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Symbiotic Learning Systems

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Dear ATEE delegates!

In this presentation I want to share some thoughts on why the education of professions needs to create what I call a “symbiotic learning system” by collaborating closer and more systematically with its relevant work life about learning; more specifically why and how teacher education on a university level needs to collaborate closely with the future work-places of teachers, that is, with the schools. I will say something about the general societal and professional background making this necessary, and I will say something about some preconditions I believe must be in place. Finally, I will say something about how such a collaboration can be achieved, based on some Norwegian experiences. Ultimately, I think we need to develop new infrastructure connecting work and education more intimately, for the sake of teaching and learning, for the sake of research, and for the sake of improving professional and organizational practice.

Since my background is somewhat different from most teacher educators, I need to say something about myself and the perspective from which I speak. My view is positioned, meaning that it is *from somewhere* in an institutional and professional landscape, not from nowhere in particular. My PhD from 20 years back is in ancient Greek philosophy. For more than 20 years, between 1985 and 2008, I worked as an organization researcher and action researcher at the Work Research Institute in Oslo, concerned with organizational learning, critical research methodology, and philosophy of science. For the last 4 years I have been a professor and research director of a program on education and work life research at the department of vocational teacher education at the University College of Oslo and Akershus. Presently, I am the vice-dean for R&D at the faculty of education at the same institution, organizing several different teacher educations. My background and positioning color my perspective, which will be from philosophy and organization studies, as much as from teacher education. This means I will speak partly from a general perspective on the education of professions and partly specifically about teacher education.

Also, of course, and this may be just stating the obvious; it has to be said that teaching is hardly “one thing”. There are important differences between teaching pre-school children, and schooling at primary and secondary levels. Teaching at the university level is again different, and teaching experienced adults is different from teaching inexperienced youngsters. Teaching is different for different subjects too, vocational and professional education and training has its peculiar challenges, and even each and every vocation and profession has its peculiar learning and teaching challenges and methods. Finally, there are, of course, important differences between countries and cultures. But, unfortunately, none of these differences will be dealt with in sufficient detail in my presentation. Science is simplification they say, and so it seems, especially when it has to be said in about 30 minutes, of course.

Before proceeding, let me briefly explain the term “symbiotic” used to designate the proposed collaboration between learning organizations in work life and institutions of higher education providing education for professions. The term *symbiosis* is Greek. It may generate associations to biology and psychology. But here, I’m using the word *bíos* or *bíôsis* in a “pre-biological” and “pre-psychological” sense. “*Bíos*”, (and even more so, “*bíôsis*”) in Greek, did not primarily mean abstract “natural life” as such, common to all living things, as in the modern discipline of biology. Rather, it meant “lifestyle” or “way of living” as in “*bíos theoretikós*” and “*bíos praktikós*” in Aristotle. This is how I use it in my presentation, to mean some form of entangled or interwoven relationship and new *modus vivendi* from which all involved partners – learning, research, and performance – will benefit.

Let me start my substantial exposition by quoting two important authorities on teacher education and on organizational learning respectively; Linda Darling-Hammond and Peter Senge. Each quotation emphasizes an important point in my presentation which I will return to and elaborate.

In (2006:302) Linda Darling-Hammond wrote that “*the enterprise of teacher education must venture out further and further from the university and engage ever more closely with schools in a mutual transformation agenda, with all of the struggle and messiness that implies...*” I agree! She continued (2006:308) by calling for “*a major overhaul of the relationships between universities and schools, ultimately producing changes in the content of schooling as well as teacher training*”. I agree!

Peter Senge¹, quoting a school principal in one of his projects, writes: “*Of all the changes I tried to lead as principal, helping teachers learn how to [work as a] team was probably the most difficult,*” says Mary Scheetz, the principal at (a) middle school in Tucson (...). “*There is so much more potential for collaborative solutions than normally gets realized given the professional isolation common to most schools. Scheetz and Assistant Principal Tracy Benson (...) made sure collaboration became part of teachers’ daily lives by redesigning the school schedule so that each day all teachers had 45–60 minutes free to meet with one another.*”

“*Collaboration only starts to make a difference when teachers have time to practice coordinating in real time,*” says Benson. (...) *This is what actually helps them feel like a team.*”

New Knowledge Management Regime; Socially Distributed Knowledge Production

Before returning to these quotes, I would like to talk briefly about the background for the changing relations between education and work. There are at least two important backdrops: 1) certain societal trends and 2) developments of a more internal professional character. First, the societal changes: Since World War II, processes of research and learning have increasingly expanded *from* being activities restricted to segregated and specialised academic institutions for teaching and research, *to* becoming activities embedded in work life settings. Concerning the natural and technical sciences, industry has been increasingly research based for at least 150 years (cf. e.g. Bernal, 1969; Reich, 1985). The burgeoning social sciences of the 19th century thought they were emulating natural science, and, at the time, separating specialised researchers from the “uneducated masses” to be studied in sociology and from the “alien cultures” in anthropology, may have seemed appropriate even *without* the massive ideological influence from the natural sciences, whose subjects of study were of course external objects.

But by the beginning of the 21st century, from having been largely socially specialised and monopolised, research and learning processes are becoming increasingly socially distributed (Gibbons et al, 1994, Nowotny et al, 2001). The conventional subjects of social research – the natives, or the knowledge workers and practitioners – increasingly acquire their own critical research and learning competencies. They are not merely external objects to be studied.

More specifically, the following are important aspects of the current changes (SLIDE 1): 1) an increased distribution of people with higher education, not only at top levels but at all levels of work organisations, making systematic learning and research at work both possible and required in new ways; 2) a greatly increased accessibility, for anyone, anywhere, anytime, of information and formalised knowledge through ICT and social media, making it possible to obtain, for example, expert second opinions from anywhere any time; 3) a rising level of “enforced” reflection caused by an expanding cultural diversity and close-up encounters between cultures (directly or through ICT), producing a corresponding decrease in the self-evidence of traditional standards in any field (like music, clothing, food, religion, ethics, etc.), making it necessary for individuals themselves to “define” who and what they are, and why (cf. Bauman, 1993, Beck et al, 1994); 4) the increased knowledge and competence intensiveness of work-processes and products through increased competence and technology requirements at every stage, all the way from the acquisition of raw materials to the finished consumer products, 5) the rising demands for “tailor-made” customisation by informed and educated customers and users of products and services, made possible not the least through ICT, and 6) an increased global competition and rate of technological change.

These developments are interconnected and mutually reinforcing. The new constellations challenge inherited hierarchical models of organisation (like Taylorism, scientific management, bureaucracy), mostly based on a division of labour between thinking, planning, and controlling in the higher organisational echelons and mere execution of systemically predefined tasks by more or less unskilled labor on “the floor” of organizations. But by challenging conventional conceptions of who learns what, how, when, and where, they also challenge traditional educational institutions and the relations between both work and education, and work and research. What should a place for systematic learning and knowledge generation look like? Advanced work life is often more “up-to-date” than educational institutions concerning technological and organisational solutions, while teachers in institutions of higher education may never or only many years ago have had experience from “ordinary work life” even within their own professions. In industry and business, the possibility is explored of refining and upgrading practically and experientially acquired knowledge, tacit knowledge etc. as the basis for insight and understanding and for practical measures and innovations (cf. Nonaka & Takeuchi, 1995). The diffusion of knowledge and the spread of mutual learning through networks and ICT are similarly explored.

Epistemological Reasons For Why Learning From Practice is Necessary

But there are also internal professional reasons for requiring a closer relationship between the institutions responsible for the education of professionals and their future work-places. There have been comprehensive discussions about the nature of social research and social knowledge almost continuously throughout the 20th century, questioning the emulation of natural science by

social science. A large part of these methodological and epistemological discussions circle around the understanding *of* and the relationship *between* theory and practice, and the positioning of knowledge generation – the researcher or knower, that is – as a spectator or a participant in relation to the known. Who should (most appropriately) research what, where, when, why, and how?

Even in outlining some of *these* challenges, I want to start by quoting Linda Darling-Hammond (2006:307), who in different ways illuminates the importance of practice by pointing out: “*Many teachers have argued that novices who have experience in classrooms are more prepared to make sense of the ideas that are addressed in their academic work and that student teachers see and understand both theory and practice differently if they are taking courses concurrently with fieldwork.*” Student teachers with practical experience are simply “*better able to understand theory, to apply concepts they are learning in their course work...*”

She also writes (2006:300): “*Much of what teachers need to know to be successful is **invisible** to lay observers*”. She continues (2006:301), quoting the US National Academy of Education Committee’s report from 2005, by saying: “*To a music lover watching a concert from the audience, it would be easy to believe that a conductor has one of the easiest jobs in the world. There he stands waving his arms in time with the music, and the orchestra produces glorious sounds, to all appearances quite spontaneously. Hidden from the audience – **especially from the musical novice** – are the conductor’s abilities to read and interpret all of the parts at once, to play several instruments and understand the capacities of many more, to organize and coordinate the disparate parts, to motivate and communicate with all of the orchestra members. In the same way that conducting looks like hand waving to the uninitiated, teaching looks simple from the perspective of students who see a person talking and listening, handing out papers, and giving assignments. Invisible in both of these performances are the many kinds of knowledge, unseen plans, and backstage moves (...) that allow a teacher to purposefully move a group of students from one set of understandings and skills to quite another over the space of many months.*”

These quotes illustrate the limitations, for both learning and research processes, of mere spectator knowledge, and the necessity of practice – actually the necessity of being a participant, even a “native” of the field studied – for understanding, that is, for theory. The preconditions for understanding are invisible to inexperienced external observers. They are “tacit”, in the words of Michael Polanyi. The necessity of practical experience and exercise is obvious when we talk about for example mathematics. You must participate and engage in the practice of mathematics in order to understand and explain how the practice of mathematics works. But this requirement becomes more contested, less evident, when we move to sociology, organization studies, or the study of professional practice.

