute (vocational higher education); twelve pursued or were pursuing studies at university level and one at a post-degree level.

Instruments

Behaviour

We videotaped and coded twenty science lessons. The coding scheme included (1) King's question typology, (2) additional types of questions consistently observed, (3) all behaviour related to the use of inquiry during the lesson, and (4) pupils' inquiry behaviour (which we also observed even though our focus was on the teacher).

Identity and mission

Even though studying teachers' identity and mission is challenging (see discussion in Beijaard, Meijer, & Verloop, 2004), we adopted the *contrast analysis exercise* (Biesta, Korthagen, & Verkuyl, 2002) to get a fair approximation of teachers' images of a good teacher. The exercise provoked in-deep personal reflections starting with the recall of the best and worst teaching experience. In pairs, teachers followed the instructions on the paper and answered the following open questions: "What is the characteristic that makes a difference between the good and the bad experience?" and "What is the obviously essential to me in education?" Next, they completed three statements: "I am someone for whom _____ is important. I am someone that needs _____. I am someone who strives for _____." By listening attentively, teachers helped each other to organize their thinking and synthetize their answers.

Data collection and analysis

To assure teacher collaboration, we explained the research project to the selected teachers and their principals. Given teachers' general reluctance to be evaluated, we presented our investigation not as judgmental but rather as diagnostic. Teachers reacted positively to a training design approach that would take into account their perspectives and the reality of the classroom

instead of "imposing from above" what they had to learn. We agreed on dates for the school visits and the contrast analysis exercise. In total, the data collection was set up during a three-month period, considering local holidays, end of term exams, and two strikes (at national and local level).

In the school visits we video-taped one lesson of every teacher (45 minutes each). Three native Spanish speaking Educational Sciences student-assistants carried out the transcription and coding of the videos. They were trained in the field of inquiry teaching and in the use of the Nvivo8 coding software. To calculate the inter-rater reliability we used Krippendorff's alpha because a) in contrast to percentage agreement, it accounts for chance agreement, and b) in contrast to Scott's pi and Cohen's kappa, it allows for more than two raters (De Wever et al., 2006). We used a SPSS macro created by Hayes & Krippendorff (2007) and obtained a coefficient of 0.70. This level is acceptable in exploratory research and when conservative indexes, like Krippendorff's alpha, are used (Lombard, Snyder-Duch, & Bracken, 2002).

The researcher coded teachers' answers regarding their mission and identity. The coding scheme was given by the categories presented in section 1.3. Nvivo8 also allowed us to identify the most common words in the answers.

Results

Teacher inquiry behaviour

During the video recording, teachers made no reference to inquiry and the lessons were exclusively content-oriented. We observed that "questioning" was a dominant didactical strategy that -nevertheless- was not oriented towards inquiry. In general, teachers used questions neither to assess learning nor to promote thinking but to keep the class actively involved in a kind of "Who knows the answer?" speed game. Teachers made questions one immediately after the other. They gave no time neither to themselves to elaborate good questions, nor to the pupils to think carefully on the answer. Pupils raised their hands enthusiastically and yielded "Me!". They competed against each other to get the right to answer first. Sometimes they answered together at the same time. Among the noise, teachers searched for the right answer while snapping their fingers or moving their hands impatiently (like saying "Tell me, tell me!"). Usually, teachers repeated the right answer aloud to make it audible to the rest of pupils and continued the agitation by saying "What else, what else!?". In general, teachers did not provide feedback to wrong or correct answers. Sometimes they just ignored them; other times, they said "Wrong", gave the correct answer or asked other pupils to answer.

In 15 hours (total of hours video-taped), twenty teachers formulated 1 600 questions; on the other hand, only three pupils (from 634 in total) asked a spontaneous question to the teacher.

When pupils presented a topic in front of the class, they were required to ask their classmates questions and vice versa. These questions were about the content just presented (e.g., "What is the chamomile?", "What does it mean to fertilize?", "At what age the growing stage finishes in men and women?"); they required memory and attention but not understanding or further processing this content.

We noticed that after 25 minutes most of the teachers concluded their speech and asked the children to work quietly on the workbook. Consequently, we coded the questions from the first 25 minutes of each lesson. A total of 1 155 questions was assigned to the following categories:

Review questions (19.39%)

Even though review questions "are not thought-provoking in the sense that they are memory based – they simply ask for recall of material previously presented" (King 1999, 93), the ones we observed were extremely easy; for example:

Teacher: What else do responsible people do?

Pupil A: They purchase the medicine!

Teacher: Correct, they purchase the medicine. And what do irresponsible people do?
Pupil B: They do not purchase the medicine!
Teacher: Correct, they don't purchase the medicine.

Probing questions (0.07%)
The absence of both probing and hint questions was consistent with the absence of following up pupil's responses, as narrated before.
Only in one case, the teacher built on the answer of the pupil:
Teacher: One characteristic of alcoholic people is "behaviour alteration". What does "behaviour alteration" mean? How does an alcoholic behave?
Pupil A: They are abusive.
Teacher: Abusive, in what way?
Pupil A: He hits his wife.
Teacher: He hits his wife. Is that a behaviour alteration?
Pupils: Yes!
Teacher: Yes, of course. Without alcohol he behaves well, with alcohol he becomes violent.

Connection questions (2.60%)
Example:
Teacher: To prepare the soil for agriculture we have to cut down the plants. Should we also burn the plants?
Pupils: No!
Teacher: Why?
Pupil A: Because burning plants is contaminating.
Pupil B: Because the vegetable waste fertilizes the soil.

Metacognitive questions (0.17%)
Only two questions of this type were identified in the video-recorded lessons:
Teacher: Why do you say that we find natural medicine in the market?
Pupil: Because there I have seen the chamomile, the mint…
***
Teacher: Why do you say that these animals have adapted to their habitat?
Pupil: Because they are already used to their environment.

Guessing questions (23.38%)
This is an additional type of question consistently observed but not previously found in the literature. It is labelled as "guessing questions" because pupils were not expected to think but rather to guess the answer; for example:
Teacher: Where could we find this plant?
Pupils: In the market! In the garden! In the forest!
Teacher: In the coastal region! That is the right answer.
It seems that review questions were turned into guessing questions because teachers did not formulate the questions in an adequate way. Guessing questions are a "distortion" of review questions. They could be considered anti-questions in the sense that they drive pupils away from learning. Guessing questions were also hardly adequate for the age level of the pupils. For example:

> Teacher: What do we have here? *[Teachers shows a poster of medicinal plants]*
> Pupil: Chamomile!
> Teacher: This big thing that we have here, what is it?
> Pupil: Medicinal plants!

Teacher: That is right; but how do you call *this*?

[Pupils mention other plants on the poster]

Teacher: Yes, good; but what we here have is… a poster!

Guessing questions seem to be inadequate in view of the inquiry process since teachers rejected answers freely developed by the pupils and rather encouraged answers stated in the textbook. Teachers kept asking till they heard the precise wording of the text, for example:

Teacher: What is the name of these plants, which have no chemicals?

Pupil: Medicinal plants!

Teacher: Let's see, all these plants… how do you call them?

Pupil: Industrial plants! Ornamental plants! Natural plants!

Teacher: Let's see. You are intelligent pupils. Think.

Pupil: Natural medicine!

Teacher: Very good, they are called "natural medicine"!

In this case the term "natural medicine" was the title of the chapter in the textbook, which seemed to be more important to the teacher than pupils' own words.

Guessing questions could also be described as "fill-in statements" made with a question intonation. Teachers asked pupils to provide or complete one missing word in the teachers' speech, for example:

Teacher: And what is the difference? That each technique has a function and each function is spe____?

Pupil: Special!

Teacher: Specific. Specific.

Self-answered questions (2.42%)

We called this type "self-answered" questions because the teacher answers him or herself. Apparently, these questions help teachers to connect their own ideas and organize their speech (e.g., "What is an infusion? To boil the water, to wash the leaves…" and "And they become, what? Slaves of drugs!").

Other questions (52%)

Besides the questions that fitted in one of King's categories (22.23%) and the types of questions consistently observed (25.8%), there were other questions in diverse minor groups:

a) Questions that relate the topic to personal experiences of the pupils (e.g., "what does your mother do when somebody at home has a cold?" and "do you know any alcoholic?").

b) Questions about graphics or pictures (e.g., "are the shapes of the bottle and the glass alike?" and "what do you see on this poster?").

c) Questions to conclude a topic before moving on to the next topic and that nobody replies to (e.g., "did you understand?" and "any question till here?").

d) Questions used at the end of every statement (e.g. "right?" and "isn't it?").

e) Questions to keep students" high agitation (e.g. "and here!? and there!? who knows the answer!?" ,"what else!?" and "who else!?").

Teacher identity and mission

Teachers provided a total of 152 open answers revealing their image of a good teacher. These answers were assigned to the following categories:

a) The interpersonal teacher (e.g., "listen to the pupils", "getting to know better the pupils and their family background", "understand their limitations", etc.) = 46.71%.

b) The intrapersonal teacher (e.g., "being innovative", "being responsible", "help to solve others' problems", etc.) = 29.61%.

c) The professional teacher (e.g., "update knowledge", "plan the lessons", "make myself understandable", etc.) = 23.68%.

Even though these 152 were open-answers, we found some common words/phrases; the most frequent were in reference to:

- providing individual attention to the pupils (mentioned 20 times)
- building trust with their pupils (14 times)
- patience (13 times)

It is important to highlight that the most common answer to the statement "I am someone who needs…" was *patience* (mentioned 6 out of 18 times). Patience, together with other answers referring to interpersonal skills, summed up 67% of the needs recognized by the teachers.

Discussion

In view of adopting a holistic approach to in-service teacher training, we have proposed that the onion model, specifically the levels of behavior, identity, and mission could be useful to identify internal and external expectations and to find a commonality between these two. We chose the case of in-service science teaching practices to examine how in-service training could benefit from this approach.

Our results on teachers' *behaviour* reveal we are still far from integrating inquiry in science teaching. When we have a look at the deepest layers of the onion model, *mission* and *identity*, we see that the image of the interpersonal teacher is more present in the teachers than the image of the professional teacher. We wonder if a minor interest in the professional teacher is related to their lack of inquiry behaviour. What appears clearer is their concern with the way they relate to the pupils. As revealed in their needs statements, teachers are aware they lack interpersonal skills. This is also evident in their behaviour. We take, for example, the excess of teacher questions as compared to the absence of pupils questions. This can be interpreted as the result of a dominant didactical teaching strategy. Pupils asking questions is a critical element of the inquiry cycle (Molebash et al., n.d.; Herron, 1971). In our study, however, teachers were the absolute source of questions. Linking this to our findings about teacher reflections on their mission and identity, insinuates that the roots of this didactical orientation lay in the teacher-pupil relationship. Teachers admit, for example, that they need to be more patient.

Due to the in-deep analysis based on the onion model, we are now in the position of prioritizing a training need according to internal and external expectations. This way we attempt to attain balance or harmony between the levels of the onion model and, consequently, strengthen the sustainability of the training intervention. As Korthagen (2004, p. 87) claims, "with more balance between the various levels, the teacher will experience less inner and outer frictions."

We propose, for instance, that the critical need to promote in teachers and pupils the use of a wider range of questions (i.e., building on King's typology) could be done while attending to a teachers' ideal of the interpersonal teacher. In the literature we find that what is relevant to the profession does not conflict with what the teachers personally desire. By nourishing the interpersonal teacher (i.e., the ability of listening, putting themselves in the place of the pupils, and accept their individual differences) as an indicator of a teacher's identity and mission, we will increment their patience and, consequently, their *waiting times* when asking questions. Waiting times are the pauses teachers should make after they make a question and after the student answers (Rowe, 1986). The focus on developing waiting in teachers, might be – wrongly – interpreted as an isolated technique being developed in teachers. The latter would be the case if we do not link the expected behavior to teachers internal characteristics. Carlsen (1991) and Oliveira (2010) demand in this context attention to the teacher-student relationship. Carlsen suggests that questions reflect status differences and that a change of questioning patterns would not last unless the relationship between the speakers has changed. Oliveira adds that teacher questions have both a cognitive and a social function. "The types of questions that teachers ask provide evidence of their adoption of a particular interactional positioning" (p.427).

Though our study helped to develop a more integral picture of a teacher's professional identity, it clearly reflects a couple of limitations. Firstly, our focus was on a particular subset in teacher behavior: science teaching with a focus on inquiry. Future studies should center on the broader range of subject related teaching responsibilities. Secondly, though the study was time consuming, the number of teachers, classes and schools involved remains limited. Replication studies are needed to corroborate the present findings.

Conclusions

Developing teachers is a challenging endeavour. Whereas traditional approaches adopt an isolated approach to develop teacher behaviour, in the present study a more holistic approach was pursued. In this first study, the onion model was a helpful framework to analyse current teacher behaviour and to identify the first ideas to develop future teacher training directions. Future research could adopt this approach to analyse again particular teacher training needs and to develop a longitudinal perspective that respects internal and external expectations. This study is the first one exploring the application of the onion model to in-service teacher training.

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THE PRACTICUM AS A SPACE AND TIME OF TRANSFORMATION: A SELF-NARRATIVE OF A PHYSICAL EDUCATION PRE-SERVICE TEACHER

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Abstract
Understanding the role of the practicum in the Professional Identity construction and reconstruction within a pre-service teacher is crucial since this is a remarkable moment in their initial training, providing new feelings, challenges and it represents the transition between pre-service teacher and in-service teacher. Although there are some studies about this subject, the perspective of a self-narrative of the Professional Identity construction had not been hitherto unveiled. Here we capture the contributions of the practicum to the Professional Identity construction of a pre-service teacher based on his/her Practicum Report and the Board Diary. The confrontation with the real context of school and teaching is noticed as critical and the importance attributed to the practicum is one of the most emphasized aspects. He/she remarked the necessity to be able to (re)construct and (re)adapt methodologies. The idea that Professional Identity is constructed in community, enhancing the importance of group work, was also noticed. All in all, the most notorious contributes to his/her Professional Identity (re)construction were engaged with aspects that can only be experienced *in loco*, raising new questions about the importance of the context of the practicum to the Professional Identity construction.

Keywords: professional identity; pre-service teacher; practicum; self-narrative; Physical Education.

Introduction

All across the Europe, teachers initial training had suffer some changes that eventually have real consequences in the way pre-service teachers construct their Professional Identity. The organization of the curriculum, the duration of the initial training, the context and duration of the practicum are just a few examples which can really affect the development and construction of the Professional Identity. In the other hand, roles and responsibilities in school are increasing, demanding more work of teachers, there are a lot of changes occurring in social agencies, multiculturalism, greater influence of the media and technology on education, etc.

As schools and teachers find themselves placed more and more often under the microscope of a critical society, new teachers in particular struggle with assuming a professional identity that both respects their personal ideologies and functions in the professional arena. (Alsup, 2006, pp. 191-192).

In Portugal, Physical Education initial training has changed from 5 years with practicum (last year) to 3 years without practicum, followed by the master (2 years) in Physical Education Teaching with practicum (last year). Consequentially, we believe that these changes affect the way pre-service teachers perceive and experience their multiples roles and tasks in school, playing a major part in the construction of Professional Identity. Schools are changing and so Professional Identity.

Pre-service teachers have a clear image of what it means to be a teacher, with different values, concepts about teaching and these images are often created while they're students in school (Chong, 2011). This previous image of what it means to be a teacher will play an important role in the construction of Professional Identity and with the confrontation with the learning and teaching process during the practicum will change some of these pre-concept.
We discuss here how a pre-service teacher constructs his /her Professional Identity during practicum in confrontation with new challenges. Hence, we scrutinize his/her Practicum Report and the Board Diary, organized in a self-narrative form, trying to attributed meaning to the lived experience and voice of the pre-service teacher during the practicum. It seeks to gain a deeper understanding of this process lived with such intensity by the pre-service teacher.

Theoretical Framework

Costello (2005) said: *"…one of the characteristics that distinguishes the professions from other occupations is that their members are expected to develop professional identities."* (p. 17).
Professional Identity is a complex and dynamic concept, continuous, not static, constructed in the relationship with the self, students, context and community during the whole professional path (Dotger & Smith, 2009; Chong, 2011; Smit, Fritz & Mabalane, 2010; Cattley, 2007).
There're many possible definitions of this concept and each one has a valuable contribution to the knowledge concerning this matter. Dubar (2006) defines identity as:
The result of a dual language operation: differentiation and generalization. The first is to define difference, what makes the uniqueness of someone or something in relation to something else or someone else: identity is a difference. The second is that which seeks to define the common point to a class of all different elements of another right: the identity is the common property (pp. 8-9).
Lopes (2001) refers that Professional Identity is a particular social identity, among others social identities of a person, which has its origin in the position that a certain profession has in the society. The author also claims that more important is that the Professional Identity has a special place in the personal identity and in the life style of the actor.
In the end of the practicum all pre-service teachers had graduate and officially they had developed a Professional Identity. Nevertheless, this isn't enough to be considered part of this professional specific group, *neither to be accepted by employers, peers and clients* (Costello, 2005).
In this case, when pre-service teachers begin a new profession, they need to learn how to behave like a teacher, recognize their values, appropriate their specific language and incorporate all that in their daily life. Dotger and Smith (2009) believe that the construction of teacher identity takes place while the pre-service teacher is learning to become an expert and learning about the process of being a teacher, about the rules, boundaries and specific contents of this profession. Sometimes, while pre-service teachers learn how to be a teacher they need to reconfigure their ideal and previous though of what means to be a teacher, created, commonly, during the time when they're in school.
It was accepted that the earlier experiences in school, the values and principles that each pre-service teacher has will have a capital influence in the teaching perception, in the understanding of what is being a teacher and in the practicum process. Walkington (2005) refers that any pre-service teacher has a certain concept of teaching, because they spent many years observing teaching in their own school. However, new challenges, findings and experiences lived during the practicum process as well as sharing their daily teaching life with others teachers and pre-service teachers brings changes to the way this process is understood, as well as to the Professional Identity construction. In fact, the practicum process is not only about the teaching itself, in a classroom, for instance, it engage the relationship established with the community,

with peers and parents, with the media, it involves a lot of bureaucratic work and all of this aspects has a foremost influence in Professional Identity construction.
Regarding this matter, Whelan (1999) said that:
As a teacher who has experience these multiple pathways, recognizing and naming these differences, I am enable to see the significant influence the out-of-classroom place has had on my in-classroom practice and on my evolving teacher identity (p. 20).
Therefore, we can say that when pre-service teachers incorporate the specific content of teacher profession they can be recognized like a teacher. So, according to Dubar (2006) Professional Identity represents a way to identifying each other, in professional contexts and for Irwin and Hramiak (2010), the teacher identity construction is a really important step in the teacher profession. Costello (2005) said that even if a student absorbs all the knowledge and skills, they would not be successful as a professional without developing a Professional Identity. So, it seems that *"the professional identity is generally held to be necessary for both ethical and practical reasons"* (Costello, 2005, p. 29).
In agreement with these authors, we can argue that the practicum represents a key step in order to construct a Professional Identity mainly because during practicum pre-service teachers has to constantly change their designation role from student to teacher, providing several opportunities for the pre-service teachers construct a new and more realistic idea of what represents to be a teacher. Lopes et al. (2007) in the concluding thoughts about one research claim that:
The transition from student into a professional life appears like a decisive stage for the respondents, given the contradictions between the education concepts broadcasted by their training (patents in their vision of themselves and as a professional) and the professional practice (p. 76).
In this scenario, we identify one more constrain in the Professional Identity construction process: the dual position occupied by the pre-service teacher: both student and teacher.
During practicum, pre-service teachers are still students, learning from their supervisor, from their cooperating teacher, from their colleagues, from other teachers in school and so on. So, they're required to share and talk about their lessons, about the assessment and they have someone responsible for them. Additionally, they're teachers and they're responsible for a group of students, they've to prepare materials for classes, they've to go to staff meetings, they've to prepare exams, etc.
Related to this, Dotger and Smith (2009) state that this constant change may produce in pre-service teacher feelings like instability and self-doubt.
Even though these feelings may occur, they usually can be substituted by more confident and joyful ones, once they gain experience in the field and when they develop a more proficient ability to reflect upon their actions as a teacher.
Reflection has been mentioned as a powerful tool in construction Professional Identity because it allows the pre-service teachers to think about their actions, about students' feedback, about the methodologies that they're using, about the mistakes that they're making, about their responsibilities, about their difficulties and most important to reflect about solutions to their problems and about new ways of teaching. Through reflection, pre-service teachers learn to attribute meaning to their experiences and attitudes. Schön (1983) said that the reflection represents a way of dealing with practice problems and by trying to think about new possibilities that emerge in the real context, teachers are able to understand their teaching process, enhancing their competence to identify problems and implement solutions.
Beauchamp and Thomas (2009) consider that reflection has a key influence when shaping Professional Identity and that emotion, contextual factors, stories and discourse are really important aspects when trying to explain Professional Identity.

Also, from the viewpoint of Alsup (2006) critical reflections cannot be learned isolated, instead we need to apply it into larger and *abstract discourses of teacher identity* that will represent a crucial landmark in our students' capacity to reflect and as a result it'll affect their development as teachers.
The practicum represents the final step in obtaining a job, so we can consider that the construction of a situated Professional Identity begins in this process.
To highlight this process, namely the details and meanings of the practicum, the narrative, specifically the self-narrative, was referred as useful (Parker & Howard, 2009; Pennington, 2007). Also Hastings (2010), to study the expectations of pre-service teacher, use this methodology, referring that this is the better way to access to their feelings, memories and perceptions.

Methodology
Great understandings about Professional Identity construction have they origin in exploring and understanding teachers discourses and their narratives. Narrative and discourse have a dual relationship with Professional Identity, where, according to Beauchamp and Thomas (2009), they both have responsibility in shape each other.
The corpus of this study was a self-analysis of the Practicum Report and the Board Diary of a pre-service teacher of the Faculty of Sport, University of Porto, on the academic year of 2010/2011, about the meaning attributed to the lived experiences during the practicum.
We analyzed the data through discourse analysis with emerging themes. To Hall and Chambers (2012) *"discourse analysis does two things simultaneously: it draw attention to the language used and it draw attention to the social dimension of its use."* (p. 296).
They also noticed that discourse isn't just about writing things but also about actions and ways of being in daily life and they also pointed out that in discourse analysis, discourse is never neutral or naive.
The Board Diary was electronic and maintained during the entire academic year of 2010/2011 on a Web site and to which only the subject under study and the investigators had access.
We like to highlight that the Board Diary does not only reports to events related to the teaching process but also with all preparation process for classes, meetings, events outside the school, portfolios' creation and others. The entries in the Board Diary were daily, made in a calm and peaceful environment at the end of the day and with duration of, approximately, 20/30 minutes.
These records will allow the pre-service teacher to take conclusions about teacher evolution and development in two dimensions: personal and professional.