Ultimately, the epistemological struggle over the nature of social science boils down to a struggle to understand the contributions and limitations of spectator knowledge versus the contributions and limitations of practitioner knowledge; outsiders’ perspectives versus insiders’ perspectives. Although outsider perspectives can hardly be abandoned completely, their previously presumed privileged access to objective knowledge has been profoundly problematized. Over the years, this has brought forth a broad movement of teacher research and similar movements among

other professional practitioners struggling to give scientific legitimacy and credibility to knowledge and competence developed from practitioner experience. From the insider's and practitioner's perspective – and quoting my own book on Aristotle and *phrónesis* from (2008:15) – I would say we're talking about *“a deeply felt desire for finding concepts to grasp kinds of knowledge and skills that are directed towards understanding and acting in accordance with requirements of the concrete situations we find ourselves in. The search is for non-technical, non-mechanical ways of recognising the sovereignty and independence of our everyday cognitions and judgements, without constantly being referred and subordinated to “theory” or “science”, and to the following of general rules or the mere application of recipes and precepts. The call is for ways of thinking, speaking, and doing things that enhance the personal mastery of everyday challenges, both individually and collectively, in cognitively, ethically, and politically acceptable and responsible ways (...) phrónêsis appears to be a concept with a great potential for all of this”*

I will return briefly to *phrónêsis* after mentioning a few specific challenges facing conventional social science which I think necessitate a move towards a more practical base for knowledge and competence development. The challenges are indicated by a number of points well-known within methodology and the philosophy of science. Roughly, there are two sets of arguments, one concerning the quality of data or relevant experience, another one concerning the quality of explanations or interpretations.

First, then, some points concerning what we might call data-trouble (SLIDE 2): 1) the theory *dependence* of data, 2) the theory-*saturation* of data, 3) the *reactivity* of data-collection, and 4) the *non-observability* of the subjects of research.

Data collection depends on theories, often implicit as basic assumptions or hermeneutic prejudices, in at least two different ways. Data collections are *selections* of data, and the relevance of data depends on some kind of *theory* or at least preconception about relevance. For example, in explaining or interpreting social conduct, most social researchers ignore the positions of the planets and stars as irrelevant. For astrologers, however, and irrespective of who is right, they are the most relevant data, because their theories of relevance differ widely. But data are also theory-*saturated* in the sense that we always perceive things as some specific things. Hardly anyone today considers heavenly bodies divine. 2000 year ago, even the most educated did, although they were not stupid, and many understood logic and basic principles of knowledge quite well. The examples emphasise the thoroughly interpreted nature of all perceptual observations. Data are selected and interpreted according to what we as interpreters bring along as culturally, socially, professionally, or personally determined preconceptions as theories, idols, or metaphors.

The reactivity of the data collection procedures also challenges the validity of conventional data collection. The way data are collected (survey, interview, observation etc.) is a socially defined activity. Different social contexts influence people in different ways. The very consciousness that something called “data collection” is going on will influence everyone involved. Neutral contexts hardly exist, since eliminating everything social is impossible or at least not neutral.

Finally, there is the challenge of what might be called *indicator research*. Most subjects studied by social research are out of reach for the “experience” of conventional research, normally interpreted perceptually. Neither “a state”, nor “an organisation”, nor “the soul”, nor “power” can be seen, heard, smelled, tasted, touched, or observed perceptually and delimited as objects in the world the way stars, rocks, plants, or animals can. And, as suggested, neither can the intricacies of the practice of teachers and musical conductors.

Only one problem concerning explanations and interpretations will be mentioned (SLIDE 3); the challenge of theory pluralism. For 2000 years, *theory pluralism* was associated with the explanatory principle of “saving the phenomena” (cf. Duhem, 1969). For ancient astronomers what mattered was saving the phenomena by means of any logically consistent model able to predict – and *eo ipso* explain – the movements of the lights in the heavens. Theoretical realism – that is, believing theoretical concepts and models were real and “out there” – was *out* before Galileo. Instrumentalism – that is, considering theories merely as tools – was *in*. Today, inspired by filmmaker Akira Kurosawa, theoretical instrumentalism or perspectivism has re-entered social research as the Rashomon syndrome in anthropology (Heider, 1988): The same phenomenon can logically and legitimately be interpreted and explained in totally different ways (SLIDE 4).

Although there isn't time to explain more, I think a more practice-based approach could solve many of these challenges. Some established methodologies, like the reflexive methodology of Alvesson and Sköldböck (2000) incorporate these critical insights and more. But they do not fully explicate and incorporate the radical institutional and practical consequences implied for learning and research.

Philosophical Significance of Skholê

Both in teaching-learning and in research, the philosophical-epistemological arguments indicate that spectator knowledge is insufficient, while the necessary critical distance supposedly secured through an external spectator perspective must be secured in a different way. But, of course, learning from practice may be, and often is quite insufficient as well.

Returning to Linda Darling-Hammond again, I find it significant what she says (2006:308) about the preconditions for a successful collaboration between teacher education and schools as teacher workplaces: “*It is impractical to expect to prepare teachers for **schools as they should be** if teachers are constrained to learn in settings that typify the problems of **schools as they have been...**” (2006:309): “*Developing sites where state-of-the-art practice is the norm is a critical element of strong teacher education, and it has been one of the most difficult. Quite often, if novices are to see and emulate high-quality practice, (...), it is necessary not only to seek out individual cooperating teachers but also to develop the quality of the schools so that prospective teachers can learn productively*”. Practical learning in “bad schools” can be directly counterproductive. It will teach us *neither* improved practice *nor* improved theory and understanding. Schools have to develop into professional development schools (PDS) in order to be able to provide the learning required for professional teaching (Darling-Hammond, 2005). The question is how?*

Peter Senge emphasises the importance of providing *time* for coordination by giving teachers 45-60 minutes each day to meet with one another. According to Senge, this is the key to

developing and improving schools and any other organisation as well. It is worth some reflection, then, that the original Greek word *skholê*; the basis for “school” as the place for learning par excellence in almost all European languages, simply means this: a free and open space – leisure, a break, time-out – from the performance of necessary work and labour. Among the ancient philosophers, this *skholê* was designed specifically for reflection. Originally, *skholê* was not like a didactic *didaskaleion*, as the Greeks used to call what we today think of as a school. Reflection was more important than undergoing positive instruction or teaching, at least among the followers of Socrates who claimed not to teach anything to anyone (ref.). But it is the didactic teaching which has received a historically embedded and institutionalised social space and a fixed position in the lecture halls and class-rooms of educational systems. The practically embedded reflective space for critical dialogue – the original *skholê* – has had a much more precarious existence. It has never received a similar social institutionalisation. But building organisational learning is one way of providing it. This insight has been basic to the development of the approach presented, explicitly developed from the Platonic and Aristotelian concepts of *skholê*, dialogue, and *phrônêsis*.

Dialogue, or dialectics, was the inductive and critical way of inquiring, finding, researching, discovering, and defining; of guidance; moving “upwards” or “inwards” *from* the “first-impressions” of how things immediately appear to us and the inchoate fumbling of novices, *to* the general skills and insights of an expert – i.e. virtue – based on a better grasp of how things are in themselves. Dialogue was conceived by Aristotle as complementary to the deductive way “downwards” or “outwards” of presenting knowledge, and to the didactic or instructive exposition by a teacher of a finished body of knowledge. Dialogue was originally directed by a theoretical interest in developing general insight and competence from extracting and explicating patterns or general ways of doing things in the practically acquired experience of the actor-knowers themselves. Deliberative *phrônêsis* was the ability to find and generate contextually adjusted appropriate action *based on* dialogically developed insights, enlisting and weighing arguments *pro et contra* (that is, *not* merely deductions, calculations, or so-called “practical syllogisms”).

Modern firms, organisations, communities, and societies need professionalism as the perfection of practices more than ever. As indicated, bad schools and bad organizations generally, are bad places for learning. Aristotle considered sufficient leisure – the reflective space of *skholê* – a necessary precondition for developing and realising virtue, excellence, or professionalism in any field. But this leisure was not supposed to be totally external and segregated from any practice. It was not supposed to be merely spectator based. It was supposed to be experience-based and integrated and interspersed in practices. Without this reflective space, work (or any activity) would degenerate into mere repetitious toil and drudgery, unable to improve and raise itself to free, autonomous, and independent virtue or excellence. *Skholê* and critical dialogue was necessary for developing and perfecting general skills and insights through training and guidance. *Phrônêsis* was considered necessary for perfecting a complex practice *during performance* by adjusting optimally in action to the current circumstances.

New Subtitle

The original thinking about the significance of *skholê* or leisure for learning and critical thinking has been central to the approach to organizational learning I’m presenting here. How can it be

embedded in organizations? When talking about the organization of their work place, most people talk about their *work organization* as something that organizes the performance of the primary tasks of the organization; the production of things, services, knowledge or whatever. It consists of divisions of labour and relations of superiority and subordination between departments, levels, and individuals in the organization. Most work places also create short-term “*project organizations*” – “task forces” – created by people from several departments or disciplines and terminated when their assignments are done, in order to deal with unique, short term tasks.

But when organizations are increasingly forced into “continuous improvement” in all fields in order to survive, the development and learning tasks no longer stay temporary. They become permanent. This creates permanent tasks that are still different from and on a “meta-level” in relation to the mere performance in predetermined ways of the primary tasks. Then the *general* preconditions for practical learning and improvement need to be addressed.

This is one reason why some of us since the second half of the 1980s (cf. Eikeland, 2012) have been thinking in terms of permanently organized development work or learning activities in organizations and work places. A new level of meta-organizing the tasks of development and learning was introduced and baptized “development organization” in order to distinguish it from both work organizations and temporary project organizations. *Developing* and improving people, divisions of labour in work organizations, professional competence, product quality, work environment, power relations, ways of communicating, etc. demand different ways of relating, communicating, and organizing than simply performing according to given standards. A critically self-evaluative, learning mode is needed.

In order to explain, we have compared what is needed to what goes on in a theatre, alternating between “on stage” performance and “back stage” rehearsals and reflections. The learning is achieved by alternating between being work organized “on stage” performing, and being development organized “back stage” discussing the performance, changing and improving it, rewriting the script, practising and rehearsing, switching roles, etc. Going back stage, everyone has to step out of the role played on stage, terminate the division of labour from on stage, reflect, and extract patterns in ways of doing things in order to discuss critically on equal terms what went well and what went wrong. In relation to performing on stage, then, the back stage is a “free space”, “open space”, *forum*, or skholê for non-competitive but critical conversation or *dialogue* where collaboration in clarifying mutual and common understanding, and learning to do things better *together* – developing collective, team and organization competence – is important, not winning an argument.

As you may see, creating and organizing back stage foras for dialogical reflection in the work places means quite literally creating the required breaks or leisured “schools” integrated in practical contexts. To create learning systems within the work place means, then, to create a permanent system that gives *everyone* the opportunity to alternate iteratively between performing in the work organization on stage and reflecting in the development organization back stage in order to learn and improve their practice individually and collectively. Developing work places through this kind of broad participation has been going on in Norwegian work life and work life research for 50 years, so it can be done. This could mean systematizing the use of

meeting places already present in the work place, or creating new ones for collective and individual reflection on work experiences. Dialogue conferences and workshops, search conferences, future workshops, change laboratories, open space technologies etc. are ways of operationalizing a back stage forum or development organization. The challenge is to find permanent ways of integrating and institutionalising these back stage forums for reflection in the work place, and to connect them to decision-making, by scrutinizing and analysing the extant formal and informal meeting places at work in order to use them more consciously for learning purposes.

In line with the demands from Linda Darling-Hammond, then, these are some of the learning preconditions I believe should be in place in schools and other professional work-places in order to build a symbiosis with formal, professional and vocational education.

New Subtitle

The basic idea of a *symbiotic* learning system, then, is to systematically utilize for formal educational purposes, this learning system in work places pursuing self-evaluative individual and organizational learning. This means not merely recognizing competence gained from *any kind* of informal learning, or from individual projects. Also, according to a report to the Norwegian Research Council from 2004 (Finne & Hubak, 2004), neither the old “scholastic” and theoretical “education first, work afterwards” or “theory first, then application”, nor a purely market relationship between suppliers and appliers of knowledge seem sufficient in relation to current needs for collaboration. A symbiotic learning system challenges both work places and educational institutions to work systematically with individual and collective learning, and it challenges them to collaborate not merely on an individual basis but systematically and systemically. Both must become learning organizations both separately and together. Educational institutions need to rethink where, how, when, and in what order people learn, and to reorganize their educational offers and their R&D work in close collaboration with the “receivers” of their finished professional candidates, finding the right balance between specialized more didactic courses and participating in systematic reflections and R&D at work. The starting point for building symbiotic learning systems is to secure the *general* preconditions for individual and collective learning in the work place, involving all employees. But it would also provide preconditions for

1) students in basic vocational and professional training and education to be better taken care of in the work place as apprentices in their internship or practicum periods, since learning is systematized among all employees.

2) an increased and improved use of practice-learning and practical work experiences in master- and PhD-studies by employees,

3) establishing learning relationships to “users” (e.g. parents), suppliers, collaborators, and other stakeholders.

4) a greater “absorptive capacity” (Cohen and Levinthal, 1990), that is, openness for and ability to utilize knowledge and innovations from other sources, conventional R&D, etc.

Educational institutions often think of internships, problem based learning, project work etc. as educational wedges into work life, merely as limited measures for bringing students through to their individual exams. Work places often want to reduce higher education to what is immediately relevant for the everyday running of business and problem-solving. But both higher education and professional work places need to think more holistically and less unilaterally instrumentally about the other. Within a working symbiotic learning system, the exchange of personnel would increase naturally as working professionals base their masters- and PhD-work on combined work-based and school based learning. In a way, it reinstates apprenticeship learning at the core of work based learning, not merely problem based or project based learning.

Since a fully fledged symbiotic learning system must be based on a close collaboration between work life and education, it will probably require some form of negotiated and binding social contract between work life and educational institutions on a national or regional level. Norway may be ripe for such a contract, based on the strongly organised structure and relationships, the generally collaborative culture in Norwegian work life, and 50 years of experience with close national collaboration between organized labour (ref.), employers associations, organizational research, and public authorities around enterprise-development, based on broad participation from all employees. Also, similar formalized contracts already established make Norwegian work life prepared for moving towards symbiosis. There are contracts concerning enterprise development (ref.), life-long learning and further education (ref.), the accreditation of informal and non-formal learning and competence acquisition (ref.), work based VET apprenticeships (ref.), mandatory Management by Objectives in public services (ref.), a work environment act requiring work life organizations to provide the preconditions and opportunities for learning (ref.), several work-based professional educations running, and established experience-based and corporate Masters- and PhDs in private and public enterprises (ref.).

A model course for the *introduction* of symbiotic learning has been developed and tested in several consecutive projects over the last decade in municipalities, hospitals, and schools but unfortunately there isn't time to delve into them. But important experiences have been gained concerning how to engage whole organizational units in building organizational learning practically and collectively, simultaneously with providing courses and exams in organizational learning for a smaller number of employees. I think symbiotic learning can resolve a number of specific dilemmas in the relations between education and work. But, unfortunately again, there is barely time to even list them (SLIDE 5) since my time is up. Darling-Hammond said that engaging in a mutual transformation agenda between schools and teacher education would imply a certain messiness. Hopefully, I have been able to explain a little bit of that mess, as I see it, without messing things up even more for you.

Thank you for listening!

Teacher Profile, Teacher Education and Teacher Professionalization in Turkey

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Being a teacher in Turkey is considered prestigious, believed to have a critical function on the formation and development of the society and a legally determined profession. Since the foundation of Republic of Turkey, special emphasis has been placed on teachers, a number of teacher education models have been implemented, teacher training institutions have been launched and teacher education programs have been developed and implemented. Numerous studies have been conducted on teacher professionalization.

The main initiations, actions, reform movements executed for teacher training in Turkey have been launching primary education schools to train teachers, village teacher schools, village institutes, teacher training institutes and higher teacher education schools in the early years of the Republic; accepting teaching as a professional job by enacting a law; enacting the requirement of having higher education in order to be a teacher; transferring the responsibility of teacher training from the Ministry of Education to universities; founding education faculties; training the teachers in all disciplines in at least four-year undergraduate programs; creating opportunities for teacher educators to make academic careers; conducting researches and organizing scientific congresses on teacher training; launching accreditation studies at education faculties; conducting studies to improve teacher education programs; organizing in-service teacher education programs; starting practicing school-based professional development model for teachers; determining teacher competencies.