Findings
The importance attributed to the practicum is one of the most emphasized aspects by the pre-service teacher along his/her speech. He/she perceives the practicum as a singular moment of learning and a crucial one in his/her process of Professional Identity construction. He/she claims that the practicum year represents the culminate point in his/her initial training because now they've the opportunity to apply all the things that they've learned, know the real context of school, meet real students, their students and see if they're ready to this develop all this tasks with competence. We can see this in the next's excerpts:
This is the year that we all expected, the year when all these scenarios revisited in our mind can become true, the year when we will be put to the test, are we good enough?
It's funny to realize how during my whole initial training I was waiting for this moment, after all this is the materialization of everything I've learned.
Here we can also perceive that the practicum year causes a lot of anxiety in the pre-service teachers, because this is the first time that they'll be responsible for an entire class, the first time

that they'll be teaching. We're enabled to conclude that there's another side to the practicum: a frightening one, although this is also consider as an opportunity to grow as a teacher.
Despite everything seems idyllic in my head, wonderful and desirable, there were an intimidating side to the practicum. It's that the practicum was, also, wrapped up in fear, anxiety and compromise, in a direct confrontation of what I know and of what I didn't know, with my adaptation capacity, with the construction of a competence that I desperate desired – will I be a good teacher? – and all that I can say is that the practicum is a moment of vulnerability, with everything good and bad that this carried, putting us to the test in every moment, making us much more than we used to be.
Concerning the key importance of the practicum the pre-service teacher moreover claims that this process is an amazing opportunity because they are working within a "safe net" (the cooperating teacher and the supervisor) that will help them whenever they need and he/she considers that the pre-service teacher as a lot to learn from them, as we can distinguish in the next's passages:
Above all, I considered and consider that this is a valuable year, an unrepeatable year where I'd have the privilege of having two wingmen, a cooperating teacher in the school I'd teach and a practicum supervisor in my faculty, that would help me obtaining new knowledge, knowledge that they're obtaining along their experience years, knowledge that allows them to notice that what is asked to whom browse in the teaching waters is not so linear as it might seems.
Thereupon, the relationship established between the practicum, the pre-services teachers, the cooperating teacher and the supervisor is crucial so that the previous established goals can be achieved.
He/she also states that during the practicum the constant need to reinvents himself/herself was constant, because everyday new challenges and discovers emerge. The need to learn more and improve was constant. The confrontation with the real context of school and teaching is noticed as critical, since he/she needs to learn and incorporate specific knowledge, that characterize the teacher profession. He/she states that:
One thing is equating the many possible situations theoretically, another, completely different, is living them.
Theory does not have a goal without practice and, on the other hand, practice does not have foundation without theory, in a duality impossible to deny and fundamental to a better understanding of teaching, of teachers' role and of the construction of professional identity.
If we didn't make this distinction, we will be decreasing the plasticity importance in teachers' life and we could fall into the tight reductionism of technocracy.
In many ways, this knowledge was very different from the one he/she learned in the initial training. He/she believes that it's crucial to learn how to combine all the theories learned in the faculty and the real context of school. These theories provide you a reference to deal with real concerns while you're teaching, notwithstanding they cannot provide you concrete answers to your questions and problems. He/she said that:
It will be necessary a great effort of adaptation, since the situations that appear in the real school context clearly distinguished themselves from some theories learned in the initial training years.
Thus, he/she remarked the necessity to be able to (re)construct and (re)adapt methodologies learned during the initial training taking into account the context, the focus in the essential and the hierarchy of priorities about the things that are necessary to be able to teach.
It was in this year that I've realized, truly, about the veracity and pertinency of THE FOCUS IN THE ESSENTIAL. Now I speak about this at least once a day, but it's really true!
I am already preparing the field: I went to the literature and I am reading again and I am reviewing the model, I asked opinions to my colleagues and I've been building the materials that I'll use.

In the beginning of that week I've made the same questions to my other colleagues. I've started watching their classes. In fact, they weren't all about football, they were about everything that I can see. And I still do it. Watching futsal classes is great, seeing another modalities too, I've to reflect to assimilate the most important aspects and by doing so, perhaps I'll be able to make the transfer from some collective modalities to futsal.

In the last quotation, the pre-service teacher talks about a remarkable aspect concerning with Professional Identity construction, that is reflection. Indeed, reflect about all the things that happens during practicum, either related to teaching or with off-school situations is imperative to give meaning to their experiences and develop a greater understand about their action as a teacher. For this pre-service teacher, in particularly, reflection had a truly outstanding place for his/her discovery as a teacher. He/she argues that:

I should safeguard the importance of the reflective act during practicum. More than "simply" experience the school daily life, pre-service teacher, must (has to!) attributed meaning to those experiences, learn from them, with their results, difficulties and conquers, must assimilate those teachings, must incrust them in themselves, in such way that they become part of their competences, must understand the contribution of all of these learning experiences to the develop of a plastic action and though and, ultimately, they must realize in what way this year, these experiences, this confrontation, contribute to their identity construction as a teacher.

During my practicum, reflection occupied a spot position in my training, in my development and, once more, in my professional identity construction.

Is was precisely through my reflection, written, thought, dreamed, lived and shared and through my portfolio and, more specifically, through my Board Diary that I was able to realize the immensity and the magnificence of all of my learning's, I was able to realize how I situated myself through some teaching matters, I was able to question me, I was able to grow, I was able to mature knowledge's, wills and ambitions, I was able to involve me in the constant metamorphosis of my action.

The importance of the others teachers in the school is also very valuated in the (re)construction of the Professional Identity, given that they provide a safe environment to develop new abilities and share their experience and knowledge. This was very important to the pre-service teacher because he/she was able to learn with others teachers, with really different approaches to teaching and complement his/her learning process. We can observe this in the next quote:

In the same way, I could found support in all others teachers, namely in those who constituted the disciplinary area, that help me doing the transition between the two worlds. I've heard many histories and experiences, I was able to draw some conclusions after observe their classes and learn, for example, about school sport, new methods and techniques used by them.

Regarding peer support, we can also recognize the desire felt by the pre-service teacher to be acknowledged like integrating part of the teachers group. This is a really important subject when talking about Professional Identity construction: the pre-service teachers need to be accepted among other teachers and they need to be considered like a valuable member of teachers' class, which they're now entering. Part of becomes to feel like a teacher, begins when the surrounded group recognizes them. Pay attention to the next citation:

In an almost whispered way, it existed a concern for that they accepted and integrated us, the need to hear something like a confidence where they talk about they fears and insecurities when they're in the same phase that we, so that we can feel comforted, knowing that we weren't the only ones to feel that way.

But these need to feel secure and protected does not only appears when the pre-service teachers is talking about his/her peers but he/she also nurtures these feeling towards the school and their representative organs as we can see below:

In the same way, I hoped that the school welcomed me, recognized me and give me the tools to develop a good job. I hoped that it assumed as a space, more than physical, of learning,

confirming my school conceptions, a place where everything should be done so that students can learn, at cognitive, psycho-social and motor level, a place facilitator of new learning, a place that motivate and inspire student to create and maintain work habits, of scrutiny and of incessant searching for excellence, throughout life, that make them responsible for the construction of their learning.

The idea that Professional Identity is constructed in community, enhancing the importance of group work, was also noticed.

Along the speech we can verify that the pre-service teacher is gradually feeling more like a teacher, he/she had develop competences to teach, to plan, to assess, to talk with the students, to reflect on his/her teaching methods and results, to overcome difficulties and so on. Indeed, there was a special moment related with an exam, reported by the pre-service teacher, when he/she affirms that now he/she feels like a teacher:

Tomorrow I will watch the exam of physics-chemistry. Have you imagined? Me? Watching? Up till now I've been always watched. I cannot believe the panoply of experiences I've been living. Tomorrow I'll tell everything.

If the expectations were high, they weren't even close to reality, of what I'd feel. I know that this seems innocent or even a little bit ridiculous, after all I only help watching an exam. But for me it wasn't just that, it was all the meaning that this episode encloses, my first time and on top of that I get to sign the exam sheets and tell the hours and my students were asking me things. It's almost like a passage ritual, something kind of mystical for those who aren't yet in school, it's almost like signing the schoolbook and right the summary. It's not the act itself, is what it means, you know?

I loved it, really. I don't know quite well why, or instead, yes I know, because this is what I love to do – being a teacher, but I felt extremely comfortable and happy. I think I was always smiling, inside, thinking about the entire path that I've already walked. I was really excited.

The significance attributed by the pre-service teacher to this event was decisive to his/her Professional Identity construction and there are some moments where the pre-service teacher talks about the characteristics that he/she think that a teacher should have. Often, the pre-service teacher thinks about if he/she has or has not these characteristics. So, the pre-service teacher refers that being a teacher is:

Being a teacher is make a difference, is founding North in times of indecision, is contribute with a piece of us to the complexion of others, in the immensity of finiteness. Make a difference is asking: where is the school failing? Make a difference is asking: Where I am failing? Make a difference is asking: how can I improve? Make a difference is reinvent us into the light of new challenges, schools and students. Make a difference is having the audacity to say: Enough! Make a difference is always smiling when we enter our classroom. Make a difference is having the sincerity and the humility to admit when we're wrong. Make the difference is maintaining the family and the school together, for the sake of our students, of our school and of our education. Make a difference is about keeping us young and rebels in the when claiming for our rights and in the fulfillment of our duties. Make a difference is having the boldness of believing in a different, better world, with more education.

Overall, we can admit that for this pre-service teacher, making a difference is a major concern when teaching his/her students. He/she seems to believe that the teacher must be someone who's able to guide their students, promoting various moments of learning and reflexion. The teacher must also be able to motivate and encourage their students in the persecution of greater outcomes.

Conclusions

The pre-service teacher speeches evolve naturally along his/her Practicum Report and Board Diary, showing the evident contribution of the practicum to the construction of his/her

Professional Identity. The most notorious contributes to his/her Professional Identity (re)construction were engaged with aspects that can only be experienced *in loco*, such as students assessment, the reflexive process, the class implementation, the sharing process with others teachers, the recognition as a teacher and also the decision making in the classroom.

Thus, the pre-service teacher believes that the practicum is a singular moment of learning, in which pre-service teachers can deal with real demands, in a real context, teaching under the most natural conditions possible. Even though practicum is seen as a real gift, there are some moments when feelings like anxiety, fear or doubt prevail, because during practicum pre-service teachers are experience teaching alone and they feel like they're putting to the test all the time. These feelings can be surmount with the increasing confidence in their capacities and also because pre-service teachers feel the support of their cooperating teacher and supervisor teachers. It was also very important to be accepted by their peers and school as a legitimate member of the class.

As well, the pre-service teacher feels the constant need to reinvent his/herself, whenever he/she is confronted with the real context of school. In these situations, he/she needs to make a good balance between theory (learned in faculty) and practice and (re)adapt some methodologies.

Is through reflection that the pre-service teacher attributes meaning to all of this changes and think about what really means to become a teacher, enhancing the major contribution of the reflection in the Professional Identity construction.

The pre-service teacher pointed out a specific moment in his/her practicum – watching an exam – stating that this was a turning point into looking at his/herself like a teacher.

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THE PORTUGUESE PHYSICAL EDUCATION PRE-SERVICE TEACHERS' DAILY TASKS: A STUDY USING VISUAL METHODS

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Abstract
The visual methods might allow pre-service Physical Education teachers accessing knowledge that, in general, cannot be verbally approached and, thus, prompt discussions about the development of their professional identity through images. The main goal of this study was to identify and get deeper insights into the type of tasks and responsibilities that pre-service Physical Education teachers perform in school. For that purpose, nine pre-service teachers from the Faculty of Sport, University of Porto (Portugal) participated in the study. In order to capture their views, an exploratory approach was adopted using photo elicitation (Harper, 2000; Phoenix, 2010; Pink, 2010) in a focus group session (Bryman, 2008). In the data collection process, the participants were asked to: (i) collect visual material (photographs and videos) of their context of practicum at school during a period of two week, (ii) present and comment the selected images in the focus group session, as well as to (iii) jointly reflect upon their daily tasks as Physical Education teachers. Data was submitted to thematic analysis using the Nvivo 9 software. The main results are as follows: (i) the images uncovered the pre-service Physical Education teachers' everyday tasks and gauged their perception of their learning process as teachers; (ii) the focus group session enhanced the sharing of ideas and perspectives among the participants; (iii) four types of tasks were outlined by the participants: those imposed by the norms of the professional practicum (e.g. teaching, meetings, peer-class observation and class director activities); those performed on own initiative (e.g. community work, participation in workshops); those which they are particular fond of doing (e.g. teaching, school trips, community work); and those which promote challenges and anxiety (e.g. class supervision, teaching particular sports, such as swimming and dance, the evaluation process, and being responsible by a school activity organization and development); (iv) the usage of the visual methods emerge as an invaluable tool to better understand how the pre-service teachers (re)construct their professional identity.

Keywords: visual methods; photo elicitation; Physical Education; pre-service teachers; professional identity.

Introduction

Qualitative research has been witnessing an increased uptake of the usage of the visual methods across the a range of social sciences (Phoenix, 2010; Pink, 2010). This form of research constitutes as "a valid and useful method for collecting rich data" (Clark-Ibáñez, 2004, p. 1523) and to glean meaning out of lives experiences (Harrison, 2004).

The situated practicum training is of paramount importance for the student-teachers' professional and identity development (e.g. Grossman, Hammerness, & McDonald, 2009; Hoi Yan, 2008), but has been assisting to a reform of its teacher education programs over the implementation of Bologna (Day, Flores, & Viana, 2007; Marcon, Nascimento, & Graça, 2007). In the context of such challenges, it is important to understand how PE pre-service teachers

learn from their practices in the practicum training setting and how they shape their professional identities in the process.

Identity has been seen as an ongoing and performative process in which individuals draw on diverse resources to construct selves (Watson, 2006), namely the practicum training experiences. Gee (2000) emphasizes the unstable and multidimensional features of identity; whereas Hoi Yan (2008) specifically underlines the teachers' roles and practices as key elements to understand the development of their professional skills and identities.

In this regard, one domain where the use of visual methods has been less documented is that of teacher and identity development. This study is, therefore, predominantly guided by the visual methods templates offered by Banks (2007) and Harper (2002), as well as by the theoretical framework on identity development proposed by Gee (2000). The research question for this inquiry relates to what constitutes the everyday tasks of PE pre-service teachers and how they evolve their teaching skills and professional identity in the context. That said, the purpose of this study as part of a larger project, was to capture the student-teachers' lived experiences in the context of their practicum training while being negotiated with their professional and identity development.

Theoretical framework

The last decade has witnessed a significant growth in the use of visual data within qualitative research. Indeed, scholars working within a number of different disciplines have become increasingly aware that adopting visual methods has the potential to further develop our understanding of the social world for a number of reasons (Phoenix, 2010). First, they can offer a different way of "knowing" the world since they enables us to access knowledge that, in general, cannot be accessed verbally (Clark-Ibáñez, 2004). Second, images are powerful in that they can do things, for instance, prompting discussions about a phenomenon (Pink, 2010). Thirdly, visual images "can act as unique forms of data that have the ability to amass complexly layered meanings in a format, which is both accessible and easily retrievable to researchers, participants and audiences alike (Phoenix, 2010).

According to Harrison (2004), "visual methods" describes any research design which utilizes visual evidence. Cameras and photographic images are drawn upon most widely, although this form of research can also include maps, diagrams, sketches, posters, websites, signs and symbols (Phoenix, 2010).

There are several key theoretical approaches to visual images (Phoenix, 2010). Banks (2007) distinguishes in terms of *how* and by *whom* visual material might be produced; whereas Harper (2002), presents an approach on the three main uses of photographs. The former divides between *the creation of images by the researcher* (i.e. the use of images to study society) and *the collection and study of images produced or consumed by the subjects of the research* (i.e. the sociological study of images). On the other hand, the later author categorizes the visual material as *inventory* (i.e. photographs used as inventories of objects, people, and artifacts), *institution* (i.e. photographs depicting events that are part of collective or institutional paths as, images of schools or images of events that occurred earlier in the lifetime of the participants), and *social* (i.e. photos representing intimate dimensions of the social, for example images of one's own body, and photos that connect one's self to society, culture or history).

As such, visual methods represent a valuable way to examine the PE pre-service teachers' professional development in a situated context (i.e. the practicum training), as well as the (re)configuration of their professional identities.

Nowadays, Portugal has been assisting to a change in the initial teacher education, propelled by a new paradigm in higher education due to the implementation of the Bologna process. This factor lead to a (re)structuration of all teacher education programs, including PE, implying a change in academia qualifications for teacher certification, with invariable consequences in the

management of teacher's education components, culminating in a new type of practicum training. The practicum is of paramount importance at the initial training as it seeks to integrate the professional-live practice in a real context, and in a progressive and oriented mode (Day, et al., 2007; Marcon, et al., 2007). As a result, it is important to understand how pre-service PE teachers learn in the context of the new practicum training, and how they (re)construct their professional identity (Luehmann, 2007).

In this respect, teacher professional identity is a concept defined and researched in a multiple of ways (Beijaard, Meijer, & Verloop, 2004). Aspects such as, cultural, political, societal, economic, racial, ethnic and religious features concur to its formation (Smit, Fritz, & Mabalane, 2010). Beijaard, Meijer and Verloop (2004) argue that identity is socially constructed throughout one's life, as individuals interact with people and society at large. Put in another way, identity varies in different contexts. It is not a fixed attribute of a person, but a relational phenomenon. Also, identity is negotiated, shifting and ambiguous, the result of culturally available meaning and the open-ended power-laden enactment of those meanings in everyday situations (Sachs, 2001).

Gee (2000, p. 99) offers another view on identity, namely identity as an important analytic tool for understanding school and society. More specifically, identity, in his view, is recognized as "a certain kind of person" in a given time and place. In this sense, all people have multiple identities "connected to their performance in society". As such, identity can change from context to context, from moment to moment and, therefore, be ambiguous or unstable. The author develops a perspective of identity built around four perspectives on what it means to be recognized as a certain kind of person. He views identity as *nature* (i.e. developed from forces of nature), *institution* (i.e. mandated by authorities within institutions), *discourse* (i.e. recognized in the discourse of rational individuals), and *affinity* (i.e. shared in the practice of affinity groups). Complementarily, Grossman, Hammerness and McDonald (2009), Hoi Yan (2008), McComarck, Gore, and Thomas (2006) and Watson (2006) propose that professional identity be organized around a core set of practices in which knowledge, skill and teacher development are constructed in the process of learning to practice during professional education.

This study is drawn upon Bank's (2007) respondent-generated visual data, as well as on Harper (2002) and Gee's (2000) theoretical lens, complemented by other related literature, to gain further insight into the PE pre-service teaching practices in the context of their practicum training. The research problem is, therefore, guided by the following question: *What are the tasks and responsibilities addressed to the pre-service PE teachers in the context of their practicum training?*

Methodology

An exploratory study drawn upon visual evidence (Phoenix, 2010; Pink, 2010) and, particularly, using the photo-elicitation qualitative methodological approach (Clark-Ibáñez, 2004; Harper, 2002), was conducted in order to gain an insight into the most valued teaching practices of a group of PE pre-service teachers, during their work placement experience.

Participants

The participants in this study were 9 Portuguese PE pre-service teachers (4 males and 5 females), conveniently and purposively collected from the Faculty of Sport, University of Porto, pertaining to 3 practicum groups and distributed by 3 distinct teachers-educators at public schools in the North region of the country. All of the pre-service teachers were supervised by the same university teacher.

Data collection

Data were collected during a focus group session through photo-elicitation at the student-teachers' Faculty of Sport. The visual methods were employed both to enhance our understanding of the daily teaching practices of the pre-service PE teachers, and to 'encourage the participants to openly and promptly expand on a specific issue as members of a particular group – practicum students (Clark-Ibáñez, 2004; Phoenix, 2010; Pink, 2010); whereas the focus group technique was employed "to build up a view out of the interaction that took place within the group" (Bryman, 2008, p. 473). Participants were asked to take their own photographs and videos of the practices and responsibilities taken at their school practicum context as PE teachers, during a period of two weeks, to be used later at the group session as discussion stimuli. The pre-service teachers used their own digital cameras, selected the photos and organized them in a Power Point presentation. The set of images were presented and described by each student-teacher and the emergent themes, i.e. their daily teaching tasks, jointly discussed with the group. The session lasted 100 minutes. The interview was audio-taped and transcribed using a timeline indexical approach. An informed consent, asking permission to utilize the audio and visual material publicly at academia contexts, was arranged with participants before the focus group session.

Data analysis

An inductive thematic analysis approach was undertaken using the cycling coding process presented by Glaser and Strauss (1999 [1967]) and Strauss and Corbin (1990), assisted by the QSR NVivo 9.0 software, to identify common core themes within the data. The first reading through the transcribed work aimed at breaking down data into themes. Then, a new reading was done to actually start the formal coding in a systematic and interactive way, i.e. through "putting data back together in new ways by linking codes to contexts, consequences, patterns of interactions, and causes" (Strauss & Corbin, 1990, p. 96), as well as by selecting and refining the final "overarching themes" (Fereday & Muir-Cochrane, 2006, p. 3) and their subsidiary categories. This analytic work was developed in tandem with the examination and interpretation of the images, and in accordance to what the participants verbalized about them (Harrison, 2004). The final hierarchical model was revised by a second researcher to ensure its internal validity. Thematic narratives were, thus, constructed and agreed upon with the images and direct quotes from the pre-service teachers to both illustrate the themes and to glean meaning out of the visual data (Phoenix, 2010).

Findings

The analysis of the research data related to the pre-service PE teachers' daily practices identified the following common themes: (i) tasks imposed by the norms of the practicum training; (ii) tasks performed by self-initiative; (iii) tasks fond of carrying out; and (iv) tasks leading up to challenges and moments of anxiety. Within each core theme, particular categories emerged as the most referred by the group of participants and are addressed in detail.

Tasks imposed by the norms of the practicum training

A) Tasks imposed by the norms of the practicum

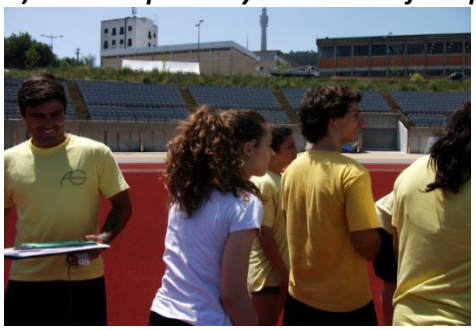

Figure 1. *Teaching*

Figure 2. *Observing a pre-service teacher colleague's class*

Figure 3. *Mentoring meeting with the teacher educator - class director duties*

Figure 4. *School club sport activities*

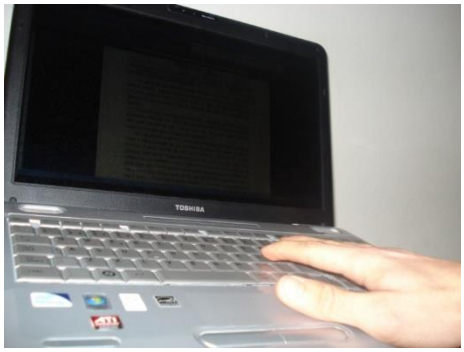

Figure 5. *Writing-up reports.*

Participants reported the following assignments as compulsory to their work as student-teachers: teaching; observing classes, both from their pre-service teachers colleagues and from more experienced-teachers; attending different types of meetings such as, school meetings (e.g. Department Section and PE Group assemblies), mentoring meetings, and informal reunions (e.g. lunches and dinners); assisting in class director duties; participating in school club sport activities; and writing up planning reports (e.g. written reflections about the conducted lessons), and the final practicum thesis, stating their teaching experiences.

Class observations
a.1 Class Observations

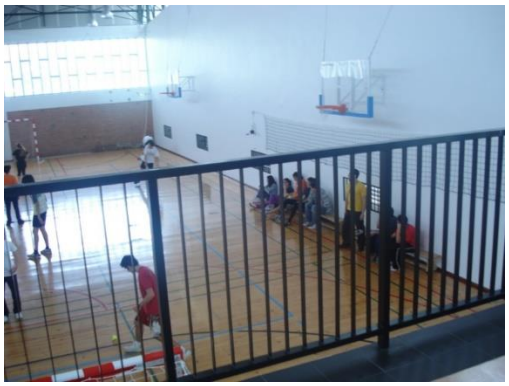
Figure 6. *Observing an experienced teacher's class*


Figure 7. *Observing a supervised class.*

The class observations represent key moments for the pre-service teachers' development as teachers. Observing classes of their peers (Figure 2) allowed them to detect errors for which

they were not always aware of when teaching or reflecting upon their lessons: “The errors committed by our colleagues are also ours mistakes, that even after doing a retrospective of our own taught lessons, remain unnoticed. As such, observing our colleagues’ lessons enable us to identify those errors”. However, “more than perceiving what is wrong, we also learn a lot from what is done well, i.e. from the implementation of new strategies and new ideas”. For this reason, “the observation of our colleagues’ lessons, also represent times of sharing”. Moreover, the dialogues and comments forged among the student-teachers about the observed classes such as, the reflection upon certain teaching dimensions, like feedback, were also important aspects reported by the participants: “Look! Is it not curious that we give away so many feedbacks, directed to a person, to a group (…)?”. Likewise, the observation of the experienced-teachers’ classes “is an imposed task that should also come from the pre-service teacher’s own initiative, since it is an invaluable piece for his or hers formation”. The novice- teachers take the “older teachers” “as reference and try to absorb in the most out of their experiences”. Figure 6 depicts the implementation of class management and organizational routines by an experienced-teacher observed by a group of pre-service teachers. Furthermore, the classes observed by the supervisor-teacher, also exhibit a milestone for the student-teachers’ personal and professional development – “it is necessary for our development” -, as it directs the pre-service teachers’ “gaze and attention” to particular aspects of the lesson “which had not been noticed before”, such as feedback. Moreover, it also symbolizes the number of tasks that the student-teachers had to meet during their practice: “The amount of papers she is holding on her hands metaphors the volume of work we need to do!” (Figure 7). Finally, the supervisor-teacher’s visit to the pre-service teachers’ school displays “moments of conversation which are an essential component of our training”. Figure 3 portrays the student-teachers assisting in the class director duties, also representing “moments of reunion and socialization between the teacher-educator and the pre-service teachers”.

School meetings

a.2 School meetings

Figure 8. *School meetings- Department section and PE group.*

Figure 9. *Mentoring meetings among the pre-service teachers.*

Figure 10. *Informal meetings - a PE group lunch.*

For the participants, attending school meetings represent one of the teachers' tasks and commitments which "greatly contribute for the enrichment of being a teacher as a whole". Specifically, department and PE group meetings (Figure 8) enhanced the student-teachers' perceptions of the meaning of being a school teacher through the contact, familiarization and understanding of the schools' structure, its main concerns and ongoing discussions, such as the teachers' evaluation, the value of the PE learning area at school, the assessment of the teaching process throughout the students' results, the establishment of strategies to improve their results, and the creation of activities of impact at school. Similarly, the practicum group meetings depicts moments of reflection, cooperation and share of problems, experiences and knowledge, valuable to their teaching planning and organization. Sometimes these occurred only among the pre-service teachers (Figure 9), in an informal manner "where we learn from each other and reflect upon our lessons and other activities in a conscious and organized manner"; in other times, it was formalized with the presence of the teacher-educator (Figure 3) who "share knowledge and experience relevant to the teacher-student's development". In this respect, the pre-service teachers emphasized that this "cooperative principle" should be extended beyond the practicum stage: "cooperating with teachers, talking about our practice, not closing it up to ourselves, is of paramount importance because we can learn a lot from others". On the other hand, informal meetings, such as lunches and dinners (Figure 10), intensified the interaction between pairs, the union of the PE group, the support given to the pre-service teachers, the opportunity to share experiences, ideas and conceptions with other professionals of education, and a better understanding of what being a PE teacher is. These are events which the pre-service teachers value for their formation as teachers: "we can always learn something from our colleagues", as well as "from other teachers from different learning areas", who contributed to

a comprehensive development of the participants. Thus, “although this is not an imposed task, we are almost obliged to be present and eat!”.

Tasks performed by self-initiative

Doing community work and participating or organizing school extracurricular activities, were outlined as the actions performed by the pre-service teachers’ free will.

B) Tasks performed by self-initiative

Figure 11. *Social center community work*

Figure 12. *School extracurricular activities - "Magusto".*

Extracurricular Activities and Community work

b.1 Extracurricular activities and Community work

Figure 13. *Psychoanalysis Conference*

Figure 14. *"Women's race"*

The images represent activities which are performed by the participants' own initiative, and are all related to school extracurricular activities or events evolved within the local community. Figure 13 demonstrates the participation of a pre-service teacher on an activity developed by the psychology group of her school, i.e. a conference on psychoanalysis. For her, it represents "an informal contact with her students and the students of the school". Figure 14 exhibits a pre-service teacher's student mother participating in a sport activity in the streets of the city – "women race", who answered to the student-teacher's efforts in promoting a closer relationship between the students' families and the school: "initially they were reticent regarding the relevance and interest in participating in these initiatives (…) but, in the end, they were positively surprised and satisfied with the experience. They will surely participate again next year". Finally, figure 11 depicts a community work developed by a group of pre-service teachers in a social center. A protocol was signed between their school and the social center and the pre-service teachers would give a sport activity once a week to children from the two initial years of the primary school. As such, this activity reflected a further opportunity for the participants to enhance their training as teachers since it enabled them to contact and develop a relationship with students of different ages from those they usually worked with at school (secondary level). This experience brought challenges as "developing new plan, new teaching conceptions, and different ways of looking at the class and communicating with the students"; Moreover, it also conduced to "a better preparation for the presumable future work opportunities". In this respect, a parallel was made between this work and the "curriculum enrichment activities" developed in the primary levels after the school activities, which may be their line of work since entry in schools are very difficult, nowadays. The participants also added that participating in this activity was a very positive and rewarding experience for them, making it one of the most enjoyable performed practicum tasks: "students really liked our lessons and liked us".

Tasks fond of carrying out

C) Tasks fond of carrying out

Figure 15. *Teaching*

Figure 16. *Pre-service teacher playing with her students.*

Figure 17. *School Trip to "Serra da Estrela".*

Figure 18. *School Sport Club – "Gymnastic".*

The participants presented a set of tasks by which they have a strong preference for, such as teaching, doing community work, participating in school extracurricular activities, namely collaborating with the school club sport projects, festivities and school trips.

Teaching
c.1 Teaching

Figure 19. *Teaching*

Figure 20. *Teaching – "Drawing a smile"*

Figures 15 and 19 shows the pre-service teachers' giving classes to their group of students, and represents the most valuable task for them: "one of the key practicum tasks is teaching"/"it is in the act of teaching that we feel good"/"it is what really complete us as teachers". In order to continuously compromise the students to the PE subject area, the pre-service teachers applied different types of strategies to enhance their learning groups' motivation, good behaviour and relationships, affectivity between the students and teacher-students, autonomy and learning, such as: teaching optional sports, dance, badminton, and orieenting (Figures 1, 15 and 19); wearing specific and attractive ornaments (Figure 19, on the right); implementing different instructional models as the sport education model (Figures 1, 15 and 19), and socializing with their students either within (Figures 16) or out of the classes, such as participating in extracurricular activities (Figure 13) and in school trips (Figure 17). These strategies also contributed greatly to the pre-service teachers' alteration of posture and attitude in teaching: "before I was very grave and anxious, now I am able to draw a smile" (Figure 20), as well as to empower their pedagogical knowledge by studying and teaching unacquainted sports: "the continuous familiarization with the content matters of particular sports, which were initially foreign for me, but that with practice conducted to significant learning, not just for the students, but for me as well, altered my form of being and intervening in the classroom".

School extracurricular activities
c.2 School Extracurricular activities

Figure 21. *Gymnastic's School Club Sport – Gathering up the equipment.*

Figure 22. *Traditional Portuguese Festivity – "Magusto"*

Figure 23. *"Magusto" – Traditional Games*

Figure 24. *BTT race.*

Figure 25. *School Trip to "Serra da Estrela"*

The school extracurricular activities also appear as the practicum tasks that the pre-service teachers most like to do and spend time on. As for some, organizing activities and assisting in the school club sports made part of their mandatory tasks, for others their participation assumed a much more optional emphasis. Nevertheless, all contributed to their specific training as teachers, enhanced their knowledge about the school culture and its pupils, promoted closure among the student-teachers, between them and their teacher-educator, their students, and other teachers.

Figure 18 represents the assistance given by the pre-service teachers in a school club sport activities. A role which very much improved their skills as teachers and made them feel "playing a significant part in the membership, support, connection to the practice, and motivation among the students". The participants consider those parameters as "an invaluable part of their function as teacher". Specifically, the figures 2 and 21 depict the workout and management routines at the beginning and at end of the lesson: "All help gathering up the gym equipment, even the smaller kids!". Figures 22 and 23 portray a Portuguese Autumn popular celebration named "Magusto". A group of student-teachers were assigned to the organization of several extracurricular activities at school, namely the ones related to the outlined festivity. The images demonstrate the students participating actively in the traditional games, which symbolizes "their commitment and respect towards the teachers' requests with regards to their participation in this kind of school initiatives, even though it doesn't add any points to their final classification in PE". It also represents the pre-service teachers' ability and responsibility in organizing and conducting this type of assignments. The following images correspond to a participation of the school community in a BTT competition and a in school trip to "Serra da Estrela" to learn how to ski. Figure 24, conveys another opportunity for the pre service teachers "to contact with new experiences, new teachers and new students"; whereas figure 25 expresses a number of meanings: "one of the best moments of our practicum", the union of the

group of pre-service teachers, and the improvement of the relationship between the pre-service teachers and their students: “from this moment onwards, there was a bigger proximity to the class”. Nevertheless, school extracurricular activities and trips also posed challenges to the pre-service teachers, particularly, the responsibility of “taking care of the students” and of dealing with unexpected events. In this respect, the pre-service teachers’ were confronted with “one more function of what is being a teacher”: “During the school trip to Serra da Estrela, a student was momentarily lost. Fortunately, nothing happened.”

Tasks leading up to challenges and moments of anxiety

Teaching particular sports; dealing with evaluative moments, either marking their students’ academic performance or being observed and evaluated by the supervisor; and being responsible for the organization of school extracurricular activities, correspond to the practices referred to as the most overwhelming within their practicum work.

Teaching particular sports

A) Tasks leading up to challenges and moments of anxiety

d.1 Teaching particular sports.

Figure 26. *Planning*

Figure 27. *“Improving the notion of rhythm”*

Figure 28. *"Dealing with unexpected events"*

Teaching particular sports such as dance, orieenting, swimming, badminton and acrobatics posed greater difficulties to the pre-service teachers, either because of the unfamiliarity with the subject or due to the miss-behaviours and uncompromised attitudes of their students towards the PE learning area. In order to surpass these challenges, the pre-service teachers studied closely the outlined sports, invested more time and rigour in planning their lessons, employed distinct instructional models, established concrete roles and goals for the students (e.g. participating in a presentation at the end of the term), and promoted affectivity amongst the class.

Figure 26 portrays a student-teacher planning attentively his badminton lesson; figure 15 and 16 depicts the importance of encouraging proximity, not only amongst the students, but also between the teacher and the students, "so that effective learning may occur"; and figure 27, a pre-service teacher conducting warm up and cool down exercises with music to systematically improve the students' rhythm, to present a dance routine at the end of the year. Regardless, "misfortunes do happen in classes". One of the pre-service teachers' reported an incident of a student passing-out in his class: "We are not prepared to deal with this kind of stuff. We should have had a first aid curricular subject in our course" (Figure 28).

Evaluative moments

d.2 Evaluative moments

	Jogo 5x5	Alunos / Conteúdo	Adriana	Ana Catarina	Bruna	Carla	Carlos	Catarina	Cristiano	Fred	Pedro	Rosana	Sara	Sónia	Joana
Tomada de decisão	Acção Ofensiva	Após passe corta para o cesto													
		Mantém o equilibrio ofensivo													
		Progride em drible se tem espaço													
		Passa a bola quando está marcado													
	Acção Defensiva	Mantém o equilíbrio defensivo													
		Defende entre o portador da bola e cesto													
Execução de habilidades	Em situação de jogo, 3x3, 5x3 ou 5x5	Passe													
		Drible													
		Lançamentos													
		Tripla-ameça													
		Total													

Figure 29. *Evaluative grid.*

Figure 30. *Supervisor's evaluation.*

Figure 29 corresponds to a grid of parameters to evaluate the students, and intends to convey the pre-service teachers' anxiety "in being fair and in ascribing the correct grade to each student". Figure 30 exhibits the coming of the supervisor teacher to their school to evaluate the student-teachers' teaching skill which is, for the great majority of them, the most difficult moment "to come to terms with".

Conclusions

Images elicited extended personal narratives and spurred meaning on the participants' teaching experiences that otherwise might have remained dormant in a face-to-face individual interview, especially when viewed in a group setting (Clark-Ibáñez, 2004). For this reason, the group focus was also of paramount importance to capture a shared understanding (Bryman, 2008) of their teaching practices, professional growth and identity development, emerged in interaction with themselves in a local setting (Macnaghten & Myers, 2010). Particularly, the photographs and videos acted as a medium to communicate dimensions of the pre-service teachers' daily practices and to access knowledge that, in general, cannot be accessed verbally (Phoenix, 2010; Pink, 2010); whereas the group focus triggered the construction of a collective meaning. In this context, most of the images were used to depict events (e.g. Figures 1, 9, 12, 19, 24 and 30) and intimate dimensions of the social (e.g. Figures 10, 13, 20, 24 and 26). Some also purported to represent inventories of artifacts and people (e.g. Figures 3, 5 and 9) (Harper, 2002).

As such, the participants referred to their teaching practices as the assignments they are tasked with everyday in their practicum training. This group of PE pre-service teachers distinguished their daily work as: (i) tasks imposed by the norms of the practicum training; (ii) tasks performed by self-initiative; (iii) tasks fond of carrying out; and (iv) tasks leading up to challenges and moments of anxiety. The first set of tasks – *imposed assignments*, included teaching, observing classes of senior teachers and of their own student-teachers colleagues, attending meetings (school, mentoring and informal encounters), assisting in class director duties, participating in school club sport activities, and writing-up planning reports of their lessons and of the practicum training experience in general. The activities in which the pre-service teachers acted on their own initiative encompassed the community work and the participation and organization of school extracurricular activities. As for the tasks for which they were fond of carrying out, teaching was the most proclaimed duty, followed closely by the community work and the school extracurricular activities, namely festivities, the school club sport projects and school trips. Finally, the participants outlined the work related to teaching unfamiliar sports (dance, swimming, badminton, orieenting), evaluating students and being evaluated by the supervisor teacher, as well as the leadership of school extracurricular activities, as the most defiant and unease tasks they had to respond to as novice-teachers.

The studied group of student-teachers attributed significance to their daily tasks. Observing classes from other teachers (novice or experienced) allowed them to capture distinct teaching styles and ways of conducting a PE class. It also enhanced the possibility of seeing themselves performing in those lessons since most of "the mistakes and good deeds done by others are

usually our own too". In addition, the class observations enacted moments of dialog and reflection upon the pre-service teachers' own actions. Finally, being observed by the supervisor led them to improve their teaching abilities through constantly directing their actions further to particular qualities. School meetings offered opportunities to interact with people, to share experiences and to develop a better understanding of the school culture and of the meaning of being a teacher in general and, particularly, a PE teacher. Likewise, their participation in school extracurricular activities (distinct learning areas activities, school trips and sport clubs) intensified their training as teachers out of the roles they exercised in each of these initiatives. Moreover, it promoted further interaction and closure opportunities between the pre-service teachers and their students, their teacher educator and school staff in general. Occasionally, it also diminished the school-parents division through the participation of the later in sport community activities. Overall, these events developed their sense of responsibility and prepared them for their future extra-class functions as teachers. The evaluation process was considered as one of the most challenger tasks as the student teachers were afraid of not being completely fair with their pupils. Finally, teaching represents the most valued task for the participants and the one they were more committed to since it constitutes the essence of being a teacher. In this regard, the pre-service teachers studied unacquainted sport thematics, planned carefully their classes, and employed distinct strategies and instructional models in order to bind the students to their lessons.

Conclusively, all of the reported tasks represent what the pre-service teachers most valued in their practicum training, and those practices which better furnished their development as teachers. Invariably, the practicum training also contributed to the configuration of the novice-teachers' professional identities. As Hoi Yan (2008) underlines, one of the ways of understanding the teachers' professional identity is through their roles and practices. In this regard, Grossman, Hammerness, and MacDonald (2009) refer that teachers' professional identities are developed in the process of learning to practice during professional education. Olsen (2008) also supports these views, and Flores and Day (2006) add that the pre-service training, alongside issues of school culture and leadership emerge as strong mediating influences in shaping and reshaping the new teachers' identities over time. Similarly, Schepens, Aelterman, and Vlerick (2009) emphasised that besides demographics, personality traits and experience, the teacher preparation context is considered as a crucial aspect in professional identity as well. In connection with this, ten Dam and Blom (2006), Shehu (2009) and Smith (2010), bring forth the concept of "situated learning", also known as "school-based teacher education" and "community of learners", as the process whereby student-teachers gain entry to professional identity. Specifically, they learn how to be a teacher and what it means in a localized and apprenticeship relationship-based community of practice (the tutor group itself), where culture and values are shared. As a result, Devos (2010), Meijer, De Graaf, and Meirink (2011) and Timmerman (2009) emphasise the teachers-educators' role model and the mentoring process itself as key influences on student-teachers' views and motivation on teaching and in the context of the construction of their professional identities. Urzua and Vasquez (2008), specify that mentoring meeting represent discursive spaces in which novice-teachers have an opportunity to verbalize plans, predict outcomes, consider possibilities, and reflect on their evolving pedagogical practices. Sutherland, Howard, and Markauskaite (2010) call attention to the importance of reflection in supporting the continued professional learning of pre-service teachers, i.e. the transition from student to teacher develops when pre-service teachers interpret and reinterpret their experiences through the process of reflection. Moreover, Mantei and Kervin (2011) stress the literature, personal experiences and, particularly, the experiences of others as invaluable sources for the teachers' professional identity development. Finally, ten Dam and Blom (2006) report that learning to participate in social and cultural practices with

regards to education (e.g. school extracurricular activities) is assumed to be crucial for developing a professional identity as teachers as well.

As to Gee's (2000) theoretical framework, images exteriorized traces of an institutional- identity, strongly connected to the imposed practicum tasks (e.g. Figures 2, 3, 5, 6 and 7); an affinity-identity, linked to the actions and events shared in practice of relational groups (e.g. Figures 3, 8, 9, 10, and 25); and a natural-identity, conveyed by the "self-initiative" and "fond of" tasks (e.g. Figures 11, 12, 19, and 20), out of the participants' discourses. With regards to the discourse-identity, this was predominantly forged as the pre-service teachers' constructed a collective meaning, prompt by the focus group, with regards to the teachers' roles, responsibilities and commitments, as well as meanings addressed to the profession.

The first limitation addressed to this research relates to practical issues, such as lack of equipment for, and knowledge in producing the visual material. Specifically, not all of the participants owned a camera and had the skills to take a picture, which explains the student-teachers' self-complains regarding their difficulties in gathering data (images) and in appearing more often in the photographs. The overload of tasks to fulfil for the practicum training also hindered the participants' commitment to this piece of research. Another restriction relates to the mode of collecting data which depended solely on images and on an autodriven collective interview, which leads us directly to the recommendations for further research and practice.

Future research would undoubtedly be enriched if (a) a camera was given to each participant to take pictures of people and the things that are most important for them in the practicum training during a larger period of time – ideally, during the entire training period; and (b) "first hand data was obtained through the researcher's direct experience of the setting being explored' (Brown & Dowling, 1998, p. 36), for instance by observing the pre-service teachers' daily practices. This would involve adopting "a researcher-created visual data", instead of "a respondent-generated visual data" paradigm (Phoenix, 2010, p. 95). Both suggestions would assist in gaining further insight to the world of the pre-service teachers' professional and identity development, as well as to better inform the teacher training programmes.

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Collaborative cultures and learning communities in teacher education

DEVELOPING A LEARNING COMMUNITY: A COLLABORATIVE STUDY OF REFORM OF HIGHER EDUCATION PROFESSIONAL DEVELOPMENT

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Abstract
In newly formed democracies, the last decade has seen large-scale reforms of public educational systems, including planning accessible professional development of higher education faculty. Unfortunately, although well-meaning, such efforts are often ineffective, relying on traditional teacher-centered pedagogy that emphasizes passive rather than active learning (Altbach, Reisberg, & Rumbley, 2009**;** Anderson, 1997; Heyneman, 2002; Tessema, 2007).
This paper presents the findings of a project involving creation and implementation of a professional development community in Mongolia that responded to the question, "How can higher education professional development reform provide individual support for faculty scholarship, build a sustained and supportive network for active learning, and model and transmit innovative approaches to learning for teacher education?" Specifically, the investigation examined (a) the establishment of a professional development learning community in the country's only university that trains teachers and (b) the use of a collaborative project to support educational reform as an agent rather than the object of change.

Keywords: faculty professional development, higher education, active learning

Introduction

This study addressed the social context of the global higher education reform movement based on the beliefs that (a) systemic change is contingent upon preparing an educated citizenry to accept the responsibility of taking leadership roles and (b) only by educating its citizens to think critically and become problem solvers can a nation grow educational leadership internally. Such a sociocultural approach is based on the assumption that learning and motivation are socially and culturally situated.
According to Heyneman (2002), "creating an effective and excellent education system in an open society and multi-party democracy is significantly different and profoundly more complex that it was under the Party/State. The emphasis must shift to the complexities of learning as distinct from the context of teaching" (p. 2). Specifically, for exploring pedagogical practice in higher education, Heyneman and others (Bain, 2004; Weimer, 2002) suggest that the complex organization of teaching and learning needs to be within a social environment involving the use of strategies which maximize opportunities for interaction between the teacher and learner rather than solely using the dominant voice of the teacher. Thus, the focus becomes one for using strategies that are frequently in opposition to transmission methods. Transmission methods include formal, didactic, expository and teacher-centered approaches, such as lectures. In contrast, learner-centered teaching offers opportunities for interaction between teachers and learners, amongst the learners themselves, as well as between learners and the subject.

Context of the project

The project systematically investigated the building of a faculty learning community in Mongolia's only university that trains teachers. Based on educational research, both a participatory and an educational reform model were selected, positioning the participants as primary agents rather than passive objects of change (Fullan, 2011). Fullan and Hargreaves (2008) emphasized the importance of using such strategies that focus on involving stakeholders in coherent change that makes sense to all involved in the process and prioritizes problem solving that focuses on the most crucial areas for improvement. Further, Fullan and Scott (2009) theorized that in higher education, change-capable cultures must advocate for strong partnerships and relationships within the academy. Finally, Sarason and Fried (2002) suggest that at the center of any educational reform should be a concern for the main players in educational institutions: the learners. Sarasson and Fried further state that any plans that cannot account for the learners in their center role as change agents will fail.

This collaborative study created a dynamic opportunity to introduce such theoretically based processes to a previous marginalized community with limited access to a variety of methodologies. Discussions within the professional learning community supported significant and specific foci on educational reform in the use of learner-centered pedagogy (Bain, 2004; McCombs, 2004; Weimer, 2006).

Setting and participants

The project involved collaboration among faculty for the learning community design with support of a non-native scholar to (a) create and implement a shared vision, (b) work with them to inquire into their practice, and (c) explore research-based methodology to enhance student learning.