Today in Turkey, in all education institutions starting from pre-school to secondary school education, according to the 2011-2012 academic year, there are 880 371 teachers working officially. Teachers are trained through two different models at the education faculties of universities. While in the first model student teachers study in a four-year program for elementary schools and in a five-year program for secondary schools, in the second model for secondary education schools the students - who complete undergraduate programs (bachelor's degree) in the disciplines suitable for teaching profession at the university - can study at a teaching certificate program, get a certificate and have the right to become a teacher. In Turkey, there are education faculties in 72 out of 168 universities. The teacher education programs implemented in all education faculties are almost the same and they are composed of subject area, vocational and general culture courses and teaching practice at schools. In order to increase the quality of programs, it is critical to take some precautions. When the standards shaping professionalism are considered, it has been observed that considerable progress has been made in teacher professionalization, yet it is undeniable that there are significant weaknesses in terms of certain standards.

In this speech, teacher profile, teacher education and teacher professionalization in Turkey will be examined, and the important problems, suggestions and implications will be handled



Teacher profile, teacher education, and teacher professionalization in Turkey

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Agenda

- Introduction
- Pre-service Teacher Education
- In-service Teacher Education
- Other Events in Teacher Education
- Teacher Professionalization
- Teacher Profile
- Problems and Suggestions

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Introduction

Teaching in Turkey is a profession which

- has over 160 years of history,
- is believed to have an important role in shaping and developing the society,
- is recognised as a profession both by the society and the laws.

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Introduction

Before and after the Republic, to improve the teaching profession

- teacher education institutions have been opened,
- models have been tried out,
- programs have been prepared and implemented,
- principles and standards regarding teaching profession have been determined,
- laws regarding teaching profession have been made,

....

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Introduction

- large-scale projects have been designed,
- Turkey has attended Bologna process,
- staff have been sent to developed countries to receive training in different teacher education fields,
- in-service teacher training programs have been organized.

In short,

- intensive efforts have been made for the development of teaching,
- teacher education has always received the utmost attention.

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Introduction

Despite all efforts,

what can be said about today's teachers, teacher education and teacher professionalization in Turkey?

Is it perfect or insufficient?

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Pre-service Teacher Education

First schools for teacher training

Started formally on 16 March 1848 - Darulmuallimin was established.

The number increased to 31 by the year of 1908.

Students were educated as teachers for schools.

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Pre-service Teacher Education

At the beginning of the Republic

Following the Turkish War of Independence (1919-1922), during the first years of the Republic (1923),

- 78% of the society were illiterate.
- *education* and *teacher education* were the main priorities of the governments.
- **elementary teacher schools** (at the level of high schools) were established.

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Pre-service Teacher Education

At the beginning of the Republic

- **Gazi Teacher Training Institute** (1926) was established to educate middle school teachers (for the duration of 2 to 3 years after high schools)
- **İstanbul Darülfünun** (İstanbul Higher Education School) was used to educate high school teachers.

These schools were far from meeting the demand for teachers at all levels.

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Pre-service Teacher Education

Village teacher training institutes

Village teacher training institutes (VTTI) were established in 1940 in order to meet the intensive demand for teachers in rural regions.

- VTTIs aimed to educate children in villages and also develop villagers of whom 90% were illiterate in socio-cultural and economical aspects.
- VTTIs (21) served as elementary teacher schools and accepted only selected children living in villages.

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Pre-service Teacher Education

Village teacher training institutes

- The educational program included both *cultural* and *educational* courses as well as *agricultural* and *technical* ones.
- Around 15,000 teachers were educated in those schools and contributed to the education of children and the development of the villagers.
- Because of some political reasons, the practice of village teacher training institutes was ended in 1954.

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Pre-service Teacher Education

Until 1970s

Until 1970s,

- elementary school teachers for both urban and rural regions were educated in **elementary teacher schools** for 3 years after middle schools.
- the number of **teacher training institutes** -middle school teacher schools- increased to 10.
- high school teachers were educated in 3 **higher teacher education institutions** which were opened in İzmir and Ankara after İstanbul.

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Pre-service Teacher Education

In 1970s

In 1970s, a law (no: 1739) was accepted which made higher education compulsory for all teachers at all education levels.

- The elementary teacher schools (at high school level) were closed. Instead, **2-year higher education institutions** were opened. The number increased to 50.
- The duration of 3-year teacher training institutes (middle school teacher schools) extended to 4 years and they were called **higher teacher education institutions**. The number increased to 18.

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Pre-service Teacher Education

In 1970s

- Higher teacher education institutions educating teachers for high schools which were attached to universities were closed. Instead, teaching certificate programs started.
- The teachers of vocational and technical high schools were educated in **9 technical, arts and trade higher teacher education institutions** from 1934 to 1976.

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Pre-service Teacher Education

In 1970s – unusual applications

In 1970s, 2 unusual applications damaged the quality of teachers.

- (1) Providing teacher education to 46,000 high school graduates who had not been accepted into universities through unorganized **correspondence education**.
- (2) Offering **intensive teacher education programs** to students of teacher training institutes who had not attended courses regularly and had not done practice teaching due to violent student incidents.

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Pre-service Teacher Education

In 1970s – unusual applications

Because of those two applications, thousands of people were appointed as teachers without receiving sufficient education.

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Pre-service Teacher Education

Turning point in teacher education - 1981

The year of 1981 is a **turning point** in teacher education.

- With the acceptance of Higher Education Law (no: 2547) in 1981, the responsibility of teacher education was transferred from MoNE to the universities.
- 4-year higher teacher education institutions were transformed into **faculties of education**, and 2-year teacher education institutes into **4-year higher teacher education institutions** in 1989, and later in 1992 they joined education faculties as programs.

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Pre-service Teacher Education

Turning point in teacher training - 1981

- **Teaching certificate programs** in which students of other departments attended were offered by the educational sciences departments of faculties of education.

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Pre-service Teacher Education

3.5+1.5 model for secondary teacher education

In 1998, the teaching certificate program for high schools were abolished and replaced by **3.5+1.5 model**.

- Faculties of education worked in collaboration with faculties of arts and sciences.
- The students studied in the faculties of arts and sciences for 3.5 years on certain subject areas such as *Turkish language and literature, physics, history, biology, mathematics*, and then they studied on teaching in the faculties of education for another 1.5 years, and earned teaching diplomas.

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Pre-service Teacher Education

Teacher education programs

Teacher education programs were designed by **MoNE** before 1981 and by the **Higher Education Council** after that date.

The same programs were implemented in all teacher education institutions.

The programs have consisted of courses in three domains namely *general culture, subject area and pedagogical knowledge and school practice*.

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Pre-service Teacher Education

Teacher education programs

All the courses in three domains were spread to all semesters.

Only for the 3.5 +1.5 model, all general culture and subject area courses were given in the first phase, and pedagogical knowledge courses and school practice in the next phase.

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Pre-service Teacher Education

Development of teacher education programs

Teacher education programs were usually discussed and evaluated in the **National Education Councils** before the year 1980 and the agreed amendment proposals were submitted to MoNE.

After 1980, all teacher education programs were prepared by field experts in **MoNE** and the **Higher Education Council** in accordance with the decisions taken in the 11th National Education Council.

Those programs were implemented in faculties of education until 1997.

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Pre-service Teacher Education

Modification of teacher education programs

Teacher education programs were modified in accordance with the studies done within **National Education Development Project** between the years 1994 and 1997.

- More emphasis was given to *subject teaching and school practice* in the programs.
- *Instructional Technologies and Material Development, Classroom Management, Guidance and Computer* were included as courses into the programs.

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Pre-service Teacher Education

Modification of teacher education programs

- Master's degree in education was required to become a secondary school teacher.

New programs were implemented between the years 1998 and 2006.

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Pre-service Teacher Education

Modification of teacher education programs

Teacher education programs were updated by the Higher Education Council in 2006.

- The content of the programs was revised.
- 50-60% subject area courses,
25-30% pedagogical knowledge courses and school practice,
15-20% general culture courses.

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Pre-service Teacher Education

Modification of teacher education programs

- Some general culture courses were added to the programs:

*Community Service Practices,
History of Science,
History of Turkish Education and
Effective Communication Skills.*

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Pre-service Teacher Education

Modification of teacher education programs

- The faculties were given the freedom to change 25% of the courses of their programs.
- With respect to secondary school teacher education, 3.5+1.5 model was replaced by 5-year joined program.
- Pedagogical knowledge courses and school practice were combined with other courses and spread to 5 years.

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Pre-service Teacher Education

Today

- Teachers for all schools are trained in the faculties of education of universities.
- There are 72 faculties of education in 168 universities.
- Two models are used for teacher training: 4 or 5-year undergraduate programs, and teaching certificate program.

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Pre-service Teacher Education

Today

- 4-year programs are for pre-primary and primary schools, and 5-year programs are for high schools.
- All programs consist of *subject area courses, pedagogical knowledge courses, general culture courses and school practice.*
- The same programs are implemented in all faculties of education at the universities. Faculties have the right to change only 25% of courses.

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In-service Teacher Education

Start of in-service training

The in-service training of teachers is considered as important as pre-service teacher training. In-service training has been made compulsory for teachers through laws.

In-service training activities for teachers started in 1960 with the foundation of In-service Training Department of MoNE.