Six faculty members met as a working team on a monthly basis to discuss emerging professional development learning community needs, which included developing appropriate topics based on faculty interest. As a result of this planning, 10 monthly faculty professional development meetings were held during the academic year for 35 faculty members.

Naming the project: the Green Apple Community

At the first professional development faculty meeting, at which the goal was to come up with a name for the project, the non-native scholar told the story of a "Green Apple" painting. After studying the painting for several months, a friend of the painter asked about the symbolism of the apple painting. The artist explained that in the painting, the green apples suggested the process of ripening and moving toward an optimal prime time, whereas the red apples signified that the growth process had been accomplished. The artist concluded, "To me, the painting says, 'As long as you are green, you are growing, and when you ripen, you are beginning to become rotten.' The friend of the painter understood this to mean that only through continuing to be a learner, rather than one who considers themselves completely knowledgeable, can one continue to develop.

After hearing this story, participants unanimously chose "The Green Apple Community" as their name to represent their interest in "always staying open to new ideas" (Field Notes, 2010).

Description and activities of the professional development meetings

Wenger (1998) describes professional development meetings in higher education as communities of practice. Faculty professional development meetings are described in the literature as more than seminar series, formal committees, project teams or support, self-development groups. McGill and Beaty (2001) and Cox and Sorenson (1999) state that several aspects consistently included in higher education professional development programs are: a) meetings at a designated time and in an environment conducive to learning; b) participants

operating by consensus, not the majority; c) the community developing its own culture; d) activities including complex teaching problems with solutions discussed openly; and e) focusing on a team approach.

Examples of the topics for the two hour 10 professional development meetings included, but were not limited to, *constructivist thought, student-centered assessment* and *small-group problem-solving*. The seminars were conducted in a meeting room with long tables with groups of six to eight faculty at each table. Each seminar had an agenda of beginning with a brief introduction of the topic by the lead researcher. The introduction by the lead researcher presented information about the theme. The remainder of the hour and a half of each session included a variety of exercises in which the community responded to the theme. These exercises included small group activities in which participants applied themed prompts to their own experience in projects, all with subsequent presentations to the entire community. For example, planning an ideal student-centered environment was a project for one session. The presentations included a goal statement of how each participant would begin implementation.

Comprehensive field notes were recorded during the sessions and seminar activities were video recorded for use by the working team for planning and for analysis by the non-native scholar as the lead researcher. Reflections written by the faculty community provided additional insight into participants' responses to activities.

Theoretical and practical insights considered

After serving as a Soviet satellite for 70 years, Mongolia represents an emerging democratic nation characterized by rapid political transitions, awakened nationalism, and other forms of potentially positive, but often challenging, change for all institutions, including higher education (Kaye, 2007). Since 1992, when a national constitution created a democratic form of government, many reforms have been implemented and directed by foreign non-government organizations (NGOs) in Mongolia (Bedeski, 2006). However, theorists and researchers such as Allerdyce (2011); Bakhtin (1981); Bruner (1996); Dewey (1944); Gunn (1988); Reich (2007) indicate that reform activity in education within emerging democracies must be processes that are inclusive, imbedded in, and owned by the culture itself. According to Bruner, "Learning in its full complexity … involves the creation and negotiation of meaning in a larger culture, and the teacher is the vicar of the culture at large … a major task for any effort at reform … is to bring teachers into the debate and into the shaping of change. For they are the ultimate change agents" (p. 84).

A dialogic theoretical framework for designing a higher education professional development reform model supports faculty to think critically and become problem-solvers in their own right so they can grow as educational leaders of their nation rather than continuing to depend on NGOs (Ginsburg, 2008). In other words, such a framework shifts the focus from outside perspectives to a more culturally sustained interactive model.

This dialogic basis for the theoretical framework gave the project teacher education faculty participatory and collaborative opportunities to think critically and engage in the role of problem-solvers in order to develop new pedagogies for the education of future teachers. As Reich (2007) suggested, "One of the preconditions of becoming an educator/teacher is precisely the ability to bear the precariousness—the contingencies and ambiguities—of learning and to resist the temptation of all too readily taking refuge only in stable orientations" (p. 22).

A framework supporting tolerance of uncertainty became helpful in developing the professional development community as a way to move away from an approach that was predicated on a hierarchy of knowledge holders wielding power over those who historically were denied access to knowledge. The underlying perspective presented values of interactivity and tools for constructing meaning so faculty trained in the model can support their students to develop critical thinking and creative problem solving essential for self-governance, both as educational

leaders and as citizens. For example, (a) within the professional development community, exploration of meaning included conversations about previous experiences for knowledge construction, problem-solving, experimentation, and discovery learning; and (b) the faculty-created term *Green Apple* referred to the commitment to growth, rather than becoming "red and beginning to become rotten" (Field Notes, October 2010).

A framework of dialogic learning and learner-centered pedagogy in reform

In the mid-1990s, a global paradigm shift in higher education moved from traditional methods of instruction that focused on teachers' behavior and the teaching process to the dialogic learning paradigm that centered on the learner's behavior and the learning process (Angelo, 1997; Barr and Tagg, 1995). This shift is illustrated by comparing the themes of two national conferences organized by the American Association of Higher Education (AAHE). In 1986, its national conference theme was "Taking Teaching Seriously"; in 1998, the theme was "Taking Learning Seriously".

Dialogic learning

The concept of dialogic learning has been linked to various perspectives and disciplines, such as the theory of dialogic action (Freire, 1970), the dialogic inquiry approach (Wells, 1999), the theory of communicative action (Habermas, 1984), the notion of dialogic imagination (Bakhtin, 1981), and the dialogical self (Soler, 2004).

Flecha (2000) describes the principles of such dialogic learning processes as based on the following principles:

1. *Egalitarian Dialogue.* All participants are part of the learning community and can make a useful contribution.
2. *Cultural Intelligence.* The learning community has respect for each person's experience in any dialogue.
3. *Transformation*. The process of learning is respectful of relationships and is considered a transformational experience rather than solely one of adaptation in acquiring new knowledge.
4. *Instrumental.* Knowledge is negotiated, collaborative and encourages questioning of established structures.
5. *Creation of Meaning.* Learning is considered as a part of building personal and social identity.
6. *Solidarity*. All opinions of individuals in the learning community are considered and valid in building knowledge.
7. *Equality of Differences.* Differences in points of view are a source of richness.

Further, Shor and Freire (1987) state that dialogue is not a mere technique to achieve cognitive results, but rather a means to recreate knowledge and the process of learning. Dialogic teaching is a mutual process where the leader can introduce critical problems for inquiry and together with the participants engage in a collaborative process.

Learner-centered pedagogy

The new learning paradigm suggests a different starting point for improving higher education professional development that begins with a focus on the learner and what the learner is doing in the classroom, rather than focusing on what the instructor is doing. Thus, in the learner-centered paradigm, effective teaching is defined as facilitating learning and, ultimately, promoting positive learning outcomes.

Implications

The major implications for using dialogic process and learner-centered pedagogy as the new learning paradigm for the project included:

1. Instead of delivering information-loaded lectures to the learning community devoted exclusively to the coverage of content, learner-centered instruction involved engaging participants in learning experiences are designed not only to enable them to learn the *content*, but also to learn *process*—the process of learning how to learn.
2. The participants' roles changed from being passive recipients into which the instructor "deposits" knowledge—the "banking theory" of education (Freire, 1970)—to that of engaged learners and active agents in the learning process.
3. The leadership role expanded from that of a knowledge-laden professor to that of being a learning mediator or facilitator.

The use of dialogic principles and learner-centered pedagogy shifts the focus of school reform from restructuring to reculturing (Louis, 2006). Professional learning communities aim at multiplying learning contexts and interactions with the objective of reaching higher levels of development (Vygotsky, 1978). A learning community is an ongoing process used to establish a culture that develops teacher leadership explicitly focused on building and sustaining educational improvement efforts. Through participation in professional learning communities, higher education faculty can enhance their leadership capacity while working as members of ongoing, high-performing, collaborative teams that focus on improving student learning (Rentfro, 2007).

Problem approach and analysis

Methods of inquiry

A sociocultural approach formed the basis of this mixed-methods inquiry predicated on the underlying assumption that learning and motivation are socially and culturally situated (Gardenfors, 2007; Pressick-Kilborn, Sainsbury, & Walker, 2005; Salili & Hoosain, 2007). The research design encompassed an investigation of implementation and participation in activities of both the professional learning community design process and subsequent activities.

Specifically, the study addressed the question, "How can higher education professional development reform provide individual support for faculty scholarship and build a sustained and supportive network for active learning?" Both quantitative and qualitative data were collected to bring together the strengths of both, to compare, validate, and corroborate results.

The approach utilized descriptive and exploratory strategies through an iterative methodological triangulation to support a base for garnering in-depth information on the faculty members' perceptions of the development and implementation of their learning community. Iterative methodological triangulation can be broadly defined as synthesis and integration of data from multiple sources through the three processes of: 1. collection, 2. examination, and 3. comparison. The approach incorporated surveys, field notes, video recordings, in-depth semi-structured focus groups, and individual interviews with participants, as follows:

- A faculty survey developed by the volunteer faculty work team requested information about previous higher education learning community opportunities, recommended topics to be covered in the learning community meetings, suggestions for participatory activities, volunteering, and ideas for learning community assessment.
- Semi-structured interviews explored the sociocultural dynamics of the content the ten meetings and the process of implementing the learning community.
- Researcher field notes were taken throughout the process by all members of the working team.
- Learning activities were video recorded to enable detailed, ongoing analysis of interactions and the monthly seminar content.

- Reflections written by the participants about personal aspects of learning and teaching, as well as semi-structured interviews and focus groups, provided information about individual reactions and responses.

Data collection

The methodological triangulation was sustained throughout the learning community process (lasting 8 months) as well as data collection 6 and 12 months later of (a) faculty application of learning within their own classrooms and (b) additional learning community activities.

Data were collected over time in relation to both social interaction and individual functioning within the sociocultural context of the Green Apple Faculty Professional Development Community. Data collection included videotapes of community activities, work products, and written documentation. Additional information included individual interviews and focus groups to explore personal meaning. The evidence also included scholarly literature, government documents, and planning meeting minutes to facilitate methodological triangulation and strengthening of the conclusions.

Analysis

Analysis of source data was guided by five major purposes: (1) triangulation; (2) elaboration; (3) initiation (i.e., discovering paradoxes and contradictions that lead to a re-framing of the research question); (4) development (i.e., using the findings of both qualitative and quantitative data to support each other); and (5) expansion (i.e., seeking to expand the range of research by using different methods for different inquiry components).

The mixed-methods data analysis of sources incorporated Onwuegbuzie and Teddlie's (2003) and Creswell's (2008) conceptualization, as follows:

Data transformation. Quantitative data were converted into narrative data to be analyzed qualitatively (e.g. qualitized).

Data correlation. Quantitative data were correlated with the qualitized data.

Data consolidation. Quantitative and qualitative data were combined to create new data sets.

Data comparison. Data from the qualitative and quantitative data sources were compared within the sets

Data integration. As the final stage, quantitative and qualitative data were integrated into a coherent whole for coding.

The coding process was derived from grounded theory (Strauss & Corbin, 1998), with coding relating to the research question. Coding can be defined as the analytic process to identify concepts and properties through comparative analysis (Pandit, 1996; Strauss & Corbin, 1998; Goulding, 2002; Gasson, 2004). Based on the emergent themes, resulting data were summarized and framed into principal conclusions and data-saturated themes. These themes are discussed in the next section.

Outcomes

Successes

Research indicates that all national reform programs are not uniform in terms of the success of their implementation (DeYoung, 2002; Gardenfors, 2007; Heyneman, 1995). However, the analysis guided by the formation of coded categories served as a basis for forming conclusions that include the following for successes for this project in response to the research question, "How can higher education professional development reform provide individual support for faculty scholarship, build a sustained and supportive network for active learning, and model and transmit innovative approaches to learning for teacher education?"

1. Four aspects of educational reform were important.
Origins. Sources of reform for professional development communities in higher education were found to be initially proposed by the national government, with varied 1. roles of stakeholders in originating the reform and 2. Assumptions about education and reform (explicit or implicit).
Approval. An investigation of the reform concept was needed to review its initial proposal and actual implementation.
Implementation. Attention to the steps taken to implement the reform was exemplified by the model of implementation and informed *the* process.
Effects. Evidence of concerns were ongoing for the effects of the implementation, intended or otherwise, with particular attention to how the outcomes of the Green Apple Learning Community affected student outcomes and learning processes in the university.

2. The emphasis on learner-centered content informed the building of the community.
The learning community became a dialogic model, with requests by the faculty for facilitated discussions and practical experience in learner-centered problem-solving and decision-making activities. From this strong response to this learner-centered pedagogy, the researchers concluded that Mongolia's higher education system could benefit from further investigation of support for integrating interactive teaching models into university classrooms.

3. Building the professional learning community involved an ongoing reflective process by the entire learning community.
This process could include (a) a working team model for analyzing each meeting for the development of future meetings; (b) decentralization of community responsibility for a specific higher education program in order to define specific meaningful topics; (c) a strong community-building element as a part of each meeting with modeling of learner-centered pedagogy in all activities; and (d) encouragement of communication among faculty between meetings through planned activities.

4. Exploration of the paradigm shift from teacher- to learner-centered instruction was an important reform topic.
Pedagogic approaches that promote active learning were the most requested content for the learning community meetings, in particular, group work, discussion forums, role-playing, and hands-on projects. The most requested approaches to be investigated for participants' own classrooms included:
a. Well-structured student-centered activities that involve students with the course content through discussions;
b. Building on topics that are culturally relevant to students' lives;
c. Engaging students in higher order thinking tasks;
d. Rubrics and formative assessment.

Challenges
This study made it clear that issues related to educational reform and change are not simple. Fullan (1993) indicates that educational change is a "journey of unknown destination, where problems are our friends" (p. viii), International development and support is important, but it cannot take the place of previous experience for higher education faculty tasked with building new academic understanding. Additionally, our model showed that ongoing tolerance for uncertainty was significant and central to developing the scholarly community.

Study as an example of practice in the field of teacher education and professional development of teacher educators

Study results centered on the following areas of successful implementation: (a) development of a working team model; (b) decentralization of responsibility; (c) emphasis on community building; (d) learner-centered, constructivist curriculum design; and (e) encouragement of communication between faculty meetings through planned activities, including a sustained method for assessment and evaluation. In summary, the findings of this study support a democratic and dialogic theoretical framework as the foundation for a workable education reform model—a sustainable model for educating teacher educators to become the change agents on whose leadership their nation's advancement depends.

Lessons learned and next steps

The collaborative study created a dynamic opportunity for analytically based research on previously marginalized scholarly communities who have limited access to the study of a variety of methodologies, both for their own scholarship and for classroom pedagogy. The kind of analysis undertaken in this project supports significant and specific foci for educational reform work led by scholarly communities using learner-centered pedagogy.

The study focused on the social context of Mongolia's educational reform movement. The theoretical framework involved the role of ideology, values, and beliefs in the implementation and direction of higher education professional development reform. This is important because systemic change within reform is contingent upon preparing an educated citizenry who is ready to accept the responsibilities of a democratic leadership. Only by educating its citizens to think critically and become problem-solvers in their own right can a nation grow educational leadership internally rather than continuing to depend on NGOs and, thus, be disproportionately influenced by foreign constructs.

Therefore, the findings of this study support a democratic and dialogic theoretical framework on which a workable education reform model can rest—a sustainable model for educating Mongolia's teachers and students to become the change agents on whose leadership their nation's advancement depends.

As Innes (2007) pointed out, additional research is needed to analyze models that use dialogic framework to better understand the inherent levels of reflection. For those of us interested in developing in a dialogic model for professional development reform, many questions are still in need of an answer, including: Does analysis of such dialogues contain evidence of growth in the level of reflective thinking? What are the direct and indirect connections between the quality of dialogues and the quality of learning? In general, "additional research is needed that focuses more sharply on understanding how the *transaction* between the sociocultural and cognitive aspects of learning operates in the construction of useful knowledge" (p. 11).

Democratic school cultures are those where, in Bruner's words, "being natively good at something implies, among other things, helping others get better at that something" (1996, p. 82). As revealed in this study, it is indeed possible to teach the skills that are needed for democratic educational leadership in the classroom and for reform through the development of a professional learning community such as the Green Apple Learning Community.

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TEACHER EDUCATION AS PROFESSIONAL EMPOWERMENT AND EDUCATIONAL CHANGE: THE ROLE OF LEARNING COMMUNITIES

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Abstract
Professional empowerment towards educational change can be enhanced through critical inquiry in the service of democratic values, and learning communities may achieve this goal. The GT-PA (Grupo de Trabalho-Pedagogia para a Autonomia/ Working Group-Pedagogy for Autonomy) is a learning community that integrates schoolteachers and academic teacher educators who have worked together in promoting pedagogy for autonomy and disseminating educational knowledge. We will discuss the extent to which this community promotes empowerment towards democratic educational change, on the basis of interviews to five of its members who act as teacher educators at university or school contexts. Although these interviews are part of a larger study, preliminary results seem to indicate that participants value and experience processes of empowerment within the community.

Keywords: teacher education; empowerment; educational change; learning communities

Introduction

Education First, a five-year United Nations initiative to bolster global action on education, puts forward three priorities: 1) put every child in school; 2) improve the quality of learning and 3) foster global citizenship, which calls for "transforming education so that it can assume its central role in promoting democratic values, peaceful coexistence, responsible citizenship and sustainable development" (UNESCO, 2012a, p. 1).

On the other hand, the UNESCO strategy on teachers (2012-2015) defines three priorities (UNESCO 2012b, 3-5): 1) bridging the teacher gap, 2) improving teacher quality and 3) informing the global debate about teaching. It states that "teacher educators (trainers) have to be supported to upgrade their competences, to ensure that their professional profiles and code of conduct are in line with the latest developments in educational sciences and research. In the same vein, teacher trainers need to be connected to national and international networks of communities of practice" (p. 4).

These are two examples of important movements that put (teacher) education centre-stage and may counteract neoliberal forces that push it back-stage or appeal to its assimilation by the global economy and info-digital market agendas. If we believe, as Bauman (2009), that we are living a unique educational moment which lets us envision radical educational changes, then we must pay attention to how education has been progressively perceived as a main assuring device of a nation's qualifications for economic competitiveness. Concerns with education for sustainable development (UNESCO 2012c), quality improvements, entrepreneurship (Curth, 2011), external assessments, and other "edumometer technologies" (Corbett, 2008) highlight a growing concern with outcomes assessment which may be dangerously reduced to quantitative (Tawil, Akkari & Macedo, 2012), standards-based measurements.

Dealing with competing forces related to emancipatory vs. instrumental education or to (re)schooling vs. deschooling movements (Nóvoa, 2009) seems to depend on which

stakeholders' (learners, parents, teachers, communities, governments, etc.) discourses prevail as "regimes of truth". Even though these discourses have no legal power, they do have symbolic power (Biesta, 2012) and determine educational agendas.
In our work we clearly defend an emancipatory view of teaching and teacher education, and we believe that professional learning communities may promote this view in the service of democratic values. In the following sections we clarify our position and report on data collected from five interviews to teacher educators who belong to the GT-PA (Grupo de Trabalho-Pedagogia para a Autonomia/ Working Group-Pedagogy for Autonomy), a learning community that integrates schoolteachers and academic teacher educators who have worked together in promoting pedagogy for autonomy and disseminating educational knowledge. We will discuss the extent to which this community may promote empowerment towards democratic educational change.

Professional empowerment for democratic educational change
Because education and schooling are one of the main pillars of social-economic and political reform, emancipatory views of education are crucial for democratic transformation because they contribute to more just, critical, eco-sensitive, hopeful and willful societies. Accordingly, teacher education should be guided by those views and support transformative action towards a re(idel)alistic pedagogy, whereby teachers' experiences "shorten the distance between reality (what is) and our ideal (what should be), by extending the limits of freedom and exploring new territories (what can be)" (Jiménez Ray, Lamb & Vieira 2007, p. 55). Teacher education for professional empowerment and educational change challenges prevailing technicist approaches by developing a "pedagogy of experience" (Vieira, 2010) that values a praxeologic epistemology in the (de/re)construction of professional knowledge (Boud, Cohen & Walker 1993; Gomez 2010; Pérez de Lara 2010; Schulman, 1998).
Despite the various understandings of empowerment in education, it usually presupposes a critical-democratic pedagogy for (inter)personal and social change, whose goals are "to relate personal growth to public life, by developing strong skills, academic knowledge, habits of inquiry, and critical curiosity about society, power, inequality, and change" (Shor 1992, p. 15). Through this process, educational actors and organizations "learn to critically appropriate knowledge existing outside their immediate experience in order to broaden their understanding of themselves, the world, and the possibilities for transforming the taken-for-granted assumptions about the way we live" (MacLaren 1989, p. 186).
From this perspective, teacher empowerment is closely related to the development of a pedagogy for autonomy in schools. When autonomy is understood as a social interest and an educational goal, pedagogy seeks to enhance teachers' and students' competence to develop as self-determined, socially responsible and critically aware participants in (and beyond) educational environments, within a vision of education as (inter)personal empowerment and social transformation (Jiménez Raya, Lamb & Vieira 2007, p.1). This requires that teachers develop a critical view of education, manage local constraints so as to open up spaces for manoeuvre, center teaching on learning, and interact significantly with others in the professional community (op. cit., p. 52). Teachers become agents of innovation by counteracting hegemonic "un-educational" ways of viewing education (Biesta, 2012).
Teacher education towards democratic change calls for inquiry on what that goal entails and facilitation of processes that allow teachers to construct their identities as intellectuals and politically engaged educational re-constructionists. Teacher educators need to understand what is needed for "real change towards democratic practices in all institutions where each individual participates on a par with all others (…), where disagreements are debated and resolutions are found that make real differences in the lives of people in the attainment of social justice" (Schostak, 2009, p. 12). This often means that teacher educators will need to be "willing and

able to transform rather than reproduce dominant practices, to challenge rather than conform to given situational constraints", thus contributing to the development of a "scholarship of teacher education that is socially relevant and morally defensible" (Vieira et al. 2008, p. 232).

Professional learning communities

Learning communities or communities of practice are believed to promote personal, social and organizational empowerment (Alsop, Bertelsen & Holland, 2005; Hennink et al., 2012; Servage, 2008; Shulman, 1998; Stoll & Louis, 2007; Stoll et al., 2006; Vescio & Adams, 2006; Vescio, Ross & Adams, 2008; Wenger, 1998; Wenger & Snyder, 2000; Wilson, 1993; Wood 2007; UNESCO, 2012). However, learning communities are also contextually-dependent, dynamic, uncertain and paradoxical phenomena with multifaceted definitions and operationalizations, which highlights their complex and contingent nature (Barton &Tusting, 2005; Ellsworth, 1989; Fielding, 1996; Gruber & Trickett 1987; Riger 1993; Troyna, 1994; Wood, 2007).

Enhancing professional empowerment towards democratic educational change within learning communities is often perceived as a recipe for success. However, we need to problematise this assumption. Learning communities are often presented as a politically correct, straightforward answer to many educational problems affecting schools, when, in fact, they may be informed by divergent educational principles and, in some cases, reinforce existing reproductive practices and values (Barton, 2005; Sergiovanni, 1999; Tarnoczi, 2006) and reduce teachers' "horizons of observation" (Little, 2003, p. 917).

The creation and sustainability of learning communities involve many factors and may reveal existing tensions, even though participants have the power to transform their interpersonal dynamics (Achinstein, 2002; Fullan & Hargreaves, 2002; Grundy, 1999; Levine, 1999; Levine & Shapiro, 2004; Lieberman, 2000; Little, 2012; Orellana, 2008; Stoll et al., 2006; Stoll & Louis, 2007; Tarnoczi, 2006; Vescio & Adams, 2006; Wenger & Snyder, 2000). We try to illustrate the complexity of communities in diagram 1.