In 1982, with the transfer of pre-service teacher training from MoNE to the universities, the universities were given the task to offer in-service training to teachers.

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In-service Teacher Education

In-service training department

The **In-service Training Department** is responsible for organizing and offering in-service training to all teachers in schools.

Six **in-service training institutes** have been opened. They were established in various regions of Turkey after 1982.

In-service training activities were organized in the institutes throughout the year where participant teachers' accommodation and training requirements were met.

Other in-service training activities were also organized in different places.

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In-service Teacher Education

In-service training in laboratory schools

In 1992, "laboratory school model" was put into practice in 208 schools that aimed to improve the quality of education and student achievement.

One of the main principles of this model included teachers' in-service training.

This helped in-service training to become an important part of teachers' professional development in primary and high schools.

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In-service Teacher Education

In-service training from faculties of education

After the transfer of teacher training to the universities (1982), the cooperation between MoNE and the universities improved increasing the variety, number and the quality of in-service training programs.

In order to meet the in-service training needs of teachers, different kinds of programs have been put into practice by the faculties of education.

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In-service Teacher Education

Probationary training program

MoNE started a 1-year in-service training program called "**probationary training program**" for new teachers.

This program consists of three components:

- (1) basic training program (subjects about civil servants / 50 hours),
- (2) preparatory training program (laws and regulations of education system / 110 hours),

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In-service Teacher Education

Probationary training program

- (3) practical training program (practice teaching / 220 hours) for 380 hours.

263,847 new teachers were trained and appointed to schools between the years 1995-2001.

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In-service Teacher Education

In-service training to become administrators

MoNE has made in-service training compulsory for the teachers who wish to be appointed as school administrators, educational administrators and primary education inspectors.

It's a 120-hour program.

In 1998, for example, 1553 teachers were appointed as school administrators after completing the program.

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In-service Teacher Education

In-service training through distance education

Teachers working in primary schools and high schools received **higher education degrees** through distance education.

This was because of The National Education Principal Law (1973) which made higher education compulsory for teachers at all levels of education.

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In-service Teacher Education

In-service training through distance education

- In 1980s, 130,000 primary school teachers were graduates of schools at secondary education level.

MoNE cooperated with the Open Education Faculty of Anadolu University initiating a 2-year higher education **associate degree program** in the 1985-86 academic year.

Within 4 years, 117,618 teachers completed the program.

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In-service Teacher Education

In-service training through distance education

- **Undergraduate completion programs** were implemented for subject teachers at schools, who already received 2- or 3-year higher education, in the 1990-91 academic year.

A total of 24,097 teachers successfully completed these 1-year programs in 12 subject areas within 4 years via distance education.

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In-service Teacher Education

In-service training through distance education

- The latest program, in the 1998-99 academic year, was a **2-year completion program for grade teachers** at primary schools via distance education who had associate degrees.
Within 3 years, 17,310 teachers received BA degree.

All those distance education programs were in-service training programs. Through these programs teachers' professional skills and thus their qualifications as teachers were improved.

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In-service Teacher Education

Local and school-based in-service training

The local in-service training for teachers was started to be offered besides central in-service training.

National Education Directorates in provinces were given authorization to prepare and administer in-service training programs locally.

In 2005, the "school-based professional development" concept was started to be used by MoNE.

A guide on school-based professional development was prepared and used in all schools.

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In-service Teacher Education

Local and school-based in-service training

As a result of these,

- in 1990, 373 in-service training programs were organized, 40,881 teachers attended.
- in 2010, 19,511 programs / activities, 444,692 trainees.
- the duration of in-service training per teacher in a year came up to 17.5 hours.
- the number of programs and trainees and also the quality of in-service training increased, and the programs became more functional.

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In-service Teacher Education

Teaching has no limits

“Teaching has no limits” is another important in-service training project for primary school teachers.

It was launched by the Teacher Academy Foundation in 2008.

It aimed to offer in-service training to 100,000 teachers, school administrators and inspectors in 5-years time.

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In-service Teacher Education

Teaching has no limits

In-service training activities were implemented by mentor teachers who had been trained for this project.

From 2008 to the end of 2011, 48,018 teachers participated in the activities.

The activities focused on the areas of *classroom management, measurement and evaluation and communication skills*.

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In-service Teacher Education

Today

- In-service Training Department of MoNE is responsible for in-service training of teachers.
- Central, local and school-based in-service training activities are organized for teachers.
- Universities – faculties of education offer in-service training programs for teachers.
- A 1-year in-service training program called “probationary training program” is implemented for new teachers.

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In-service Teacher Education

Today

- In-service training is compulsory for the teachers who wish to be appointed as school administrators and inspectors.
- The Teacher Academy Foundation’s project which aimed to offer in-service training to 100,000 teachers in 5-year time is continuing.
- Distance education is used for the teachers’ in-service training.

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Other Events for Teacher Education

National Education Councils

National Education Councils have an important role in the formation of teacher education system in Turkey.

NEC is a large council that consists of high officials from MoNE, academics in universities, teachers, school administrators, education experts and other people from other professions.

The first meeting of NEC was in 1939 and the last one -the 18th meeting- was in 2010.

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Other Events for Teacher Education

National Education Councils

The decisions taken in the councils provided the basis for the practices of the governments.

In most meetings teacher education and current issues in teacher education were discussed and solutions were proposed.

In 1982, the **11th NEC**'s agenda consisted entirely of teacher education issues.

Most of the decisions of the Council were put into practice by MoNE and HEC.

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Other Events for Teacher Education

Development Plans

The other source that shapes the teacher education policies in Turkey is the **development plans**.

So far 9 Development Plans covering different periods have been designed and put into practice.

The last of them covered the years 2007 to 2013.

In all those plans, issues regarding teacher education were put forward and certain decisions were taken.

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Other Events for Teacher Education

Preparing an accreditation system

An accreditation system for faculties of education was prepared and piloted in 1999.

Foreign experts and Turkish academics from faculties of education around Turkey worked as the accreditation project team.

A book on accreditation was drafted and later published.

The pilot practice of accreditation process was completed in 6 faculties of education and then it was evaluated at a national conference.

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Other Events for Teacher Education

Preparing an accreditation system

Dissemination-training courses were held across the country, with participants from faculties of education.

36 senior teacher educators were trained as assessors.

The accreditation system became ready for implementation.

Unfortunately it has not been pursued in the decade since.

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Other Events for Teacher Education

Determining teacher qualifications

Teacher qualifications -general and subject areas qualifications- were determined by MoNE as a part of National Education Development Project (NEDP) in 2006.

The general teacher qualifications included six major qualification areas, 31 qualifications and 233 performance indicators for them.

Subject areas teacher qualifications were determined for 16 areas for primary school teachers in 2008.

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Other Events for Teacher Education

Joining Bologna Process

Turkey joined Bologna Process in 2001.

The European Credit Transfer System (ECTS) has been implemented in many universities -including faculties of education.

The Diploma Supplement has been used in almost all higher education institutions since 2005-2006 academic year.

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Other Events for Teacher Education

Joining Bologna Process

As of 2011, 5 higher education institutions were awarded the ECTS Label, and 25 higher education institutions were awarded the Diploma Supplement Label.

Student and teaching staff mobility started and a lot of students and teachers took advantages of those programs.

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Other Events for Teacher Education

Joining Bologna Process

Example:
At Anadolu University
in 2011-2012 within Erasmus Program

2576 students and 720 teaching staff went out,
1020 students and 404 teaching staff came in.

From Faculty of Education 14 teaching staff went
out.

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Other Events for Teacher Education

In short

All those events or activities or councils or
projects
aimed to make teacher education
–pre-service and in-service education–
more effective,
more qualified, and
more functional in Turkey.

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Teacher Professionalization

Question debated

Is teaching a profession?

A question that was debated a lot till now.

“Yes.”

“No.”

“Teaching is a semiprofession.”



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Teacher Professionalization

Answers

Some say,

“Teaching is complicated, requires specialized
knowledge and skills and deserves some kind of status
and standing as traditional professions, such as law
and medicine.”

Some say,

“No, teaching is not a profession. If everybody boils
water and coaches basketball, then they can teach.”
According to them, understanding subject-matter
knowledge is enough in order to be able to teach a
course.

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Teacher Professionalization

Answers

Some others say,

“An occupation has to meet many criteria in order
to be considered as a profession. Teaching meets
some of those criteria and thus it is a
semiprofession.”

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Teacher Professionalization

Teaching as an occupation

Teaching is an occupation of great value for the
community, because it is the occupation which is used
to teach other occupations.

Teaching is the occupation without which the other
occupations,
besides important behaviors, skills, rules, events and
other things which are necessary for the society to be
in peace and wellness
cannot be gained properly and easily by the people.

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Teacher Professionalization

Criteria of professions

What makes an occupation a profession?
What are the criteria or characteristics of a profession?

Some criteria developed by sociologists:

1. Credential and licensing requirements for entry
2. Induction and mentoring programs for entrants
3. Professional development support, opportunities and participation
4. Specialization
5. Authority over decision-making
6. Compensation levels
7. Prestige and occupational standing

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Teacher Professionalization

Is teaching a profession?