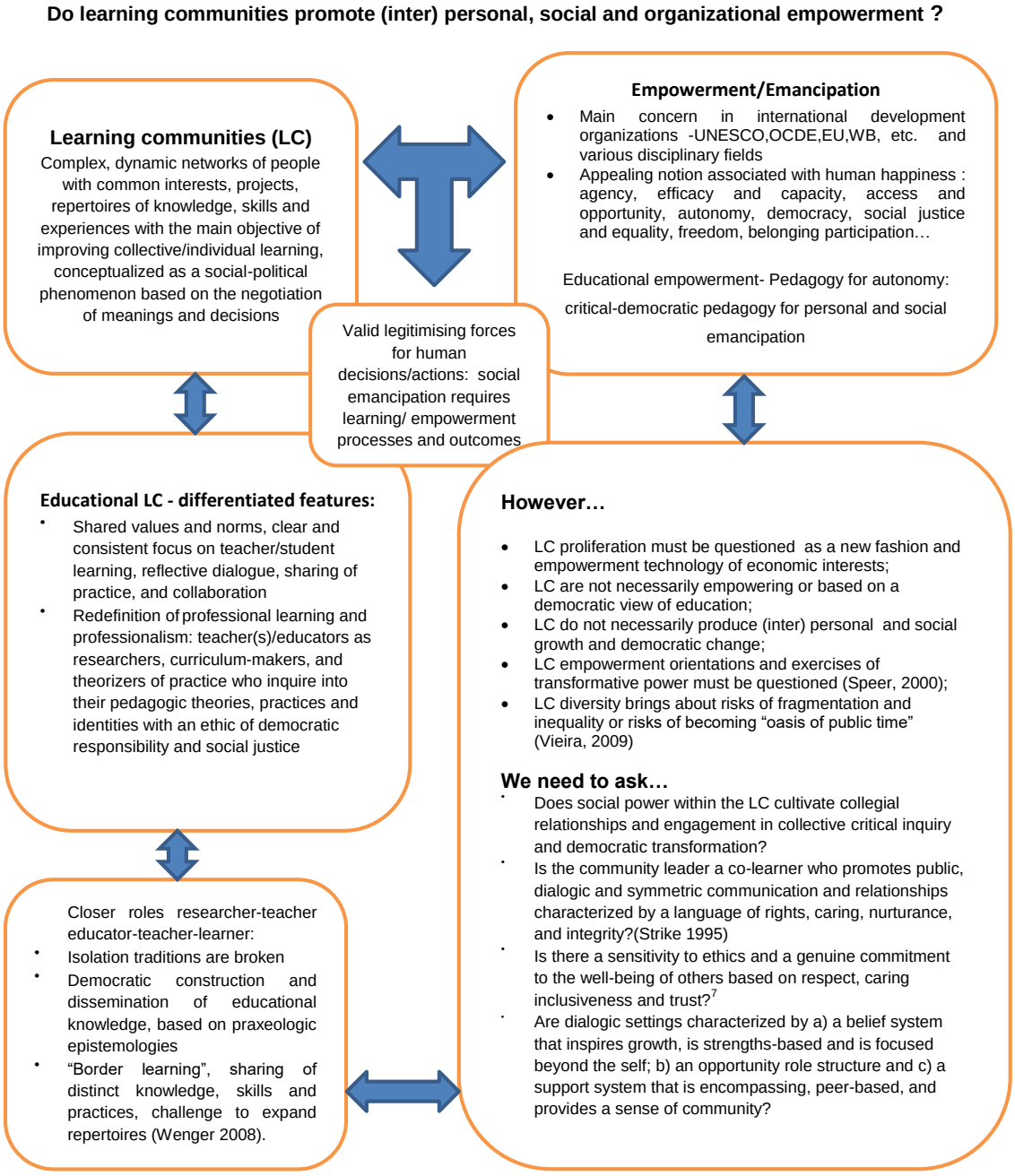

Diagram1: Learning communities and empowerment

Assuming that learning communities take "inquiry as stance" (Cochran-Smith & Lytle 1999, p. 289), paradoxes, conflicts and tensions cannot and should not be avoided or ignored, because they often signal the existence of educational cultures that are more humanist, holistic and democratic. In that sense, "teacher learning is associated more with uncertainty than certainty, more with posing problems and dilemmas than with solving them, and also with the recognition that inquiry both stems from and generates questions" (Cochran-Smith & Lytle, 1999, p. 294). The power of historical and structural forces needs to be acknowledged so as to avoid a teacher-centred view of educational success and failure.

In sum, caution needs to be taken as regards the transformative potential of learning communities and the study reported below seeks to investigate whether and to what extent that potential exists in the case of the GT-PA. Our guiding question is: *Can learning communities enhance professional empowerment in the service of democratic educational change?*

Preliminary answers to this question will be discussed with reference to data from five interviews conducted to teacher educators who are members of the Group.

Investigating a learning community: the GT-PA

The GT-PA

The GT-PA was set up in October 1997 at the University of Minho (Braga, Portugal) and is coordinated by the second author. It followed an in-service teacher development project developed from 1993 to 1996 on Pedagogy for Autonomy, as the participating teachers expressed the desire to continue working with the university researchers/ teacher educators involved in that project. Initially, the Group only integrated language teachers[65] but it is now a multidisciplinary community that integrates schoolteachers and academic teacher educators from various subject areas and teaching levels. Membership is open to anyone interested in autonomy as an educational and social goal.

According to the coordinator, the GT-PA represents a "collective effort to enhance pedagogy for autonomy (…) and to counteract the divorce between schools and universities and develop collaborative inquiry" (Vieira, 2009, pp 270/279). Common assumptions and values within the GT-PA center around the notions of "critical vision" and "transformative intervention", and the Groups' work rests on four core beliefs: autonomy is an educational and professional goal; pedagogy has the power to transform the lives of teachers and learners; democratic university-school partnerships are powerful means of (re)constructing educational knowledge and practice; resistance and persistence are crucial ingredients of professional empowerment and educational change (Vieira, 2003, 2009). The modes of participation, collaboration and professional learning within the GT-PA are flexible, allowing for differentiated engagement in the production of knowledge through diverse forms of inquiry, ranging from dialogue and reflective practice to empirical research. Teaching and teacher education experiences are shared in meetings (about four per year, mostly held at the university and more recently in schools) and conferences (every two years at the university), and also published in various formats.

The GT-PA collective history seems to indicate that university-school partnerships can "play an important role in making the autonomy dream come true in a re(ide)alistic manner" and build a knowledge base about pedagogy for autonomy understood as a "value-laden, ideological process that involves commitment to a democratic view of education" (Vieira 2009, p. 270; Fernandes & Vieira, 2009). As stated by Rappaport, "the goals of empowerment are enhanced when people discover, or create and give voice to, a collective narrative that sustains their personal life story in positive ways. This process is reciprocal, such that many individuals, in turn, create, change, and sustain the group narrative" (1995, p. 795). However, although the Group exists since 1997, no extensive study was yet undertaken to investigate its empowering potential. This was the main reason to design a project along the lines that follow.

The research project

In order to investigate the GT-PA potential regarding professional empowerment and educational change, a PhD project was initiated in late 2011 by the first author, who belongs to the Group since 1997, and has been supervised by the Group's coordinator, the second author. The project objectives are: a) to characterise the nature of the GT-PA culture and dynamics as regards its context, assumptions, action principles, discourses and practices; b) to characterise conditions and mechanisms for the construction and collectivisation of educational knowledge within the community, with a main focus on the collaborative supervision of practices,

[65] This was because the coordinator and other colleagues from the university all worked primarily in language education and the previous in-service teacher development project had been directed to language teachers. At present, more than 100 teachers are enrolled in the Group, although some (about 50%) are more active than others.

pedagogic research and dissemination c) to evaluate the community's impact on the reconstruction of professional theories and practices, namely in the promotion of critical reflection in the service of pedagogy for autonomy, and d) to identify the community's tensions, constraints and conditions for growth.

The study adopts a naturalistic, interpretative approach to educational inquiry and case study research (Guba & Lincoln, 1988; Bassey, 1999). Data were collected from participants' narratives through an initial open questionnaire on personal images of the GT-PA and personal motivations to join it, and 20 semi-structured interviews to members that were selected to represent the Groups' diversity as regards subject area, length of membership, scope of the impact of membership upon professional practices and contexts, and degree of participation in dissemination activities. The study also involves the analysis of teachers' narratives of practice published over the last fifteen years, with a focus on their visions of education and educational change.

For the purpose of the present paper, we looked at five interviews to teacher educators who integrate the GT-PA.

The interview

The interviews, conducted in 2012 by the researcher, were audiotaped and fully transcribed. The interview questions refer to the following themes:

- Initial motivations to become a member
- Present motivations to be a member
- Significant episodes as a member
- GT-PA impact on professional practice and development/learning
- Change in professional context as a result of membership
- Participation in and importance of dissemination
- GT-PA pedagogic culture
- School-university partnership
- Sustainability factors
- Problems, tensions, constraints as a member
- Problems, tensions, constraints in the Group
- Conditions for the sustainability of the Group in the future

The five participants are generally characterised in table 1. They all act as teacher educators (TE) and three (TE 1, 2 and 3) are currently working at school, although two of them used to work at the university (T1 and 3). TE 4 and 5 work in two different higher education institutions.

Table 1. *The interviewees*

Participants	*Membership*	*Professional roles*
TE 1	15 years	Secondary English teacher, previously university foreign language TE (pre/in-service and post-graduate); coordinates a multidisciplinary project in her school to promote teacher development and learner autonomy
TE 2	15 years	Secondary school English teacher, pre-service school supervisor and in-service TE; created and coordinated a multidisciplinary learning centre for the promotion of learner autonomy in her school
TE 3	8 years	Recently retired secondary school English teacher, working as a part-time post-graduate teacher educator at university, previously university foreign language TE (pre/in-service and post-graduate)
TE 4	8 years	University Kindergarten TE (pre/in-service and post-graduate)
TE 5	13 years	University Science TE (pre/in-service and post-graduate)

The main goal of the interview analysis was to identify the extent to which professional empowerment for democratic educational change is evident in the participants' narratives about their experiences as GT-PA members, with reference to four dimensions identified by Jiménez Raya, Lamb and Vieira (2007):

- *developing a critical view of education;*
- *managing local constraints so as to open up spaces for manoeuvre;*
- *centering teaching on learning, and*
- *interacting with others in the professional community.*

These four dimensions were further divided into the sub-dimensions presented in table 2 below (section 4.4), also based on the same authors (op. cit., pp 53-54).

Each interview was analysed so as to find discourse evidence of the dimensions/ sub-dimensions, at first by identifying the corresponding discourse segments and then by summarising the main ideas contained in those segments.

Teacher educators' perceptions of empowerment towards change

In table 2 below we present the dimensions and sub-dimensions of professional empowerment towards democratic educational change, and indicate their presence in the participants' discourse by identifying the number of participants (1 to 5) whose narratives integrate more explicitly the sub-dimensions in question. These are ordered from the most to the least present within each dimension. We also present some teacher educator's testimonies (translated) which illustrate some of issues raised.

Table 2. *Evidence of empowerment towards change in TE discourse*

Dimensions	Subdimensions evident in TE discourse	Nº TE
Developing a critical view of (Teacher) Education	Predisposition for learning about approaches to (teacher) education	**5**
	Seeing (teacher) education as an inquiry-oriented activity	**5**
	Understanding oneself and learners/teachers as agents of educational and social change	**4**
	Encouraging learners/ teachers to be critical towards social and educational values and practices	**3**
	Taking a critical stance towards values and ends of (teacher) education	**3**
	Taking a critical stance towards the educational value of syllabi, textbooks or other pedagogic/training materials	**2**
Managing local constraints so as to open spaces for manoeuvre	Uncovering constraints to professional autonomy	**5**
	Shaping pedagogic/training choices so as to open up possibilities for greater learner/teacher autonomy	**3**
	Involving learners/ teachers in finding creative solutions to problems that affect their learning	**3**
	Compromising between tradition and innovation without losing one's ideals	**2**
	Sharing pedagogic beliefs and concerns with learners/ teachers	**2**
	Challenging school routines and conventions, being subversive if necessary	**2**
	Accepting disagreement, conflict, uncertainty and complexity as dimensions of pedagogic communication and decision-making	**1**
Centring Teaching/Teacher education on learning	Fostering the learners'/ teachers' self-esteem and willingness to assume responsibility for learning	**4**
	Involving learners/ teachers in critical (meta)reflection (substantive and process knowledge)	**3**
	Fostering knowledge of, experimentation with, and evaluation of learning strategies	**3**
	Fostering self/co-management of learning activities (planning, monitoring and evaluating)	**3**
	Fostering negotiation of ideas and decisions with and among learners/ trainees	**3**
	Finding ways to enhance the formative role of (self)/(co)evaluation/assessment	**3**
	Encouraging learners/ teachers to learn how to collect and analyze data on their learning (self-critical and self-focused research stance)	**3**
	Collecting and analyzing learner data so as to understand and improve teaching/learning (e.g. through observation, questionnaires, diaries, portfolios…)	**2**
Interacting with others in the professional community	Sharing own theories, practices and concerns with significant members in the professional/educational community	**5**
	Disseminating experiences and confronting one's voice with others in the professional community	**3**
	Inviting others to help improve teaching and learning (Co/Peer-supervision)	**2**
	Participating in public debate on issues regarding schooling and education in general	**2**

All teacher educators are willing to learn and keep informed about (teacher) education approaches by getting specialized knowledge and discussing private and public theories; develop teaching/ teacher education as an inquiry-oriented activity, thus acknowledging the importance of a critical educational stance and a transformative approach to professional learning; uncover constraints to teacher/ learner autonomy and exercise self-agency in the face of constraints; and share theories, practices and concerns with significant members in the professional/educational community, thus fighting professional isolation, emotional breakdowns and finding spaces for collaboration. They all assume the importance of questioning and problematising theories and practices from an ethical and political standpoint, recognizing their role as facilitators of empowerment and transformation. Close links between a critical view of education and autonomy are established, as they all express the belief that pedagogy for autonomy fosters lifelong competences such as social responsibility, self-determination and criticality.

The Group tends to be seen as a democratic environment where the teachers' work is valued and supported:

"The fact that [in the GT-PA] each one may choose the work one finds relevant in one's context values the teachers' work greatly, because there isn't a top-down academic imposition but a position that each one personally adopts. Therefore there is coherence between the defended pedagogic principles [in the Group] and (…) our work, be it academic research or simple pedagogic experiences (…).

The fact that we know we aren't alone, we aren't isolated, that… the group gives us the feeling of comfort when things get worse or when we feel emotionally shaken by any reason (…), we know that we have people there that inquire more about things and that can help us deal with these situations." TE1

Democratic and supportive forms of leadership appear to enhance teacher empowerment for educational change as well as university-school partnerships, as is pointed out by a university teacher educator who helps coordinate the Group's activities:

"The group's social relevance has to do with the fact that we value the teachers' practices, making them feel that what they do is useful, that it is possible to learn with what they do and that they also learn with what they do. It is a way of motivating them to innovate their practices and to follow the evolution of knowledge and society in general. Valuing the teachers' work implies a non-hierarchical relationship. Even though it exists, and it has to exist, the coordinator must be a very enthusiastic person, able to transmit that enthusiasm and capable of finding some usefulness even in the minimal tasks, which sometimes seem insignificant, and able to transmit some security to teachers who are developing their work, thus making a connection between schoolteachers and university teacher educators possible." TE5

Even though all participants seek to develop autonomy in their own professional contexts, only two describe strategies aimed at implementing broad institutional changes – creating a school learning centre based on principles of a pedagogy for autonomy, involving the collaboration of the school community (TE2), and creating a multidisciplinary learning community at school focused on a pedagogy for autonomy, inspired by GT-PA itself (TE1). The following testimony comes from TE1, who worked as a teacher educator for some years at the university and is now working in a secondary school, where she seems to face greater challenges than before, when her convictions and practices seemed more "natural":

"Now I have to make a greater effort to keep that optimism and that strength to go on struggling against installed practices and find ways of envisioning education in a more subversive way. (…) I still feel the need to do the exercise of situating myself more often and to keep reminding myself that I have connections and that I can't give up some of the convictions and pedagogic

practices I have been involved with [at university] .(…) It isn't that natural anymore. I have to stop now. I have to think, analyse and see where I am going. Am I going where I really want to or am I going where they want to take me? I feel the need to do that exercise many times." TE1

Working contexts are perceived by all teacher educators as being adverse to democratic change, in deep contrast with their perceptions of the GT-PA culture. The GT-PA is seen as a privileged space where they can share their theories, practices, and concerns. They feel comfortable disseminating their experiences in the Group because they feel safe and challenged to confront their ideas regarding schooling and education in general. However, as the same university teacher educator says, the gap between the Group and working contexts may appear insurmountable:

"There is a big gap between the group's ideology and what goes on in my professional context. In terms of practices I think there is also a big gap. The group has a culture of cooperation, teamwork, and at the university that culture does not exist. I feel that teamwork culture with a few colleagues who don't belong to my disciplinary group. (…) If we consider my working context as a relationship among professionals, there isn't [any impact of group membership in the professional context]. There is no openness for that to happen." TE5

The same seems to occur in schools. For the participant below, a schoolteacher who has been involved in pre/-inservice teacher education for a long time, sharing experiences within the GT-PA is essential for collectivising professional knowledge, something that appears to be impossible within disciplinary school departments where a collaborative learning culture is seen to be missing:

"I think it is very important that teachers disseminate their work. For a long time I did things for myself, I saw the results, the learners saw them, some liked them, but I didn't give other teachers the change to know about it. One of the reasons is that disciplinary groups are very complicated and I had the impression that if I presented something there they would think I was boasting and I didn't want to get upset with that. (…) That is why teachers don't learn much in the disciplinary groups and collaborative work isn't effective. They want it to be but it isn't. Disciplinary groups who have really valid collaborative work are very rare either due to people's insecurity or jealousy, or for other reasons which I don't understand." TE2

Empowerment for change is related not only to dissemination within the Group but also to publication for wider audiences. However, publication is not part of the teachers' working culture, and academic standards for publication often dismiss professional writing:

"For me it [disseminating the teachers' work] is important for the scientific community to mobilise it. I think that for us, university teachers, publishing here and there is normal. We have to. I think a schoolteacher doesn't have that culture. That's my view. When I published an article with my student teacher I recall she was absolutely thrilled because she saw her work there and, for her, getting published means realising that her work is valuable, it has quality and it won't be forgotten (…). For schoolteachers, publishing their work may sound inaccessible, but it isn't. The problem is that the academic community imposes certain rules. It's an attitude of arrogance. They determine what is or isn't valid according to their own will." TE5

The issues raised by the participants show that the GT-PA goes against the grain by challenging dominant forces as regards teacher agency in the production and dissemination of professional knowledge. Schools and universities are pictured as non-democratic settings where constraints to professional empowerment and educational change abound. On the contrary, the GT-PA appears to be a space that promotes knowledge, willingness, ability, action and passion in the search for significant (inter)personal learning and democratic change. According to one of the interviewees, the Group has the ultimate mission of struggling for a better society:

"What we all want is to promote an education that values people and that makes them more… that makes them more active and valid citizens. For a society which we also wish to be better.

So, there's a mission. I think we have a mission. (…) The idea of hope has to do with this vision, right? If we want to build something for the better we must have that hope. I think the group has that mission which isn't just for oneself (…) because we know that we all have an important role in our context as educators, that is, as teachers we realise that socially we have an important role and that our action, socially and ethically and so on, can make the difference in our more or less restricted society, that is, at school, at university, in people's lives (…) Maybe this is what makes us a community." TE1

Concluding remarks

Identifying whether, in what ways and to what extent professional empowerment for democratic change is evident in the teacher educators' discourse and trying to relate that to the GT-PA is far from easy. Notions and perceptions of empowerment and democratic change are highly subjective, and the participants' views and beliefs relate to various facets of their professional histories, not just to the fact that they belong to this community. Nevertheless, it seems that the ideas expressed in the interviews are close to our analytic framework, which is deeply associated with the assumptions and purposes of the Group as described above. Further analyses need to done at a later stage of the research process before we draw more reliable conclusions.

The preliminary findings call our attention to dangers and pitfalls of learning communities, as they may "have the effect of creating oases of public time" (Vieira 2009, 279). In contrast with professional settings, the GT-PA appears to represent the only site for personal/professional sharing, challenge and support, for true collaboration and for self-fulfillment. This points to the risk of participants minimizing the importance of professional cultures as sites for human and professional growth and the need for personal investment in transforming those cultures.

The study needs to shed further light on the empowering and transformative potential of this community, especially as regards the following questions:

What can be done to maximize participants' agency in professional contexts that are adverse to teacher empowerment for democratic educational change?

What role can university-school partnerships play in legitimizing the teachers/ teacher educators' role as critical intellectuals, educational inquirers and co-constructors of valid educational knowledge and social change?

By focusing on these questions, we hope to deepen our understanding on the value and limitations of learning communities as sites for in-service learning towards empowerment and change.

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COLLABORATIVE CULTURES AND PROFESSIONAL DEVELOPMENT OF TEACHERS

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Abstract
Literature has demonstrated by consensus, not only that teachers learn from each other but also that learning together is developed in several formal and informal circumstances. While strengthening a collaborative culture to bring benefits to the educational communities, it requires a large number of personal and political negotiations, and represents a profound change within the organization and social structure of the traditional school.
This study aims to increase knowledge about collaboration and collegiality in schools. Based on the opinions, experiences and practices of a group of teachers, the following objectives are defined: assessing what are the real benefits and constraints of collaborative cultures for schools and their teachers, to identify the obstacles that prevent the implementation of these cultures, as well as strategies which can enable schools to overcome these obstacles , and, finally, is to understand how the professional development of teachers occurs, trying to establish a relationship between this and collaborative practices.
The findings reveal positive feedback from the teachers related to their collaboration. The individualism of teachers, the legislative conditions and physical and structural organization of the school and the teaching profession which is still very balkanized, are the principal obstacles to the growth of a stronger and more collaborative culture. On the other hand, the professional development of teachers seems to occur in a holistic and continuous manner throughout their career, through learning concentrated on the school, which call for different development strategies in a collaborative context.

Keywords*:* professional development, teaching culture, collaborative learning

Introduction

Collaboration and collegiality have been consensually referred by literature, as strategies particularly effective in promoting the professional development of teachers.
In fact, research has shown that teachers learn more in groups, through sharing and joint development skills. Collaboration and collegiality enhance the confidence levels of teachers and contribute decisively, not only for the professional development of teachers, but also for the schools.
In terms of professional development, authors such as Day (1999) emphasize collaboration, not only as an important strategy for professional growth, but also as cross-cutting issue, to the various strategies that contribute to the professional development of teachers.
Collaboration and collegiality also have negative aspects, involving negotiations between people and political issues that make them difficult to implement as well as representing a way of working culture among teachers, which collides with the organization and social structure of traditional school ruled by individualism and balkanization.
In this context, and not intending to establish generalizations, this investigation permits to meet the educational actors that deal specifically with the issue daily, benchmark their reports, personal feelings and perceptions, obstacles and solutions, based on the theme.

Research questions and methodology used

This research is divided into two parts: a theoretical and another with the empirical methodology, analysis and discussion of results and the conclusions of the investigation. In the theoretical part we can find two literature review chapters. The first on the subject of collaborative cultures, and the second deepens the area of teacher professional development.
Based on the literature review and taking into account the initial theme, the following research questions and objectives were elaborated.

What types of collaboration exists between teachers and how have they develop and manifest?
What are the main obstacles of collaborative cultures in schools and what practices to adopt to promote such culture?
Which facts contribute with greater relevance to the professional development of teachers and which ground practices can be adopted?
What is the influence of collaboration in the teacher professional evolution in the innovation?

The study was directed by three previously established objectives: Firstly, the research sought to expose a description of the feelings and meanings of teachers face collaboration and professional development, and second, tried to establish an inductive way the relationship, between collaboration and professional development and, finally, tried to build theories and responses throughout the study.
A privileged access to the faculty of a school, (the) support and willingness of the participants in research as well as time constraints; easily distinguish the case study as the best method of study in terms of physical and human resources available to the investigator.
Although some official documents of the school were used, study data were mainly collected in nine interviews: one to the Director of the school, four to Head department teacher, and another four to the representatives of the Disciplinary Group, from different departments.
The need for participants to speak freely about the subject, (and) the need to follow a sequence of pre-selected topics, capable of simplifying the later stage of processing, and a very short time, led us the choice of a semi-structured interview.
The script of both interviews had two starting blocks in common. The remaining blocks are structured differently with regard to the difference of targets each interview.
In respects to the interview with the Director, the issues of the last three blocks are: (i) meet the vision of the Director regarding the importance of collaborative cultures and their contribution to the professional development of teachers; (ii) understand the social organization of the school, and finally (iii) know the strengths and weaknesses of the school in building a collaborative culture, the current promotion and the main obstacles.
In the case of the interview to the delegates, the remaining two blocks represent the two central questions of the study, and simultaneously, the two main categories of data analysis: the importance of collaborative cultures in schools and the contribution of collaborative cultures for the professional development of teachers.
In the first category five subcategories were identified: (i) feelings of teachers towards the formation of collaborative cultures; (ii) the contexts of collaboration; (iii) objectives and ways of developing cooperation, (iv) the factors that influence the collaborative practices among teachers, and finally (v) the areas for improvement in promoting collaborative practices.
The second category is divided into (i) professional development of teachers; (ii) current strategies for promoting professional development; (iii) possible strategies to implement in school and finally (iv) learning in a collaborative context.
During the analysis and discussion of results, we proceeded to the distribution of the registration units by tables of subcategories, from which, descriptive summaries were prepared. Each

summary represents a resume of key ideas, illustrated by quotations from registration units, and a discussion of the data based on the confrontation between data and literature. This allowed comparison of data to support or decline the interview data, allowing the inference of theoretically grounded conclusions to answer the research questions.

Conclusions

Based on the results of the discussion and making correspondence with each of the research questions, the investigation revealed the following conclusions. Firstly, with regard to the types and forms of collaboration among teachers of the school, the research showed that:

Teachers generally have a positive feeling when faced with collaboration, recognizing the benefits of collaboration, by that facilitate individual work, allowing a saving of time and energy and mutual learning.

Collaborative practices are established and developed mainly in an informal context; meetings are understood as a mere stage of operationalization of the agreements and predetermined objectives.

Teachers recognize the importance of vertical articulation meetings, by opportunity for teachers, of advanced cycles, receive information from students who will receive and can be transmitted, to the teachers (of) previous cycle, skills and content to focus.

Teachers recognize the importance of the moments of horizontal articulation whether this is established by the Council of Class or the result of coordination, between different groups, in disciplinary extracurricular projects.

School study presents a strongly balkanized culture, since teachers emphasize working together with members of the same disciplinary group, and secondly, the monitoring of young teachers is done informally, by the older teachers of the same area.

Collaborative practices found in school, such as joint planning, standardization of evaluation criteria, and exchanging of experiences and materials, show a strong collegiality within most disciplinary groups.

In terms of obstacles and promotion of collaborative cultures in schools data reveal the following conclusions:

The legislative constraints affect the collaboration, since they represent mostly checks on teachers, resulting in increased workload and a consequent reduction of time available to collaborate.

The management and organization of human and material resources of the school, adversely affect the construction of collaborative cultures among teachers. The Portuguese traditional school does not provide physical space nor time, or resources for teachers to work together.

In school study, there was a fictional operationalization of the joint. Although conceived and outlined in meetings, apparently the joint does not leave the paper.

Concerning the Promotion of professional development in the group data show four conclusions:

The existence of a continuous and holistic nature of professional development, which involves self-training, training courses, a learning-centered school and collaborative learning.

The training courses focused on the school are the main development strategy implemented at the school. (Porém) There are difficulties to promote training courses: budgetary constraints, scheduling and distance to training places, plus there is a limited supply of training.

The promotion of strong collaborative cultures takes place only in social groups collectively strong, so rather than individual changes, promoting a stronger collaborative culture requires a collective change.

The professional development strategies go through three levels. First, appeal to a restructuring of the national policy on training of teachers, with a more diversified and less conditional offer.

In the second suggests a mutual aid between different schools. Finally highlight what each school can do in isolation, using the skills of teachers.
Finally, research findings, emphasizes the influence of the level of collaboration in professional development for teachers:
The teachers not only learn from each other but also learn together, and in collaboration. Learn from others by the transmission of knowledge, by observation of colleagues, and the daily interaction with peers. Learn together because teachers exchange knowledge, discuss strategies, observe each other and reflect together.
Teachers learn in a collective manner, based on issues raised by the same group of students, observing techniques of others, and articulating, in terms of content and classroom projects.
The data underline the importance of dialogue as an instrument of confrontation of ideas, concepts and trading.
Finally, collaboration, promotes self-confidence and job satisfaction of teachers, promotes a climate of mutual trust among the faculty that encourages teachers' receptivity to learning.

Research limitations and suggestions for future research.
In terms of limitations of research and being a case study, the research did not allow generalizations, and the sample is very small and unrepresentative. Furthermore, the fact that the researcher belongs to the faculty of the school, caused during the investigation, a discomfort in addressing most sensitive issues. Finally it is noted that the interview data were only compared with the literature data, and not with data from other similar studies.
The findings show the need for school (i) monitor the results of the joint, (ii) implement a uniform tracking of teachers, (iii) joint sets time and physical spaces for collaboration, (iv) ease the bureaucratic burden on collaborative processes, (v) promote diverse strategies for professional development and (vi) invest in the implementation of collaborative practices.
Finally, research also highlights some suggestions for future research. First extend the study to other contexts of analysis. In the second draw up questionnaires / surveys to allow an investigation with a significant sample, dealing with case studies involving various schools. Thirdly, it must necessarily provide better care to other data sources.
Finally it is imperative to investigate, how to build and maintain relationships between the teachers of a school, particularly at the level of informal contexts, such as the staff room.

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THE PROFESSIONAL CULTURE OF TEACHERS IN PRIVATE SCHOOLS NETWORK

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Abstract
This paper will discuss about teacher identities from the concept of professional culture. The professional culture of teachers is conceived in this study as the construction of identity with professional peers, mediated by a reflexivity about the uses of knowledge and marked by processes of subordination and rationalization experienced in schools. In this sense, I present a semi-structured interviews conducted, in the initial stage, of the research entitled "The professional culture of teachers in private schools network" which aims to understand how teachers live the professional culture in the workplace. Revisiting the literature, discuss the identity and the teaching profession from the characterization of a network of 21 private schools, in Rio de Janeiro, and interview with the teacher of a network drive, revealing the role that this type of school have as an area of socialization, development and construction of professional identity for teachers from the lower classes.

Keywords: professional culture; professional Identity; teacher education; work

Introduction

In a work that investigates the formative path and teaching, Gatti and Barretto (2009) point to a hierarchy between teachers in subject areas and teachers of the early years the basic education in terms of wages, workplace and also in terms of socioeconomic and formative. This is because there are many areas of employability that influence the construction of identity and culture of teachers. The study also shows that there are different environments with different curricula in charge of teachers' education for the early years the basic education.

The diversity of the condition of teachers is not something specific to our reality Tardif and Lessard (2005, 21) state that "there are about 60 million teachers in the world working under very different between countries and cultures." In Brazil, the issue of socialization and identity construction is poorly linked to the existence of a professional culture. Professional identity in Brazil, is still little explored theme in relation to the theoretical development due to the difficulty of characterization of teaching as a profession by both the heterogeneity and diversity the environments the teachers education and professional socialization (Gatti & Barretto, 2009; Barretto, 2010).

Studies that discuss the teaching profession rarely fail to show the weaknesses of the "profession" and the teacher using the following arguments: a) the function can be performed by any person; b) the entry and exit from the profession without control their own peers, c) lack of an internal code of ethics d) lack of strong professional organizations. For Morgado (2011, pp 796-797) professionalization "should promote, at the same time, ownership of a given professional culture on the part of teachers and promote the construction of their professional identity, this building that will extend throughout their professional life. "

Teaching as a profession is built on the work. The professionalism is built with professional peers to the extent that emerge singular situations with which young teachers are confronted and

forced to act and reflect on the construction of their own practices that will reveal a teaching identity (Nóvoa, 2009; Marcelo, 2009).
Indeed, the heterogeneity and diversity of teacher education institutions, public and private, for enter the profession affect the construction of identity and culture of a teaching professional. Although there is a concern with the teachers education and the work of these "one aspect that characterizes the teaching is their lack of concern for the way teachers are integrated the teaching" (Marcelo, 2009, p.127).
According Nóvoa (2009), the first 3 or 4 years in the profession will be the time when teachers will work in contact with professional peers, they will construct their identity and their conceptions of what is to be a teacher in the work environment which us tells about how they live, understand the teaching profession and how they are socialized the younger teachers, at profession and at school.
Researchers like Gatti and Barretto (2009), Roldão (2007), Caria (2000), Marcelo (2009) indicate teaching as a self-directed learning by the teacher in that it builds its strategies and its professionalism according to the context of socialization of professional.

A private school network as a place of study on the professional culture
In this paper, I approach the teaching identity through the concept of professional culture in perspective Telmo H. Caria (2000) which conceives as the construction and development of collective knowledge basing the study of culture on three topics: practice, reflexivity and identity associated with social relations in the workplace. The professional culture of teachers is the construction of identity with professional peers, mediated by a reflexivity about the uses of knowledge and marked by subordination and streamlining processes experienced in schools.
In this sense, I present some data from a research entitled "The professional culture of teachers in private schools network" which aims to understand the ways in which teachers live the professional culture in the workplace and how to face the challenges of everyday work. I am interested in understanding how teachers are organized within the institution, if they have some kind of autonomy over the organization of work in school.
The literature has pointed to the isolation of teachers and lack of knowledge sharing as a feature of the teaching profession in contemporary (Caria, 2000; Marcelo, 2009, Nóvoa, 2009; Barretto, 2010). Therefore, in order to know what kind of professional culture has been developed and which tips the rationality and knowledge construction permeates this place where teachers are working and building their professionalism, chose as a research field, one school, in an extensive network of private institutions, composed of 21 schools located in the suburb of Rio de Janeiro.
Private schools network are basically characterized by having an array school, controlling center of the entire organization from which derive the requirements for the management team of each of the units of the network, also have a standard architectural, administrative, and teaching.
This study represents an approach to the study "The teaching in private schools for popular sectors: a forgotten object" being carried out by GEEPE (Group of Studies and Research on Teaching and Teacher), coordinated by Isabel Lelis professor in the Department of Education of PUC-Rio (the Pontifical Catholic University of Rio de Janeiro). The choice to work with private schools that meet the new middle classes was due to be silenced by this object literature in the field of education.
The network chosen for this study is the largest network of private schools in Rio de Janeiro, composed of 21 schools, and has great credibility, marked by the large volume of students in the regions where they are located, according to a withdrawal done by GEEPE about this schools private network in Rio de Janeiro and an interview with the directors of the Rio-SINPRO (Teachers Union of Rio de Janeiro). The network that meets all years the basic education has the educational material purchased from a standardized education system, educative projects

purchased from another school system, good infrastructure, affordable school fees for parents who bet in private schools as a guarantee of the future of the children, as well as assessments from the matrix of the network, which also takes care of the orientation of the entire management and teaching team the units by making a "Teacher's Guide" and a specific department for educational affairs, the SAT (Service Technical Support).
In accordance with Formosinho (2009) in the same way that teachers can change yourself and change the school they also can not do anything. So, I am investigating how teachers working in a school network behave in the teaching profession, how they deal with the rules, face challenges, as they seek, and if seek the professional development. I aim to understand how teachers are living in the profession and if there is a professional culture in private schools network, which receive many teachers at the beginning of the profession especially those coming from the lower classes who see, in most cases, private schools as the only alternative to immediate employability (Gatti & Barretto, 2009; Barretto, 2010).
Precarious conditions the work and the teachers education, the limited cultural capital in the view of literature are factors that interfere with the treatment of the primary school curriculum and can be obstacles to the process of professionalization (Barretto, 2010, p. 436).
In this study, conceiving culture as interpretive practice of symbolic representation of the world to generate a social meaning, put its focus the professional culture and of teachers thinking about the representation of the teachers identity in daily, the relationship with the professionals peers and the uses and production of knowledge in the daily exercise of the teaching affecting the construction of the teaching professionality (Caria, 2000; Marcelo, 2009; Nóvoa, 2009).
The concept of professional culture shows to be relevant insofar as it affirms the professionality of teachers by both the appreciation of their practical experience and the professional socialization of experiential knowledge, contributing to the legitimization of a specialized knowledge and practical teaching.
Although there are many discussions about the professionalization of teachers in Brazil, there are few studies that use the term culture to refer to professional of basic education. The spaces of heterogeneity the teachers education and the employability of these constitutes a barrier for the building to a professional culture of teachers in basic education (Gatti & Barretto, 2009; Barretto, 2010).
Understand the professional culture in this research as a collective knowing, how a culture-action determined by the social interaction and knowledge that are constructed during interactions at work within the school, where teachers in the socialization process will build to practice their knowledge and their professionality (Lüdke & Boing, 2004).
The culture assumes, to always be practical and thinking, doing and knowing, played interactively, a part of local social relations stable and durable, this is an everyday experiences of a group of people, social relations that generate and maintain the mutual knowledge and ties of solidarity (Caria, 2000, p. 195).

Educational systems are the result of policies, rules and projects conceived by the members of this organization (system, managers and directors), interpreted and shaped by members of the institution (mainly teachers) serving as reference for the interpretation of situations and working as a field forces intended to direct the activities to the extent that the teachers' experiences in the institution influences their behavior (resistance, concealment or acceptance) reflecting the local professional culture and the construction of group identity of teachers (Pérez Gómez, 2001).
"Life at work has a decisive importance in the formation of rules of relationships that are structured cultural models" (Gomes, 1993 p. 92). Upon entering the institution as a teacher brings the subject concepts decoupled from practice, usually acquired during initial teacher education, which is faced with the expertise of teachers in practices that shared experience of

teaching in workplace. The incorporation of practices by teachers, not automatically, but is streamlined for these teachers who, in accordance with the provisions that bring interpret the concepts and practices included in the working group turned them reflexively.
Given the starting point of research, an exploratory stage of the field and pre-test the methodology, were performed the semi-structured interviews, one with the teacher of early childhood education, a network unit, and another with the owner of private schools network seeking to understand the dynamics of socialization / interaction, construction and use of knowledge and organization of school work in understanding what the implications of the work environment in the construction of the teaching profession.
Map practices, beliefs and classification systems for specific social universes, more or less well defined, in which conflicts and contradictions are not clearly explained. (...) They [the interviews] will allow the researcher to make a kind of deep-sea diving, collecting evidence of the ways each one of those individuals see your reality and lifting means consistent information to enable it to describe and understand the logic behind the relations that are established within that group, which in general is more difficult to obtain with other instruments of data collection" (Duarte, 2004, p. 215).

The first interview with the owner of the network, a professor of biology, that more than 30 years manages its own network, composed of 21 schools, was essential to know how are the organization of work in each unit of the network that has an average of 2,000 students each. I chose not to use excerpts from the speeches of the coordinator at this early stage of the study, considering that there was great potential for identification. Thus do my preliminary analysis based on information obtained from the network owner, but bringing only the reports of the teacher interview.
The teacher interviewed is 24 years old, took a first class in 2011, but works at the school since 2008, when it was indicated by a supervisor of the school to fill a vacancy for a trainee. After two years, was hired as helper to reach the function that now occupies, that of professor of Maternal I. Regarding your education, initiated the Faculty of Education the Federal University of Rio de Janeiro, in 2007, and the Normal course in a private institution, in 2009 - completed in 2010 -, because of the possibility of taking a class before completing his undergraduate degree, then entertained the possibility starting stage school in 2008, supporting the hypothesis that the specifics of the private school network can be a rich field of initiation to teaching, especially the lower classes, who seek immediate professional integration (LELIS, 2001). Recalling that will ensure the anonymity of the interviewee, which we will call Tania, and the school, too.
The school, like any other social institution, develops and reproduces its own specific culture with its values, expectations and beliefs (Roldão, 2007; Gatti & Barretto, 2009). Institutional development is closely linked to human development and employment of people living institution. Tania told us that there was an intern when he was able to follow the development of a single class, " the intern go where will need, each time it is in a different class," and then says how good was to help the Maternal before taking a class in this segment thus demonstrating the importance of professional socialization in school.
And the teacher who I was helping she was a love, she allowed me to participate in the planning. When she marked the planning meeting, which marks off hours the work, she called me. When the report had to do, because there is through the evaluation report when the report had to do she asked me what do you think that this child has, you think that presents some difficulty? I think that helped a lot, because now that I took a class I did not feel so lost and supervisory guidance always, always helps and the other co-workers also help. (Tania)
In fact, as stated Nóvoa (2009) there must be in the workplace forms of internal solidarity enabling emerging professional identity of teachers, but this is only possible if it is taught to future teachers ways to exercise their autonomy in the workplace (Roldão, 2007; Lüdke & Boing,

2004). The professional culture emerges from the knowledge that the actors are constructed according to the contexts of work mobilizing prior knowledge both theoretical and experiential. Although a trend towards homogenization of the network, there is also an attempt to control the school and the profession. The people oldest profession socialize the young teachers so that they can participate in the local professional culture being knowing and managing the idealized model (symbolic) and trivialized model (practical), building their own professional knowledge and seeking strategic positions in the school field that will allow greater power and legitimacy (Gomes, 1993; Caria, 2000).

In the process of socialization and professional development, Tania tells us about the importance of professional peers and the help they received from colleagues both in the period as an assistant, and in the adjustment period. "It allowed me to do things, and she let me free to do what I wanted," and complete "All were very nice to me, at the first meeting of parents before the beginning of the year, I was very scared and they would helped and gave me security. The construction of professional identity of teachers involves constant dialogue and the dimension personal and professional relationships that are mediated with professional peers in the ways of organizing the workplace, “how each lives the teaching profession is as (or more) important than the techniques that apply or the knowledge it conveys, teachers construct their identity by reference to knowledge (practical and theoretical), but also by joining a set of values, etc” (Nóvoa, 1995, p. 33).

The school is the place where it occurs the professional socialization and the formation of teacher identity. As many authors point out (Canário, 2001; Gomes, 1993, Roldão, 2007), there will be that teachers build their skills the teaching and learning from the daily work (Canário, 2001). As important is the knowledge that teachers learn in university to streamline the school culture through his work, in order to manage mechanisms for expression of autonomy and uses strategies of professional knowledge, thereby building their experiential knowledge.

The school is the place where teachers will be socialized with their professional peers. In everyday life, teachers build their identity and understand the different types of rationalities that pervade this environment and the processes of domination and subordination and uses of knowledge (Caria, 2000). Emphasize the importance of the workplace as a privileged locus of formation. "We must, therefore, that the university research should produce the knowledge to teachers in order to compose a repertoire of knowledge for teacher education" (Tardif, 2000, 12).

The studied network joined, just over five years, teaching materials purchased from a company specializing in the standardization of education. In addition to standardized material, the company provides training for teachers in the use of teaching materials, including the media high technology as satellite classes for teachers of all network drives at the same time, where they are received instructions to work with projects, and to learn ways to teach certain content. Although concern the standardization of teaching and school satellite instruction for the use of teaching materials, a novice teacher believes that these devices have helped his work.

This is a worrying situation, bearing in mind that the definition of Standards, to determine the content that teachers must work in class and what students should learn, (...) has been configured as a form of guardianship, centralize decision-making powers and educational curriculum, and put political pressure on schools and teachers who work in them (Morgado, 2011, 801).

Another aspect highlighted by the teacher in his interview was the emphatic importance attached to the Technical Support Service (SAT) and the Teacher's Guide as an important support given by the institution.

The SAT is a sector composed of a school counselor and an educational psychologist to help teachers in the organization of pedagogical tasks, monitoring of student development and the

manufacture and repair of bimonthly reports, and also assist in directing students to learning disorders. For Tania, "the SAT is a very good support," for help to resolve difficulties that arise in their daily work, although she claims the need to show the planning and reports to be corrected.

I have the autonomy to resolve some issues, but other issues usually have to be passed by the guidance and supervision, I think not as an obligation you have to go, but more as an aid. You do the record to show for a psychologist and a counselor for the SAT there, as she has to monitor the child, because when the child is enrolled does that history and an interview with the parents and everything, so she already has a follow-up. Then they will fix the sending of the report. They ask to send a draft of the report and they go after correcting for, then we print it. It's the same as responsible for printing reports. But has a model, more or less to be followed. (Tania)

It is valid to note that all activities of the teachers are governed by a Teacher's Guide. The Teacher's Guide is a great book of activities for the year, including routine activities, projects and activities of each project. Delivered at the beginning of the school year, the goal of the board of education of the network is to regulate and standardize all units what teachers make in each half. They leave only the teachers adapt to guide to planning school days and the planning the teachers are collected periodically by the SAT for the observation of possible failures in planning. However, Tania seems to cope very well with the difficulties arising from this context and so many regulations, considering it as something positive for their training.

It is a little different, but in a way it is good, because when we start the year, we have some freedom too. When you start the year we won the Teacher's Guide is written around the projects to be worked on and suggestions for activities, which does not preclude us give new suggestions. Then, in planning meetings, join the morning shift and afternoon shift to be planning the same for all classes. But so each one gives an idea of something different and we may include activity that is outside the teacher's guide (Tania).

For Tania, the Teacher's Guide is an excellent tool to make that happen everyday work. But it is questionable whether this mechanism through the organization of teaching practice is possible to perform activities of teachers with autonomy and a construction of knowledge for subsequent experiments in the profession.

The teacher education and the teaching identity: challenges to the teaching profession

The construction of identity in the workplace is obliged by a hidden process of production strategies for the reception of the rules (explicit and implicit) and a reorganization of these for a symbolic elaboration that seems more consensual, but is individual. According to Rui Gomes (1993, p. 93) "is the analysis of the mental worlds built by individuals from their social experience that best we can reconstruct the typical identities, relevant in a specific social field."

The organization of professional experiences are linked to local conditions, relational and normative orders and strategies that are independent of the implicit logic of the organizational and professional field. The construction of identity in the field where the subject acts professionally is formed by the articulation between three elements: the relationship with the system, the rules of relational behavior and relationship with the future (Gomes, 1993). Thus, the identity of the teaching means sets of interest, knowledge and power. "Identity is a place of struggle and conflict, is a building space of ways of being and being in the profession" (Nóvoa, 1995, p. 34).