According to the criteria, is teaching a profession?

It is.

If, in any country, teaching doesn't meet some of those criteria, it's not because teaching is not a profession.

It is that country's matter that teaching is **not professionalized** in that country.

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Teacher Professionalization

Right question

~~Is teaching a profession in Turkey?~~

Is teaching professionalized in Turkey?

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Teacher Professionalization

In Turkey

For the first criterion "**licensing requirements for entry**", teacher candidates have to have a higher education degree in order to be able to enter teaching profession.

They have to be successful in Civil Servants Selection Examination.

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Teacher Professionalization

In Turkey

The second criterion is "**induction and mentoring programs.**"

There is a regulation regarding this criteria. According to the regulation, all novice teachers have to undergo 1-year induction program entitled "probationary training program".

Those who complete this 380-hour program successfully can transfer to the permanent teacher position.

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Teacher Professionalization

In Turkey

The third criterion is "**professional development support**".

In-service training is compulsory for all teachers in Turkey.

The teachers participate in in-service training programs organized by the In-service Training Department, sometimes voluntarily and sometimes on compulsory.

The teachers can also participate in professional development activities organized locally or by their schools.

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Teacher Professionalization

In Turkey

With respect to the fourth criterion “specialization”, it can be said that pre-service training programs in Turkey are organized in a way that they cover the knowledge and skills essential for teachers.

Each program consists of specific subject-area knowledge and pedagogical knowledge as well as school practice.

Teacher candidates are trained on a specific subject area such as *Pre-school Education, Mathematics, Turkish Language, History, Music and English* and gain expertise in these areas.

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Teacher Professionalization

In Turkey

The fifth criterion is “authority”.

The committees consisting of “professionals” in MoNE and Higher Education Council exert control over the curriculum of the schools at all education levels and teacher training programs, admissions and accreditations of faculties of education.

The education system in Turkey is centralized. Therefore, school administrators have limited independence regarding school administration. Teachers have almost no influence over school operations. They also have limited freedom in classroom teaching.

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Teacher Professionalization

In Turkey

The sixth criterion is “compensation”.

Unfortunately teachers are not provided with high salary in Turkey.

In terms of teacher salaries, Turkey is ranked lower than almost all countries as reported by OECD.

Furthermore, teachers receive less salary compared to other professions in Turkey.

Teacher salaries have always been a hot topic of debate in Turkey.

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Teacher Professionalization

In Turkey

Relative to the final criterion “prestige and occupational standing”, teachers are respected professionals in Turkey.

During the first years of the Republic, the status of teachers was high. This situation continued until 1970s and then it decreased gradually.

Today it can be said that teachers do not have a high status.

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Teacher Professionalization

In short

In Turkey,

- teaching is accepted as a profession by law and by society.
- when the criteria are considered, some progress has been made in teacher professionalization.
- still there are serious weaknesses in terms of almost all criteria.

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Teacher Profile

Number of teachers (2011-2012)

- 880 371 teachers in all educational institutions.
- 59% at primary education.
- 27% at secondary education.
- Only about 3% at pre-primary education.

	N	%
Pre-Primary education	22 936	2.6
Primary education	515 852	58.6
Secondary education	235 814	26.8
Non-formal education	105 769	12.0
Total	880 371	100.0

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Teacher Profile

Student-teacher ratio in schools (2009)

- Turkey has the highest student-teacher ratio among other countries.
- Student-teacher ratio in Turkey is also higher than OECD average.
- Student-teacher ratio at pre-primary education is the highest – one teacher for 24 students.

	Pre-primary education	Primary education	Secondary education
Turkey	27.4	22.9	16.9
OECD average	14.3	16.0	13.5
Germany	13.6	17.4	14.8
Italy	11.0	10.7	11.0
Japan	16.3	18.6	13.2
Slovenia	9.4	16.7	11.0
Denmark	5.5	m	m
Portugal	15.7	11.3	7.7

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Teacher Profile

Gender of teachers (2011-2012)

- Half of the teachers male, half female.
- Almost all teachers are female at pre-primary schools.
- More female teachers at primary schools.
- More male teachers at high schools.

	Total	Male		Female	
		N	%	N	%
Pre-primary edu.	22 936	1 600	7.0	21 336	93.0
Primary edu.	515 852	238 854	46.3	276 998	53.7
Secondary edu.	235 814	134 153	56.9	101 661	43.1
Non-formal edu.	105 769	60 721	57.4	45 048	42.6
Total	880 371	435 328	49.5	445 043	50.5

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Teacher Profile

Age of Teachers (2007-2008)

- 44% of teachers are below 30 years old – very young.
- 50% of teachers are between 30-49. Only 6% are above 50.
- Most are young.

10.1%	Under 25 years	} 43.9%
33.8%	25-29 years	
35.0%	30-39 years	} 49.7%
14.7%	40-49 years	
6.2%	50-59 years	} 6.4%
0.2%	60 years +	

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Teacher Profile

Teachers' educational attainment (Lower secondary education, 2007-2008)

- A very large portion (88%) of teachers are holding Bachelor degree.
- About 6% have master's and PhD degrees.

88.2%	Bechelor degree
5.6%	Master degree
0.2%	PhD degree
6.0%	Associate degree

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Teacher Profile

Teachers' job experience (2007-2008)

- Two-thirds of teachers have teaching experience of below 11 years.
- One-third has experience above 11 years.
- Many of the teachers have little experience in teaching.

18.0%	1-2 years	} 68.7%
50.7%	3-10 years	
19.3%	11-20 years	} 31.3%
12.0%	20 + years	

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Teacher Profile

Teachers' working time (2009)

- Turkish teachers' net working hours is almost the least, total working hours is almost the highest among other countries.
- Turkish teachers' net working hours at primary and secondary education are less than OECD average, but total working hours are higher than OECD average.

	Net teaching hours		Total working hours	
	Primary education	(Upper) Secondary Education	Primary education	(Upper) Secondary Education
Turkey	639	567	1808	1808
OECD average	779	656	1665	1663
Germany	805	713	1775	1775
Italy	757	619	-	-
Japan	707	500	1899	1899
Slovenia	690	633	-	-
Denmark	648	377	1680	1680
Portugal	857	770	1464	1464

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Teacher Profile

Teachers' salaries Annual EUROS (2009)

Turkish teachers' salaries are less than the others, also than OECD average. Increase rate is 16% in Turkey. – less than almost all and OECD average.

	Primary education			(Upper) Secondary education		
	Starting salary	Salary at top of scale	Increase rate %	Starting salary	Salary at top of scale	Increase rate %
Turkey	22 420	26 074	16	22 980	26 634	16
OECD average	26 512	42 784	61	29 472	47 740	62
Germany	40 780	54 249	33	48 942	68 157	39
Italy	25 381	37 373	47	27 358	42 908	57
Japan	24 579	54 824	119	24 579	56 310	129
Slovenia	25 629	32 726	28	25 629	32 726	28
Denmark	41 222	47 728	16	41 849	54 681	31
Portugal	30 112	52 909	76	30 112	52 909	76

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Teacher Profile

In short

In Turkey,

- 880 371 teachers in schools.
- student- teacher ratios are between 27.4 and 16.9, and higher than other countries and OECD average.
- half of the teachers are female, and the other half are males.
- almost all teachers are young, below 50 years old.

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Teacher Profile

In short

In Turkey,

- most of the teachers hold Bachelor degree.
- many of the teachers are little experienced – below 11 years.
- teachers' net working hours are less, total working hours are more than the others'.
- teachers get less salaries than the teachers in other countries.

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Problems and Suggestions

It is clear that in Turkey teacher is placed at center for his/her role for the education system to carry out its expected function.

A great effort has been made to make teacher training more effective.

The last two decades have witnessed multisided initiatives and applications.

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Problems and Suggestions

Practices from USA, European countries and other countries have been observed and adapted to improve teacher training and to make teaching professionalized.

Despite all those initiatives and applications, teacher training in Turkey is still major residual issues which are feared to be continued.

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Problems and Suggestions

- Faculties of education lack the necessary number of teaching staff.
There is a ratio of 32 students per instructor and 63 students per faculty member with PhD.
However, faculties of science and arts, faculties of fine arts and faculties of medicine have far more better ratios such as 12 and 22; 14 and 32; 2 and 4 respectively.
Precautions which will increase the number of faculty members should be taken; especially faculty members with expertise in teaching of specific subject areas should be employed.

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Problems and Suggestions

- Pedagogical knowledge is not required for university teaching staff. Not all teaching staff have teaching qualifications in faculties of education. When they have, they can be good models for student teachers.

Teaching certificate should be a prerequisite to be hired at the faculty.

Faculty members without teaching qualifications could be offered an in-service training program on pedagogical knowledge and skills.

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Problems and Suggestions

- Teacher training programs implemented in faculties of education and teacher qualifications determined do not overlap in every qualification area.