Certainly, the professional culture, which shape the new generations, depend on legitimacy in the field of power relations in the workplace and social representation that these teachers make the profession. Nóvoa (2009) points to five key provisions to teachers today, including the professional culture of learning where teachers with professional peers realizing reflection on

the school organization and work which are central to the improvement the learning and teaching that are they advance the teaching profession. He further claims that "being a teacher is to understand the meanings of the school, integrated into a profession, learn from more experienced colleagues" (Nóvoa, 2009, p. 30).

The professional culture of teachers in the schools enables them to put into practice critical thinking and use of knowledge considering a plurality of knowledge that need to be articulated to account for the unpredictability of the technical and intellectual work focuses on teaching the subject (Tardif, 2000; Nóvoa, 2009).

The identity of the teacher is also professional. Thus, training in the workplace and the consolidation of a professional identity that allow teachers to know to be in the profession and develop knowledge and socializing the young teacher in the ways of survival in the institution ensuring the continuity of the professional culture of the group.

Teacher education in its path a hard time "results from the pre-existence of historical action of teaching before the formal training to teach" (Roldão, 2007, p. 97). Thus, when discussing professional contexts and situations in the classroom are not always clear differences, the presence of several schools in the same school, groups, methods, powers and interests of different permeating the pedagogical activity and, consequently, the identity of the teacher, very worrying indeed.

Although this initial stage of the study has revealed the importance of institutional support for the development of the teacher, still wonder if this "educational support" would be applicable in work in other school contexts other than the private school network, since "the relationship of teachers with the knowledge does not reduce the transmission of knowledge already established, and the practical expression of multiple knowledge embedded in contexts, times, various areas of socialization (Lelis, 2001, p. 48).

It is the school that the teacher claims their professionalism, their identity and character of their irreplaceable expertise and knowledge through active actions and committed to teaching, rationalizing the local culture and mobilizing teachers to claim their power professional culture and the school system (Roldão, 2007). We can not deny that "there is a close relationship between the school and teacher professionalization" (Lüdke & Boing, 2004, p. 1174) which the teachers education courses for more specialized and are aware that have failed to report in their entirety.

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CURRICULUM DEVELOPMENT AS A COOPERATIVE LEARNING PROCESS

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Abstract
The present research deals with the curriculum development process which was realized in the technical department in Oulu university of Applied Sciences. The curricula of higher education have been developed since the middle of the first decennium of 2000 into competence-based curricula in Finland. The development process is spurred by the necessity to produce exams and knowledge comparable in the European scale. The purpose was to study the initiation education as a cooperative learning process among the teaching staff of one department.
When studying the rhetoric ways of discussions, two kinds of assurances emerged: specialist talk and `no alternatives` - talk. In the initiation education the talkers used their own conceptions and experiential knowledge as a rhetoric way of argumentation. The other way of speaking can be called a `no alternatives` talk: the regulations of the competence-based curriculum were accepted with little questioning in the beginning as the interpretative operative resource, and the argumentation was based on it. From the responsive point of view discussion occasions proceeded cooperatively and reciprocally.

Keywords*:* community learning, competence-based curriculum, cooperative learning, discourse analysis

Introduction

The curricula of higher education have been developed since the middle of the first decennium of 2000 into competence-based curricula in Finland. The development process is spurred by the necessity to produce exams and knowledge comparable in the European scale. The curricula are undergoing a change from subject- and teacher-oriented planning towards describing student-oriented aims and competences as the outcomes of learning. Higher education institutions have during the last few years carried out curriculum development work according to the guidelines of the Bologna process (Auvinen et al., 2005, p. 23; The Bologna process and Finnish universities of applied sciences, 2007). Developing competence-based curricula is also connected to the quality assurance work in higher education and appears easily as a hierarchical up- to- down change process in the organizations causing resistance to change and critical argumentation (Annala & Mäkinen, 2011, p. 15; Hirsto & Löytönen, 2011, p. 256).

When starting to carry out and disseminate a development process, the teachers easily question the meaningfulness and significance of all the process. They have had to adapt to the curriculum reforms in accelerating speed during the last few years, without possibilities to gain enough experiences and follow-up data from the earlier reforms before entering new changes. The work environments of higher education change according to the changes in work life. These changes will inevitably influence on the demands concerning the curricula. Their development has become an ongoing process (Auvinen et al., 2005, pp 13 – 23; Nummenmaa et al., 2006, pp 126 – 137.) Due to the reforms the competence demands of higher education teachers have also

changed from contents-based autonomous officials in the 1990`s to dynamic and development-oriented networkers (Auvinen et al., 2005, p. 21; Mäki, 2012, pp 11-12; Paaso, 2010.)
The development process of the competence-based educational plan was carried out as a two-phased initiation education among the teaching staff chosen for the project (11 teachers) in one department which is the target of the present research. The researcher was the main educator in the initiation education. She had two co-educators representing the teachers in charge of educational programs. They had participated in the curriculum education of all university of applied sciences in the previous year. The idea was to transfer the initiation gradually from the educators through program leaders to teachers. The aim of the present research was to study the learning of the teachers in this process.
Research questions in this study were *what meanings were produced in the process and in what ways were the meanings created.* The research method was discourse analysis. I will first describe the realization of the education and its pedagogical-theoretical background. After it I will introduce the research material and method as well as the research outcomes. Finally I will reflect on the results.

Developing curricula as a collective learning process
A competence-based curriculum work starts from setting the learning goals and defining the competences. In the initiation education of all the local university of applied sciences the curriculum work started from Bloom´s taxonomy which acted as a model of using various verbs to describe the progress of competences. In addition, the qualifications of the Bologna process guided the construction of the frameworks for evaluating cooperative learning.
Cooperative learning is a process shared by a group of people in learning new things. Although all were teachers, the group roles were those of both learners and educators. A learning plan with assignments had been designed for the participants. Most of the contact learning hours had been reserved for discussions and reflections on new things. The education was based from the right beginning on shared learning. The question was about a new thing to be mastered, and nobody was an expert in it yet. The target of learning, the continued development of competence-based curriculum demanded integration of theoretical and practical knowledge. Therefore it was natural to choose the approach of cooperative learning method based on the socio-constructivist learning conception (Sahlberg & Sharan, 2002.)
A lot of research has been done of learning in social contexts, in socio-constructivist frameworks. Socio-constructivism has been a starting point for instance in developing the theory of cooperative learning (Kumpulainen & Kaartinen, 2004) as well as in the studies of the development of expertise and learning in organizations (Hakkarainen, Paavola & Lipponen, 2003; Repo, 2010; Tynjälä, 2004). The socio-constructivist approach, which originally was connected to Vygotsky´s theory of social learning (1978) emphasizes social construing of knowledge stressing especially social, interactive and cooperative processes of learning. Different constructivist trends always regard knowledge as the result of common interaction between an individual and communities (Tynjälä, 1999, pp 37 - 38).
According to Hakkarainen et al. (2003, pp 4 – 13) in the research of learning there emerges different theories stressing different aspects and complementing each other. Besides the cognitive processes, learning can be approached from the viewpoint of collective participation when learning is considered a process of participation in cultural practices. Knowing and expertise are not situated in an individual mind, but they are dispersed between individuals as well as between individuals and their environments. Learning is a process of socialization in which identity formation is central. Researchers illustrate learning as participation as Wenger´s (1998) theory of social learning and the communities of practice describe.
The basic supposition in starting the initiation education was that the method of cooperative learning would allow each person included to participate in the curriculum development and

become heard in the developmental discourse. In pedagogical development work the teachers are key persons and their voices should thus be heard (Syrjälä et al., 2006, p. 34). The development and new definitions of curricula with their evaluation frameworks were reforms that were not easily and simply adapted to practices. Now the question was about a new kind of thinking and model to be adapted to practices. On the other hand, the teaching developers in the UAS (university of applied sciences) needed information about the application of the reformed models. The meeting point of the knowledge from outside and practical knowledge is especially important.

Research material and method

The material consists of six 90-minute sessions and their transcriptions. The material was collected between September 2009 and February 2011. The lines were transcribed word by word, but the pauses were not marked, which a sufficient exactness is in a discourse-analytic research. (Jokinen, Juhila & Suoninen, 1999, p. 267; Valtonen, 2011, p. 96; Siltaoja & Vehkaperä, 2011, p. 206). Expletives were taken off from the samples to be used in illustrations and to make reading more fluent. 19 sequences out of the transcribed material were first chosen due to their ”interesting” meanings when interpreted intuitively. This was followed by a reading process during which the meanings that were intertwined to certain themes were written down. Besides them, attention was paid to the ways of creating meanings and their possible recurrences in interaction. For reporting the analyses samples out of nine separate sequences were picked up.
The research method is discourse analysis. It is not a clearly outlined method, but loose theoretical and methodological frameworks which make many kinds of studies possible. The origin of its concept system is partly in structural linguistics and post-structural sociology. From the scientific philosophical point of view, discourse analysis is based on social constructionism which is widely accepted in social sciences. Due to the emphases of various schools and the variety of discourse analyses, its definition is challenging. Neither is there any consensus of the concept of discourse, but in spite of different views many researchers define discourses as established practices of speech which for their part construct and produce the phenomena that they describe (Fairclough 1992, pp 63-65; Jokinen et al., 1999, p. 38; Phillips & Hardy, 2002, p.3; Potter & Wetherell, 1987, pp 6-7, p. 175; Siltaoja et al., 2011, pp208-209).
Discourses become concrete in the texts. They can be regarded as discourse units and as material manifestations of discourses. The texts can have many kinds of forms: written texts, speeches, pictures, symbols, artifacts, etc. Discourses can be seen as a number of texts intertwined together and practices of interaction with which they become existing. In the connection of creating meanings the conception of making meaningful is central. It refers to social interaction in which we name and make meaningful, through a language, the objects we are talking about. Meanings have arisen in interaction and shared socially. To understand the meanings of discourses and their influences we have to understand the environments of events, the contexts in which they were born. The text, discourse and context act in a three-dimensional interaction (Fairclough, 1992, p. 4; Jokinen et al., 1993, p. 27; Phillips & Hardy, 2002, p. 3; Potter & Wetherell, 1989, p. 7; Siltaoja et al., 2011, p. 210).
Discourse analysis is structured and systematic studying of the texts that construct the discourse reality. According to the basic idea of social constructionism, social reality has been produced through discourses, and social interaction cannot be understood without referring to discourses which provide it with the meaning (Fairclough, 1992, p. 63; Jokinen et al., 1999, p. 38; Phillips & Hardy, 2002, p. 3; Potter & Wetherell, 1987, p. 6; Siltaoja et al., 2011, p. 209).
Jokinen et al. (1993, pp 17-18) presents five suppositions as the starting points of discourse analysis. They are 1) the supposition of the existence of language as a constructor of social reality, 2) the supposition of the existence of several parallel and mutually competitive meaning systems, 3) the supposition of the context bonds of meaningful action, 4) the supposition of the

actors´ liability to get fixed on the meaning systems and 5) the supposition of the character of the language usage which causes consequences.
Rhetoric and responsiveness are central in this study. Discourse analytic research concentrates on analyzing meanings and the ways they are created. In a single study the focus can be either in meanings or their producing, although the meanings and the ways of producing them are always intertwined in practice. The ways of producing meanings can be researched by paying attention to their rhetoric and responsive qualities (Jokinen et al., 1999, p. 77).
When rhetorical expressions are studied the focus is usually on the ways of expressing certain meanings or versions of social reality. Rhetorical expressions are affirmation or persuasion directed to a certain audience and mediated through language in which a certain version is produced in order to make the audience support it. The research of rhetoric pays attention to the fact how the speakers justify their claims, i.e. through what kind of language the speaker tries to assert or argument. In the analysis attention is paid to the fact how certain versions of the situation are proved to be factual, not how well targeted the claim is in the existing circumstances or events. In the responsive approach the attention is directed to the fact how the meanings are constructed in interactive situations. Responsive interaction is ”here and now” responsiveness in which the parties of the discussion react to each other´s words and create certain versions of social reality through them (Jokinen et al., 1999, p. 77; Shotter, 1993, p. 180.) One or the other approach may be more suitable to different types of data, but it is also possible to use both in the same material collection. It is the researcher´s task to decide with which kind of methods the material will answer the research questions (Jokinen et al., 1999, pp 77-82).

Research questions
The data were analyzed with the following questions in mind:
1) What meanings were produced during the interaction of the initiation education?
2) In what ways were the meanings created rhetorically and responsively?

Results
How did the meanings of development emerge?
In the samples to be presented the code ***E*** means the educator and ***CE*** co-educators who were also responsible for the education. The participants are coded with ***P*** and equipped with current numbers. After the samples there is the running number of the educational event out of which the speech sample is taken as well as the page number of the transcriptions. Unless there is a reference after the sample, it means that the speech passage will go immediately in the next sample.

“What do teachers and students avail of this?”
A plan of the future development work was presented in the first meeting. Although the background and guidelines had been explained to all the staff in the previous spring, the first discussion theme to come up in the start of the initiation education was the questioning of the need and justification of the curriculum reform. The educator answered the first request for explanation by appealing to the decision of the UAS according to which the reformed curricula should be ready in autumn 2011. Appealing to the administrative decision did not satisfy the questioner but he wanted to go on questioning. Next the educator appealed to the demands of the Bologna process. The questioner in his turn went on questioning the Bologna process:
P1: …what concrete things do we try to reach in this project?
E: …that we´ll have ready developed curricula in spring2011.
P1: Well, why?
E: Because we´ll act according to the Bologna process and European frameworks…
P1: And what will we avail of it?

The question ”and what will we avail of it” can be interpreted that to the speaker´s mind the Bologna process has nothing to do with practical teaching, i.e. “us”, and the speaker´s intention is to oppose to the development project by questioning it. The question can also be interpreted as a possibility for the educator to introduce practical benefits and thus to promote the educator´s project and support her. This interpretation would give a possibility to start constructing a positive meaning. The educator, however, interpreted it as a questioning and answered again by appealing to the strategic level discourse.

The co-educator offered help to the educator by suggesting audition as an extra argument to explain the curriculum reform. After this another participant joined in wishing to return to the beginning by asking for more reasons. The educator appealed this time to the Ministry of Education adding that all higher education institutions do the same work. The fact that the curriculum reform has a wider context and that it is not only local, for instance a project invented by the educator, made the speaker satisfied. The administrative reason for curriculum reform seemed to become justified.

The next questioning opened again a possibility of creating a positive meaning. The speaker raised the question about the benefits for the practical level teaching and learning and compared it to administrative reasons. The educator expressed her unwillingness to answer by asking her co-educators to participate in the explanations. One of them answered. Through this dialogue the meaning of the curriculum reform was made a facilitator of practical work.

P1:... University invests in this considerably, so is it auditions that is the core? Ok if yes, but what from the viewpoints of a teacher and student, what do teachers and students get from this?

E: Could anybody else answer?

CE: Well, for instance one concrete benefit could be the recognition and validation of earlier acquired skills …(Education 1, 5)

Seeking for meanings went on. The next question about the possible need to develop action opened again the chance to explain the curriculum reform as based on practical needs. The educator felt that the question was addressed to her, but avoided answering to give floor to the participants. The challenge was accepted by a co-educator who described the necessity of the present curriculum reform.

P1: Is there a problem or need for development in our action which we could cling to in this work? Has it been thought of?

E: Well, actually I already remarked about the needs of developing your own educational programs …

CE: …I have believed that everything is perfect from my part, but then I noticed that it wasn´t like that … that there were needs for development which should now be seen as ***a benefit for students, and that study was useful for me ,too.***

The next participant who had earlier been dubious began now to support the co-educator´s positive meanings saying:

P1:We have done these works long and with merit and, in a way, if there is a kind of need or start from which to go on improving clearly, so that all understand, so then this kind of work can yield more.

The comment can also be interpreted so that the curriculum reform should have a clear and understandable need. Development work should start from shared problems in practice. When the needs for development are understood in the same way, “*work can yield more*” which can be interpreted as meaningfulness. The educator did not interpret the previous lines to support her action, as she passed by the possibility to talk about the collective starting point. She took the position of an educational subject and showed by the transition that she wanted to finish the theme.

E: Well, let´s do in the way that if any of these questions starts worrying, so (Education 1, 5-6)

The initiating education began with questioning the development of curriculum development. The questioning speech *"why", "what benefit can we get of it", "what do students and teachers get out of this" "Is there a problem or need to develop in our action "* can be interpreted as critical towards development work. Criticalness became strengthened when the educator with her co-educators availed of administrative reasons for the development project. The questioning speech opened up, however, a possibility to raise up a positive meaning, when a participant noticed the possible benefit of curriculum work for teachers and students. The answers which brought up personal and supposed practical benefit: "one *concrete benefit could be*" and "*that study was useful for myself, too*" were interpreted as positive.

Two opposite meanings about development were produced through questioning. One of them brought up the development as a bureaucratic and administrative project progressing from up to down. The other meaning regarded the project as a development which might benefit the teachers´ work and the students´ learning and become a concrete tool in teachers´ work. A shared and negotiated need for development was chosen for the starting point. The bureaucratic meaning emerged from distancing and globalizing the responsibility to remote institutions (Jokinen et al. 1999, 133). Correspondingly, the speech which presented the benefits provided by the development, i.e. localizing speech built the meaning of positive attitude. The meanings were constructed through dialogues, when the participants asked questions and the educators answered them. From the interactive point of view direct suspicious questions were felt attacking and expecting direct answers. It made the total structure of the discussion resemble the attack – defense model.

Forbidden and allowed words

In the following sequence of speech the bureaucratic meaning of the curriculum development is strengthened.

The sequence is like the former one. The theme of the discussion is how to devise the instructions for designing competence-based learning goals and to recommend the verbs with which to describe different kinds of skills. The earlier produced bureaucratic meaning gets new shades, when the recommended verbs of knowing become "allowed or forbidden words".

CE1: Thus these are not allowed.
E: These are allowed words.
CE2: In the right column there are allowed words.
P1: Are there also forbidden words?
(Education 1, 13)

At the beginning of the next sample the first comment refers to the contradictory nature of the instructions of competence targets which was paid attention to in the discussion. The co-educator supports the speaker and describes the meaning of obscurity with the metaphor of "mishmash". The next speaker goes on with strengthening the meanings of obscurity and contradictions and compares the curriculum development to the Soviet Union. The comparison is meant to be a joke and all participants, the educators included burst laughing. The humorous impression is supported by one more member who goes on with the remark of "putting the words into the mouth". This is followed by a summative comment on the project which is nullified and will surely fail.

CE1: …That included thirty words. That it gets totally a mishmash.
P1: It begins to resemble the old Soviet Union.
(all laugh)
P2: …words are put into your mouth….
P3:….nothing will come of this….

The power of metaphors is hidden in the fact that when they are successful they create the opted connotations without many-phased argumentations (Jokinen et al. 1999, 149). Raising the Soviet Union metaphor had a strong influence, although it was not opened in the dialogue. When *forbidden and allowed words* and *the Soviet Union* were presented in the same context, the interpretation is not difficult. The bureaucratic meaning of the curriculum development is intertwined in this sequence with totalitarianism, contradiction and obscurity as well as failure. Responsively examined the discussion in this sequence is mainly spontaneous and lively participation. It differs from the previously analyzed sequence in having not clear dialogues, but the discussion is more like fast throws. The repliques are short, partly incomplete sentences and clauses, which tells about the competition to get involved in the discussion. During all the sequence there are five speakers besides the educator who are speaking. The educator is interrupted three times, the participants obviously wish to be steering the discussion to the observed direction and prevent the educator from turning it to the "right" path.

Expert talk

The previous passages told how both the critical, bureaucratic and the positive meanings of curriculum development were produced through questioning lines and metaphors. When the education proceeded, the attitudes of the participants towards the project stayed both critical and positive side by side. Both meanings were strengthened and they received more contents. On the side of questioning and opposing speeches two other types of speeches could be discerned: expert talk and `no alternatives`-talk. In an expert talk the speaker tried to make his message factual by appealing to his professional expertise. This is seen in presenting the conceptions and opinions which are based on the person´s expertise and experiences (Jokinen et al. 1993, 178). This kind of argumentation is strong and difficult to nullify, since the partner cannot get into another person´s experiences (Jokinen et al. 1999, 134). Participants could with good reason be called real experts, as they all had several years of experiences as teachers and persons in charge, so the construction of expert talk is not surprising.

In expert talk there can be discerned rhetoric methods. In the following discussion the uselessness of curriculum development is justified by appealing to personal expertise by "*I think/ I don´t think", "it is surely so"*. In addition, another way is distancing from one´s own interests, *"it cannot be avoided*" which allows to understand that the contents of the claim are a generally accepted fact with no alternatives. The speaker believes that personal experience contains a fact "I think" (Jokinen, ym. 1999, 133, 139; 1993, 163). In the sample we can also notice that the curriculum development is connected to a wider cultural discourse, namely the deterministic conception of learning with which the nullification of curriculum development is justified.

P1: ***I don´t think we can change the fact*** *that some people don´t learn in any way…*
P2: ***No , not ,there are such, too****.*
P1: …although you tried anything, ***though any kind of curriculum, so it is not*** *…*
P2: Others could learn better in another way.
P1: ***Well, it may surely be so.***
(Education 1, 9-10)

Several speakers used now and then the expression "seriously" as a means of confirmation. Using the expression presents the idea that the speaker has the right and rational interpretation. It often happens in the speech that the opposite of the right remains unsaid, but using "seriously" hints to its opposite. This supposition is strengthened by the following sample in which the speaker stated directly that the curricula will actually be devised for the EU Bureaucrats, although they pretend to be devised for the students. The sample was preceded by a discussion in which the participants reflected, whether the evaluation criteria should be published in the study guide.

CE2:..it is questionable whether the student looks at (evaluation criteria), although they are for students.
P1: Have these been made for students or the EÙ bureaucrats?
CE2: Well, ***actually to the EU bureaucrats****, but* ***in the parentheses for the students*** *…* (Education 2, 18)

Claiming that curriculum development is always waste of time is justified in the next sample by making teaching and curriculum into opposites. The speaker creates a connection to the discourse of wide changes in this context which offers real challenges, while the curriculum development is disconnected from reality. Using we-rhetoric gives reason to understand that the presenter does not stand behind the claim alone, but she appears in the name of a wider group (Jokinen, ym. 1999, 139).
P2: …we are in such a situation that … they (study programs) ***will be changed fast****. The* ***greatest duty*** *waiting for us is* ***what to teach*** *there and how to learn the matters ourselves, they are our* ***problems****, and* ***not how they are recorded****.*
E: Exactly.
P2: ***Giving time to this is surely waste of time****.*
(Education 1, 21)

`No alternatives` -talk
`No alternatives`-talk became now called expert talk, which aroused when the vocabulary of higher education curriculum development was adopted. The participants of `no alternatives`-talk presented various arguments concerning the contents of curriculum development using the terminology created for its instructions. The contents included a lot of matters which were interpreted in different ways. The main interaction way was thus negotiations about shared meanings concerning the matters included in the education. The negotiations used the commonly compiled vocabulary, although it had been questioned in the beginning. The name `no alternatives` refers to the institutionalizing of the vocabulary as a self-evidence. Self-evident discourses are often intertwined with power and unquestionable truths (Jokinen et al. 1993, 77), and we can ask with good reason, if the participants had had a possibility of not becoming joined to this project added to their work. From the viewpoint of curriculum development, adopting the vocabulary as well as constructing and accepting the shared repertoire made it possible to negotiate about the meanings. In the following sequence there is negotiation about the requirement levels of the study units. `No alternatives`-talk appears responsively as self-initiated and reciprocal speech of the participants and as the negotiation about the meanings and information construction promoting the aims of curriculum development.
P1: What about these (like subject A) which are quite basic things, but very difficult to the students?
P2: Well, it is surely primary.
P1: Well it is still primary?
P2: I will put (subject B) to figure two, because it…
P1: Ok. (Subject C) is then three.
P2: (Subject C) is two as well.
(Education 5, 7)

Discussion
In the analyzed material there was observed the questioning and opposition to the curriculum reform as well as the acceptance of the task to be included in the personal area of responsibility. As a matter of fact, commitment can be more easily seen as the commitment to the shared duty of a community of practice than to the design of the competence-based curricula, which was

the purpose of the administration. Thus commitment could be noticed, but the question remains what they were committed to.