Research should be done to find out the points which do not overlap in the programs and be revised accordingly.

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Problems and Suggestions

- School observations and practices in the programs are either insufficient or not carried out properly.

While school practice activities last 16 weeks in Denmark and 840 hours in the Netherlands, in Turkey it lasts only 200 hours.

To research and observations, student-teachers have very little opportunities for classroom teaching in schools.

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Problems and Suggestions

School practice time should be increased and mentors at schools ought to be trained and the number of students per mentor should be lessened.

In short, school practice should be redesigned to make it efficient.

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Problems and Suggestions

- Courses and credits in **teaching certificate program** for secondary education are behind the expectations. Due to the excessive number of students teaching cannot be carried out efficiently.

All the inconvenient applications which diminish the quality of teaching in schools and affect the dignity of the teaching profession negatively must be stopped.

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Problems and Suggestions

- Despite the increase of In-service training activities which are carried out centrally or locally or as school-based, this increase is still insufficient due to the number of teachers.

According to TALIS (2009) research, 75% of teachers said that they have not attended any in-service training activities in 18 months' period of time.

In order to have teachers attend in-service training activities, they should be convinced that they need continuing professional development. They should also be supported and motivated to attend in-service training activities.

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Problems and Suggestions

- School-based professional development activities have not been implemented effectively.

In order to disseminate and increase the efficiency of the school-based in-service training activities, school managers and teachers should be informed about school-based professional development.

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Problems and Suggestions

- In-service trainings organized so far unfortunately could not meet the real and whole professional development needs of the teachers.

For this reason, in order to diagnose the real needs of the teachers, the teacher qualifications and their performance results should be used.

Local and school-based in-service training activities should be organised to address the needs of the teachers who work in a certain school and region.

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Problems and Suggestions

- Teaching in Turkey has not been completely professionalized yet.

It especially has some drawbacks in terms of prestige and occupational standing, compensation and authority criteria.

Following are the necessary precautions to make teaching in Turkey a profession at a higher level:

- Number of students who will enter faculties of education should be determined according to the needs of the specific areas of teaching in schools.

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Problems and Suggestions

- Policy tools such as scholarship should be developed to take the attention of the successful candidates to enroll faculties of education.
- Teacher appointments which are conducted heavily under political influence affect the quality of teaching negatively.

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Problems and Suggestions

These practices have misled the general public to the idea of “everybody can teach” and have encouraged many to apply for teaching positions without certification, which degenerated the dignity of teaching profession.

Therefore, persons without teaching certificates should not be allowed to do teaching in schools even if they are not appointed as full time teachers.

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Problems and Suggestions

- Salaries of teachers should be increased to make the teaching profession more prestigious and develop highly qualified teachers.
- Faculties of education lack a quality assurance system which is very important to develop teacher education systematically.
- Quality assurance system should be set up for faculties of education and the programs should be accredited. An independent accreditation institution should be established.

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Last words

If we really wish to have a good life,
the starting point is *teacher education*.

Countries, people should do more than they could
to improve teacher education and training,
to professionalize teaching and
to have qualified teachers / to have a good
teacher profile.



Thank you

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Teacher Professionalism: Why Are We Still Talking About It?

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Introduction

In 2003 I published a book titled *The Activist Teaching Profession*, in many respects this was a manifesto for revitalising the teaching profession, a strategy for public recognition and legitimacy. I was concerned with how teachers were viewed externally (especially by communities, employers and government) and what the profession needed to do in order to ensure accountability, improve the practices of its members and build the trust of government and communities. Based on observations on practice across a number of English speaking countries, as well as my involvement in a national project on teacher professional development in Australia I ended the book with a call to action for the teaching profession and suggested that “An activist teaching profession is an educated and politically astute one” (Sachs, 2003:154). Now nearly ten years on how far has the profession progressed in responding to that call to action?

I am left asking the following questions: why are we still talking about teacher professionalism? What are the current conditions shaping teacher professionalism and how do we enhance teacher professionalism through continuing professional development? In this paper I will reflect on progress over the last ten years, especially how this relates to notions of teacher professionalism, teaching standards and teacher professional development. My argument is twofold: first is that teacher professionalism is shaped by the external environment during periods of increased accountability and regulation different discourses of professionalism will circulate and gain legitimacy and impact on how professionalism is conceived and enacted. Second, in such a fluid environment teacher professional development will need to serve both a political purpose as well as a capability one. In developing my argument I organise the paper around four themes: factors shaping teacher professionalism, teacher professionalism as a contested site and teacher professional development as a strategy to shape professionalism and a mature profession.

Factors Shaping Teacher Professionalism

A number of factors are impacting on the conceptualisation and enactment of teacher professionalism, I identify three that are shaping policy and practice; each intersect to develop particular discourses about professionalism, and can be seen to have both a positive and negative effect on the political intent of teacher professionalism. The three issues are the rise of performance cultures, increased accountability and the imposition of teacher standards.

Performance Cultures

Performance management and performance cultures are now embedded in policies and practices of education they are especially evident around government interventions to impose professional standards on the teaching profession. In the light of increasing demands for accountability and transparency the use of performance indicators is a strategy whereby student learning outcomes and teacher performance can be measured. For purposes of

clarity and simplicity we will use the language of performance cultures, while acknowledging that much of the literature from which we draw uses the language of performance management (Sachs and Mockler 2012)

In most countries performance cultures are a strategy to link national and international economic agendas with institutional and individual activities. In the case of school education the preferred outcome, as required by government, is to demonstrably improve student learning outcomes by improving the standard and quality of teaching. Performance cultures rely on technologies which aspire to provide perfect information about the workings of the organization through highly selective objectifications of performance known as performance indicators (Elliott, 2001, p. 201). These performance indicators are used as a measure for accountability as well as an indicator of alignment of outcomes with strategy. Accordingly, one of the aims of indicator systems “is to attach value to that which is measured” (Fitzgibbon 2000, pp. 260,261)

Performance cultures within public service organisations imply a low level of trust in the professionalism of their employees: the more pervasive the gaze of audit the less trust invested in the moral competence of its members to respond to the needs of the people they serve.” (Elliott 2001: 201) Hence the logic is: if you can demonstrate improvement through the use of ‘objective’ metrics then trust in government can be reinstated because improvement has been clearly objectively demonstrated.

Performance cultures can be helpful in that they can give some shared baselines about learning outcomes and provide teachers with a common and shared language about practice. At their best they can also help outsiders recognise the scope and scale of teachers’ work, and provide a systematic approach for the recognition and reward of teaching rather than an individualistic one. Accountability is clearly central to performance cultures, I now turn to elaborate how increased accountability is intrinsic to the current context in which teacher professionalism is being enacted.

Increased Accountability

The project of accountability is inherently a political one; it is a two sided sword- the accountabilities identified by teachers themselves and the accountabilities identified by government and employers. Ideally these two types of accountability should be aligned. Teachers are accountable to the students they teach and the communities in which they work. For governments teachers implement government policy and enact government priorities which vary from time to time according to the particular political flavour at the time. Ostensibly teachers and governments are working in the collective enterprise of ensuring quality student learning. The differences emerge in terms of how that quality is defined and how it is measured.

Given the huge financial investment in schools and education by governments it is not surprising that there would be a focus on accountability and transparency of practices. Moreover, the focus on efficient use of limited resources and the effectiveness of policy priorities to improve and add value to student learning outcomes reinforces a regulated approach to accountability. It is in such a context that performance and compliance cultures begin to evolve across systems and within schools. Significantly at the systemic level different forms of accountability circulate which in turn produce different outcomes and have

different effects on the enactment of teacher professionalism. For Ravitch (2010: 163) a good accountability system must include professional judgement, not simply a test score and other measures of student achievement, such as grades, teachers' evaluations, student work, attendance and graduation rates.

Accountability, like standards, is a concept that is often invoked by politicians when questioning the quality of education and student learning outcomes. Both concepts are defined in different ways in theory and in practice, and applied according to political need and interest. Proponents of the 'new accountability' argued that educators could be held accountable by making their work more visible to public scrutiny (Taylor Webb 2005: 193). *Clearly*, accountability is an evocative concept that is all too easily used in political discourse and policy documents because it conveys an image of transparency and trustworthiness. In practice being accountable is seen as a virtue, as a positive quality of organizations or officials (Bovens, Schillmans and 'T Hart (2008: 226- 227).

Halstead (1994) distinguishes between two forms of accountability: contractual and responsive. Contractual accountability is concerned with the degree to which educators are fulfilling the expectations of particular audiences in terms of standards, outcomes and results. This form of accountability is based on an explicit and implicit contract and tends to be measurement driven. The factors to be measured are selected to fit perceived preferences and requirements and focus mainly on outcome measures and rely on external scrutiny to achieve its ends. Student test results, literacy and numeracy rates are some examples. Responsive accountability on the other hand, refers to decision- making by educators, more concerned with process than outcomes, and with the stimulating involvement and interaction help to secure decisions to meet a range of needs and preferences and relies on self-regulation to achieve its goals.