The separation of teaching and curriculum

Construing bureaucratic meanings for development is not surprising in the administrative contexts of practice reforms. The participants found it difficult to understand what they had been given working resources for. They didn´t see any connection between the formulation of verbs and practical teaching work with its problems. The curriculum was not seen meaningful from the viewpoint of the student learning: the students do not read curricula devised for bureaucrats. Annala and Mäkinen (2011, 6-18) reports of similar results: higher education teachers´ attitudes to curriculum work were passive and reactive.

In the results of this research critical expressions and reactive attitude were also seen. The development-positive meaning created in interaction contained the idea that the development of competence-based curriculum would have clearly observable positive influence on the students´ learning and the teachers´ work. Collectively experienced and negotiated need of development was raised as the starting point of development. The developmental goals from outside and the personal needs from inside appeared to be opposites and belong to different worlds.

Cooperation and sharing

In planning and implementing the initiation education the pedagogic-theoretical frameworks consisted of learning through cooperation and sharing. The presupposition was that cooperation makes equal participation in knowledge construction and commitment to the project possible. From the viewpoint of cooperative knowledge construction the initiation education appears in a more positive light. Supported by the results of the responsive examination of the material, the education can be considered to have fulfilled the prerequisites of cooperative learning. (Sahlberg & Sharan 2002, p. 108; Johnson & Johnson 2009.) There was no teacher-centered lecturing in the meetings, but they were free discussions for the most part. Time had been reserved for them so that all could participate in the discussions, and they were lively. The educator guided the discussions in the direction of the aims by limiting the acutest speech slightly. The atmosphere can be characterized liberal, for the participants presented a lot of questioning opinions, critique and polemic meanings.

`No alternatives`-talk with which curriculum development was carried out can also be called commitment speech from a certain point of view. The formation of a common repertoire tells about the commitment to a shared project, and it can be regarded as a sign of the formation of a community of practice in Wenger ´s words (1998). A project is an answer to the community members in the situation in which they are and to organizational demands as well (Wenger, 1998, p. 46, pp 55 - 56, pp 73, 77).

Conclusion

The most important finding in this discourse-analytical study was the bureaucratic meaning given to the curriculum work. Another meaning, the development-positive conception contained the idea that the curriculum development should have clearly observable positive consequences in students´ learning and teacher´s work, and that the development of reforms should proceed from commonly recognized challenges. The rhetoric and responsive analyzes emphasized the meanings of questioning, expert and `no alternatives`-speech. Responsive research revealed the cooperation in education. Researching only the responsiveness would have yielded the above result. Sensitive and reproduced meanings with their ways of production could easily have been left unnoticed.

The discourse-analytic research often moves simultaneously between producing meanings and the ways of producing them, and is capable of multidimensional expressions (Jokinen et al., 1999, pp 56-57; Gee & Green 1998, p. 135, p. 139). Discourse analysis pays attention to the fact that the interpretations of interactive meanings are always influenced by the interpretations of the researcher, her interaction repertoires and cultural models. The present material offers the researcher several different possibilities for interpretations (Jokinen et al., 1999, p. 45, p. 61, p. 85; Gee & Green 1998, p. 159). When this research is continued, the attention will be paid to knowledge creation by focusing on the interaction points where the problems can be solved through common negotiation. Learning and the change of work identities will also be considered.

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THE EXPERIENCE OF BEING A PHYSICAL EDUCATION PRE-SERVICE TEACHER WITHIN A COMMUNITY OF PRACTICE

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Abstract
The aim of this study was to characterize the daily practices of pre-service teachers within a community of practice (Wenger, 1998), and to examine how they constructed their Professional Identity (Jurasaite-Harbison, 2005; Flores & Day, 2006). A community of practice composed of three Physical Education pre-service teachers and one cooperating teacher was observed during fifteen days. A non-participant observation was made, which included field notes and videotaping of the pre-service teachers' daily practices. The interpretative task was informed by the Gee (2000)'s identity theoretical framework and facilitated by Nvivo 9 software. The findings show that: (i) To be a pre-service teacher is to take responsibility for the students' learning process and their integral education as a as a whole; to respect the school rules and the group, development of activities; to manage the teacher and students' tasks and to share new knowledge. (ii) The pre-service teacher's personal and social characteristics showed a high influence on the performance of the above outlined functions. (iii) The pre-service teachers readjust schedules and adopt new strategies to become autonomous in decision-making. (iv)The cooperating teacher plays an important role as a guide in the whole process.

Keywords: Community of Practice; Physical Education; Pre-service Teachers

Introduction

Currently, the emphasis attached to the teacher as person of the in teacher education was been studied in a large number of researches. The focus was the teachers' lives, their careers and career paths, their autobiographies and personal development (Nóvoa, 1992).
The same author said that is necessary (re)directing research in order to include qualitative and subjective methods, as ethnography and narrative. These methods allow highlight the description and interpretation of the professional daily life and can conduct to new theoretical formulations about this issue.
For example, the narrative should be seen as a process influenced by the interpretations by the tools and techniques used in the process. Denzin (1989) state that theoretical approach and the life experience of the researcher and narrator influence the process. In fact, the experiences reported by someone (in this case for the pre-service teachers (PTs)) are interpreted by the researcher, with his beliefs and knowledge. The narrator chose how the story will be counted. In this way, the narrative can be considered an artifact produced and interpreted by others that, at the same time, can conduct to new interpretations when exposed to the "audience".
Moreover, based on the narrative, we can better understand how the PT's live the experience of learning how to be a teacher, not just for access to individual elements of each one of them, but also accessing to elements about how they act in community practice and relate within it.

Through narrative it can be possible to better understand how professional identities of PT are constructed, taking into account the identity as a concept built individually, collectively and in interaction (Lopes, 2007). Intending this concept of identity as a concept essentially dynamic, ambiguous and unstable, Gee (2000) considers that the identity is linked with being recognized as a certain "kind of person" in a given context. In his words, "the "kind of person" one is recognized as "being", at a given at the time and place, can change from context to context, and, of course, can be ambiguous or unstable" (p.99). This idea points to the concept of paper in interaction with others. Gee (2000) develops their construct identity around four perspectives, when the identity is constructed and reconstructed at time, in space and to interaction.

The first perspective is the nature-identity (N-identities), being an identical twin of this state. The source of this state is the "power", developed from in nature (genes). The second perspective is the institution-identity (I-identities) that reflect the position in institution. The source of this position process through which this power works is authorization, that is, laws, rules, traditions, or principles of various sorts allow the authorities to "author" the position and to "author" its occupant in terms of holding the rights and responsibilities that go with that position. The third perspective is the discourse-identity (D-identities), this is one way of recognized in the discourse/dialogue of other people with "rational" individuals, it is an individual trait, a matter of one's individuality. Finally, the fourth perspective is the affinity-identity (A-identities) characterized by experiences shared in the practice of "affinity group". These four perspectives are interrelated among themselves, there was no real division between them.

In this sense, the aim of this study was to examine how Physical Education pre-service teachers constructed their Professional Identity (Jurasaite-Harbison, 2005; Flores & Day, 2006), through of these four key perspectives, and to characterize the daily practices of pre-service teachers within a community of practice (Wenger, 1998).

Method

Data collection

The data collection resulted from a non-participant observation over a period of fifteen days at a practicum group, made in April of the academic year 2010/2011. The observation comprises eight visits to the school. During the observation period it was taken field notes; videotape and informal interviews focused in pre-service teachers daily activities.

Data analysis

The first step of the analysis it was reading and visualize the data. As Bardin (1977) refers the initial read is important to take contact with the documents under examination, in order to gathered impressions, meanings and orientations. The thematic analysis was the methodology used to analyze data. All the data (field notes, videos and interview contents) were analyzed independently by two researchers. Sub-themes emerged from individual analysis and after were discussed and negotiated between researchers until the final definition. This process has become essential in organization for the presentation and interpretation of the narrative, accomplished through a process called thematization (Patton, 2002). The thematization as based in the research questions given by the theoretical framework, which served as guide to the non-participant observation: (i) to be a pre-service teacher (daily living and work typology - what they do, how they do and why); (ii) the roles played by the members of the community of practice (pre-services and coopering teacher); (iii) the pre-service teachers' personal and social characteristics; and (iv) how pre-services are as teachers.

NVivo 9 software was used to organize the data. The theoretical background it was supported for the four perspectives identity developed by Gee (2000). The anonymous of the participants was guaranteed by assigning pseudonyms for all of them.

Results and Discussion

Daily living and typology of the work - what they do, how they do and why

The school context

In order to better understand the daily life of the pre-service teachers it was important to characterize the school context were the practicum take place. As state Gee (2000) the identity is to be recognized as a certain kind of person, which is relate to the personal history, including institutional and cultural elements. These conditions require some changes in witch context classes teach, being it important to understand how this dynamic mess about the community of practice of PT. More specifically, what are the position which PTs occupy, before the rules and standards of the school, that influences the I-identity of PTs as teachers (Gee, 2000).

Almeida Garret school is in reconstruction, so the PE has only a small pavilion to tech Physical Education. And unlike that the teachers done previously, only able to divide the space for two sections and maintain two classes in lessons. For this reason, the classes to 45 minutes lessons are outside the sports and directed towards the development of physical condition. Some classes, exclusively the secondary classes to 90 minutes lessons are forwarded to the Paços Rei Stadium (outside of school). The changes of school physical space test the capacity of adaptability of the PTs teachers. In fact, the PT Rita came to show some concerns when he had to teach in Paços Rei Stadium on a rainy day. In these days the limitation of space was many. Inside the stadium the conditions to football (the content that she was teach) were too bad, few space shared with another PE teacher.

This shows that the fact of being at PTs in practicum education process, the institution not provides them with facilities. Indeed, to understand the I-identity is important to understand the position that the PT takes in school, being that is source that regulates the construction process of this identity. She "authorizes" by the laws, rules, traditions and principles, the post of PE teachers to PT, should comply with the rights and responsibilities inherent in any teacher.

So, aware that the unpredictability is part of teaching, we see how these constraints become important for the development of decision make the PTs.

Simultaneously, PTs didn't lose their I-identity as pre-service teacher the Faculty of Sport, since the very socialization that institution and the discourses and practices of PC and supervisors, do also whereat they adopted this I-identity.

The group of Physical Education

The group of practicum is constitutes by three elements, Manuel, Isabel and Rita. Manuel was who established the first contacts in class presentations. Here we see that the audience is often asked for this type of classes for all PE teachers, being this is a characteristic of the PE group (A-identity of pre-service teachers). Although this group doesn't have a voluntary participation of PE teachers, as features Gee (2000), the author warns against a tendency of institutions to create their own affinity groups. In this case, the school creates small affinity groups among teachers of various disciplines (disciplinary groups) in order converge the teachers for the common good of the school. That is, they join the best learning and education of students. In fact, the more people feel connected and belonging to the institutions to which they belong but "productive" will be (Gee, 2000). Gee (2000) reinforces the idea that teachers develop more this sense of I-identity toward school, the more specific practices to promote school affiliation, as is the case of group meetings and meetings of disciplinary departments. Thus, we see the importance of PTs attend these sessions at school.

This affinity group doesn't mean that all teachers share the same concepts in relation to diversity education, but they share common concepts in relation to the common interest. For this reason,

single teacher can have multiple A-identities, because they can join different affinity groups. The PTs are affiliate with PE group in interest the improvement of the PE discipline and learning of student, but they are both affiliated with community of practice in interests the learning to be teachers.

Participation of school

Although the PTs we have informed participation in the school at level implementation of extracurricular activities (study tours and activities multidisciplinary the education project of school, only at level of participation in Education Sports we can see some experiences the PTs. The group of Education Sport is another A-identity presented to PT, being frequent the presence of Rita and Isabel in training the Education Sports, on Wednesday and Friday and some competitions on Saturday. In this context, we see on again the "authorize" given these PTs teachers assume when they assume the Education Sport teachers. The group the Education Sport is divided into three sub-groups identified by three distinct levels of learning. Usually, the PTs were in the group of initial level. In along the observation this training and some classes of lesson the Rita that we see the cunning and wit of Rita as some the characteristic of her N-identity. This, by the positive way that she knows monetizes of the learning here acquired in their classrooms.

The group of practicum - Teaching and observation of lessons

Observing the first classes, we see some characteristics and common routines the community of practice (A-identity). Gee (2000) say that the source determinants this identity is the access, the participation and sharing a set of practices of common interest this group. In community of practice, the PTs engage in joint experiences among themselves, as the observed classes, seminars group with the cooperating teacher (CT), among other holdings. Thus, the PTs share new information and new procedures for practice can stand routines common in this group stage.

In addition, these moments of observations allowed detect certain characteristics and particularities of PT, resulting of N-identities and D-identities (Gee, 2000), checking up, how influential are the personal and social characteristics in the performance of teachers' tasks and the construction of professional identity of each PT. Among other factors influential in the formation process, these features allow delineate how each PT is as a teacher (I-identity). Thus, it is essential understand these four perspectives of identity as unsociable and coexisting identities Gee (2000).

The presence of Rita in the Manuel classroom, demonstration that in addition the obligation observing of 6 lessons the each PT for period, the PTs own initiative seek are present in all classes of fellow PTs (A-identity common this community of practice). The source of this behavior doesn't come from the institutional power (school or college), nor is something inherent in the state of being of PT (identity Natural) or implicit in their discourse (discursive identity). The source of this power result of a voluntary behavior shared by the group. Returning to idea of Gee (2000), which is involve in affinity groups is sharing of interests that allows participants have got access to new experiences. In this case, learning in community of practice, the PTs want to access more and better learning situations at them become teachers. Of course, before the creation of this group of common interests, intervened on I-identity assigned by the institution (college, the PC and the supervisor), but it is the collaborative environment, the learning of knowledge shared, discussed and put into practice, that they allows to build an A-identity as a community of practice. It is an identity where participants are proactive and responsible for each other the benefit of all (Gee, 2000). That is, it is a voluntary participation of PTs in wanting to learn to be a teacher.

These classes of observation, the PTs advantage, now to observe some important details for your lessons and help who are observed. Sometimes they work in practicum' tasks sharing ideas, questions and dilemmas with each other. During this class, the interaction between the PTs, CT and the class teacher was always active and we see the influence of colleague Rita on PTs. Because, revealing once again features its N-identity, she was demonstrated very attentive and insightful, able to draw the attention of colleagues to some aspects that seem to go unnoticed. While watching the lesson of CT and maintains an informal talk, the PTs reveal the emotional and friendly atmosphere, support and trust each other. Rita appears to be extroverted, sociable, fun and very talkative. For this reason, we seem that she a little to take leadership the group of practicum (D-identity). In fact, contrary what happens in the N-identity, the characteristic the D-identity of Rita results of personal individual features and only mark their individuality in relation to the other (Gee, 2000). This feature is revealed already the behavior that gets in the discourse with peers. Alone she not expressed leadership on anyone, nor would the recognition of others as leader. It is just because other people treat, talk and interact with she that she shows this peculiarity, without restrictions or obligations and laws or rules (Gee, 2000). However, it should be note that this D-identity was actively achieved by Rita, while other D -identities could simply be allocated (Gee, 2000). We show, for example, the leadership of CT on the PTs, which his position (I-Identity) gives power to this role of leader.
Recalling the lessons, we perceive that this Practicum Education Model, the PTs applying the Sport Education Model (SEM) one of the modalities that the in teaching. Rita chose to apply the model in the Football Didactical Unit (DU), while Isabel and Manuel chose to apply the SEM at Gymnastics DU. Thus, we found that starting from an institutional imposition (Faculty), the PT have got adopted different ways of acting, correlating the I-identity with the D-identity as the rules fit the practicum model to the own characteristics and the characteristics of each class.

The group of practicum - The seminars

The seminars are bi-weekly moments that bring together the group practicum with the CT. These seminars are often organized and conducted by CT, assuming the I-identity as a cooperating teacher the faculty. He introduces the points to be developed at the meeting and the purpose of session, alerting the CT for some relevant aspects, not only about the classes as the numerous tasks and duties of the teacher. Simultaneously, the CT is who tells the PTs about school' standards and activities, being the link between PT and the school, integrating and involving the PTs in entire educational system.
Often, the CT start the seminars for transmission of information, then provides feedback in collective terms, specifying the feedback in long the session, on time of sharing, cooperation and self and straight-reflection.

The roles played by the members of the community of practice (cooperating teacher)

In the seminars, the CT appreciates the thoughts and decisions of PTs. The CT admits to acting as a cooperating increasingly easy, because he feels and see that can give autonomy the PTs and trust in their work, saying "*get lucky by having student interns and not just trainees".* Throughout the seminars, feature as professionalism, competence and pedagogical requirements are always present on discourse the PC. Encouraging the PTs, he requires working in the constant search for excellence. Guiding the PTs, he gives them the opportunity to identify their own weaknesses and learn to overcome them. Acknowledging the work of PTs, he praises the PTs in order they involve in their own professional development: "*If you could send these things, I almost dared to say, let's create a place because you have to work on my team (...) Your investment is such that leads us to say this in order to keep your character at a professional level".* Estimating the potential and characteristics of PTs, the CT concerned about the future investment PT and say: *"What I am pleased that in your person is. You are a person that I really enjoy living in, so rather*

than professional involvement is almost the involvement of friendship that we did, and I'm your friend does not even admit that you can't invest on your capabilities".
The challenging character is quite evident on this CT and constantly challenges the PTs to reflect the applicability of some methods of teaching acquired in practicum outside this (for example, they have got more classes and simultaneously teaching different modalities).
On appreciate the particularities of each PT, the CT considers important to know reset the orientation, adapting to the needs of each PT and informed the PTs about their development process, alerting them to the aspects that he considers urgent they invest.
Taking some informal interviews and individual seminars we can understand the difficulties of PTs in the construction of their professional identities. In individual seminar with Isabel, the CT highlights the portfolio as evidence of progression the PT, since it represents a clear investment in the formation process at the practicum. However, he tells that CT needs to be more organized in managing these tasks, because in some ways is a bit limited interaction between them. In fact, for the CT, look, feel, hear is essential but not sufficient, he needs to read, see the commitment and consistency the work of Isabel. Update the portfolio is very important to better control the development of PT. Thus, we note that each person can be recognized the different ways in same environment, by different peoples, and different ways by same peoples (Gee, 2000). This idea result the fact of Isabel reveal a D-identity charge as a teacher by CT, but careless in her duties as PT.

The pre-service teachers' personal and social characteristics and how pre-services are as teachers.

PT Isabel
Unlike colleagues, the Isabel reveals some difficulties in engaging students their classrooms.
Another difficulty the Isabel is to get of leadership in classroom, because she feels the constant lack of respect some students, getting bad answers, complaints and some refusals to do the exercises. Thus, we return the idea of assigned D-identity and earned D-identity. The students recognize the teacher' authority for position and roles that he playing and assigned by the institution, because if anyone speak and recognize teachers as school teachers, no one can sustain them as teachers. But a leadership is one feature that sometimes the teachers need conquered in their classes.
The PT appears to be very helpful and caring with your students but the excessive "treat" prevents them distinguishing and respect the authority of teacher in relationship teacher-student.

PT Rita
Recalling the lessons of Rita, who chose to apply the SEM in Football' DU, your class is divided into teams formed to *priori*. The functions adopted by students were permanently kept (player, coach, arbiter and responsible for records statistics).
The first class outside the school, Rita seems quite calm and confident (D-identity), being that the expenditure of time and agitation of students didn't appear interfere in domination and control your class.
Decided, the Rita chooses not break the rhythm of game with constant stops for corrections. But she make of time learning potential joining the class, sometimes in moments of exercises transitions and in small groups, she clarify, correct and adjust activities already students' responses. This attitude reveal a great ability the Rita tailor the unpredictable lesson in real context of teaching. Simultaneously, we note that she is more considerable to plan lessons and she is good manager the detail of your lessons. However, the CT is who orders distribution of teams (off-play) for rear the both beacons to ensure the prompt replacement of balls.

In course of lessons, we noted that Rita is very insightful in strategies implementing to maintain engagement, motivation and attention of students. Concerned about main aspects the teacher' position, she keep always your students in front her and captivates their attention with gestures and she say “look at me”. The PT has got a presence planted by authority and leadership. She was very expressive and clear during instruction and feedback. Persistent, she enjoyed the end of games to correct and enhance the help of someone knows more together who knows less, remembering is important that the home teams take to learn through observation of peers.
Being an exemplary for your students, the Rita dresses up strictly for PE’ classes, using the dress that EP group order for students (black shorts and yellow t-shirt). A particular feature of these lessons is spirit team in class, because all teams do the scream team, demonstrating fair-play as players and spectators. Respecting your opponent, in each at beginning of competition the teams welcome. And when were some discussion groups, the PT emphasizes the importance spirit team and mutual help.
In casual conversation, the Rita explicit the functionality of statistics chips out filled by students during games. The PT considers this statistics chips useful because it allow motivate students and it show results of learning. For the performed work between the teacher and coach and team, the Rita is always accessible to discuss about the best methods of "training". The meetings between the coach and teacher and constant contact by e-mail are precisely to best decisions by team and individual learning.
The accuracy in equipment of each team show the enthusiasm that Rita encourages your students, because voluntarily and together, they created strategies to obtain monetary conditions to all have t-shirt team.
I-identity of Rita as a teacher comes to prove the ideas of Gee (2000) regarding the possibility of an I-identity can be considered active or passive I-identity. In this case, the Rita’ I-identity is clearly an active I-identity, where the PT plays a role not by imposition, but for pleasure and vocation.

PT Manuel
Manuel, as a teacher, seems to stimulate the participation of all students in activities classroom, in order not only to continually assess the knowledge and interest of each student, but also promote student’ motivation and involvement. Thus, the PT takes role of questioner and he guides the students for independently they explore their own learning.

Conclusions
To be a pre-service teacher was interpreted as to teach classes, i.e. taking responsibility for the students’ learning process and their integral formation as human beings; to respect the school rules and the disciplinary group and, simultaneously, cooperating on the development of extra-curricular activities; to reflect on their own actions as teachers, i.e. investigating their practice in order to improve the teaching process and improve and acquiring new competences; to manage the teacher and students’ tasks; and to share new knowledge with the students, teachers and the members of the community of practice.
The pre-service teacher’s personal and social characteristics showed a high influence on the performance of the above outlined functions. Moreover, despite of the common routines in their classrooms, confidence and initiative are the characteristics that better allow control over the different contexts of intervention, while creativity and carefulness seem to arouse more interest in the students for the Physical Education subject matter.
In the teacher role, the pre-service teachers prepare their lessons, concerning to the management of time and equipment, as well as the behavior of students in order to keeping active control. They also reflect upon the unpredictability of the educational context, readjust schedules and adopt new strategies to become autonomous in decision-making. Furthermore,

interaction with students in and outside the classroom, developing a good climate for learning, is a features addressed to the role of being a teacher.

Finally, it was noticeable that the construction of professional identity is a complex process, and that the cooperating teacher plays an important role as a guide in the whole process.

The reflection, sharing, cooperation and experimentation are characteristics essential to the development of teacher professional identity. Since the real context, provided the practicum, and learning community of practice, are favoring environment these behaviors.

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