Recognising that these forms of accountability have different purposes and outcomes is important as these differences have implications for policy development. The former is particularly evident in regulatory environments, where the intent of government is compliance and control, while the latter is about inclusion and the use of the collective wisdom of the profession to self-regulate practice. At its worst, (contractual) accountability threaten to punish educators through a sophisticated network of surveillance (Taylor Webb 2005: 190.) and can lead to what Levitt, Janta and Wegrich (2008: 16) refer to as 'accountability overload'. This is the result of inadequate clarity between performance requirements or the contradictory obligations they generate.

Such regimes can lead to external regulation where the actors (educators) have little agency or where self -regulation does exist it, acts towards a formal form of self-surveillance by teachers and their peers. As a consequence it erodes trust and develops risk adverse dispositions towards practice. Systematic external observation thus becomes part of the taken-for-granted aspect of education practice and at its worse creates timidity on behalf of teachers who prefer tried and tests practices because they are safe and a safe cover story - the more practice is interrogated in the quest for transparency the increasingly opaque the profession and one's practice may become.

Standards

Standards and accountability go hand in hand and in some respects standards have become the tool for accountability. Defining the scope and content of standards has been a difficult task. Sometimes there is reference to teacher standards and others teaching standards or teacher professional standards. While these are complementary, there are differences between the two. Teacher standards refer to levels of competence expected of individual teachers, either for entry into the profession or for measuring ongoing performance. The scope and remit of *teaching standards* is the teaching profession *rather* than individual teachers.

In examining standards it is important to examine them for their clarity, consistency and coherence, as well as the values, principles and assumptions that underlie them. They also need to be examined in terms of fitness of purpose – are they capable of doing the work they are intended to do? And is this consistent with the broader purposes of their institutional setting? Procedurally, standards can be investigated in terms of their establishment and formation, with all the issues of accountability and transparency that this entails. They can also be questioned in terms of the manner in which they are translated into practice and the consequences, both manifest and latent, which follow.

In practice, standards may be seen to be an opportunity for governments either to control education activity through the reporting requirements of student learning outcomes and teacher performance or to improve the provision and outcomes of schooling. The former focuses on regulation, enforcement and sanctions to ensure compliance (Sachs 2005). The latter is more focussed on development and improving teacher quality.

Elsewhere (Sachs 2005) I argued that many of the assumptions associated with standard setting are derived from a commonsense and populist approach to education, focussing on minimum levels of achievement in various aspects of practice. Their focus is on defining what teachers should be able to do and what they should know. Such as preoccupation on the technical capabilities of teachers led Groundwater-Smith and Mockler, (2009: 8) to comment

It is our fear that the current standards regimes and the policy contexts out of which they grow have, at their hearts, a desire not to build an understanding of the complexity and nuance of teaching practice or to celebrate the diversity of teachers and learners, but rather to standardise practice, stifle debate and promise the fallacious notion of 'professional objectivity.

Earlier I referred to contractual and responsive accountability, aligned with these forms of accountability are two kinds of standards: regulatory and developmental standards (Mahony and Hextall 2000). Regulatory standards align with contractual accountability and responsive accountability with developmental standards.

Regulatory Standards

Developmental Standards

A focus on accountability	A student centred approach to teaching and learning
A technical approach to teaching	Systematic forms of monitoring for the purposes of accountability
Monitoring teacher performance	A view that teachers should be career long professional learners
External imposition of standards by a government instrumentality (Sachs 2005: 583)	A commitment to teachers improving their professional knowledge and practice

Two approaches to standards

Put simply, regulatory approaches focus on performance, as measured through external tests which make claims about the quality of student learning outcomes. Not surprisingly, this approach supports government agendas - tests supposedly provide objective data! We can see this in how governments respond to PISA data and other international benchmarks. Go down a ranking and there are consequences, even if there is a valid explanation for the change. This is the practice of 'if it moves you measure it'. The problem here though is it is not necessarily an indicator for improvement. Ravich (2010) in her recent attack on the prevalence of measurement through standardized tests has been critical of the authority which regulatory standards are dominating government policy and practice.

In contrast, developmental standards are concerned with improvement, usually of teacher performance and student learning outcomes. They emerge through consultation among various stakeholders and are, in the main, profession led, rather than bureaucratically imposed. They are also context specific, acknowledging that different systems and contexts (inner city, rural, metropolitan, remote etc) should be considered when making judgements about teacher and student performance. Their power is not in the words and sentences they contain, but rather in the scope they offer to build a shared understanding of what it is an accomplished teacher knows and does, and in the processes that sit behind the expression of accomplishment, representing the opening of professional practice to debate, discussion and improvement. (Groundwater-Smith and Mockler 2009:59)

In the current situation with its focus on regulation, the opportunity for teacher professional standards to be a catalyst for authentic professional learning is not being realised. Rather the focus is on a compliance and accountability approach, driven by an administrative rather than developmental imperative. This has short, mid and long term effects. In the short term it means that teachers and school administrators are often held captive to the short term political rhetoric and interests of a particular government at the time. Failing schools and students give rise to questions about teaching quality and these make for poor headlines, and thus political intervention. It also leads to a compliant teaching profession who are constantly reacting to government fiat. In the mid-term this makes teachers risk-averse, limits decision-making and starts to move towards a 'teach to the test' mentality. In the long term it leads to a teaching profession who are timid in their judgements, whose skills are reduced and whose perception in the community is that of technical worker. In this environment the application of standards becomes ritualised form of accountability to meet the needs of

government to satisfy the community that its schools and teachers provide a quality education.

Having briefly identified a number of factors that are shaping education policy and practice I now turn my focus on teacher professionalism and how context is important in how professionalism is understood and enacted.

Teacher Professionalism as a Contested Site

There have been numerous attempts to categorise teacher professionalism. Evetts (2008: 20) identifies three interpretations of professionalism developed over the years:

- Professionalism as an occupational value
- Professionalism as an ideology
- Professionalism as a discourse of occupational change and managerial control.

These three different approaches to professionalism have been found in the literature on teacher professionalism. First and most consistently found in the education literature presents professionalism as an occupational value; this is an optimistic account of professionalism, based as it is on trust, competence, a strong occupational identity and cooperation (see Hargreaves 1997, 2000, Hargreaves and Goodson 1996). Professionalism as an ideology is a more pessimistic account critical of occupational values analysis of the 1970s and 1980s (Evetts 2008: 21). Professionalism as an ideology focuses on professionalization as a process of market closure and monopoly control of work and occupational dominance (see Lawn 1996). Professionalization was intended to promote professional practitioners' own occupational self-interests in terms of their salary, status and power as well as the monopoly protection of an occupational jurisdiction (Evetts 2011: 410). This was a significant moment in attempts to legitimize teaching as a profession. Finally, professionalism as a discourse of occupational change and managerial control has emerged within organizational contexts where this discourse is increasingly applied and utilized by managers (Evetts 2011: 410).

Other interpretations have ranged from descriptive definitions which refer to the nature and character of professional work, encompassing the quality of work and the conduct of standards that guide action (Hargreaves 1997) to what Lawn (1996: 127) describes as an ideology of service that has been developed as a strategy to control teachers. Hargreaves and Goodson (1996) invoked the term 'practical professionalism' which they argue acts as a form of control as it situates any form of professionalism in the personal practical knowledge of teachers, such as subject expertise, and as a consequence it restricts teachers' role to matters of classroom competence and leaves silent the impact of broader moral and social issues that teachers play as mediators of knowledge and values within the community and society.

Hargreaves (2000) spoke of the four ages professionalism: the pre-professional age, the age of the autonomous professional, the age of the collegial professionalism and the fourth age – post professional or post-modern. He argues that the ages should not be seen as “a contingent history of Anglophone nations that now contribute to a collage of opportunities with which other cultures engage, rather than being viewed as distinct stages with an evolutionary necessity that all other cultures must follow” (p. 153). Hargreaves (2000)

suggests that at the beginning of the new millennium the post-professional age best describes contemporary patterns of education reform (such as centralisation, increased prescription of curricula, and school self-management. A new dimension is the development of teacher standards, increased surveillance and measurement of teacher performance. Individually and collectively these constitute what was referred to above as the development of performance cultures where reporting of student outcomes represents the intention of government for demonstrated improvement and accountability. These in turn impact on the autonomy of teachers in terms of their professional knowledge and judgement.

Hargreaves (2000) questions whether this age will see the creation of positive new partnerships beyond the school, that will enhance the individual and collective work-lives of teachers, and whether it will lead to the de-professionalization of teachers, as teachers begin to founder under conditions of uncertainty, multiple pressures and intensified work demands. The very idea of professionalism becomes a site of struggle between various interest groups and stakeholders. In an optimistic turn, Hargreaves (1999) suggests that this may result in the development of a form of professionalism that is 'open, inclusive and democratic' (1999:14), a form that is similar to what I (Sachs 2003) have described elsewhere as an activist form of teacher professionalism which is premised on a conscious form of social movement where there is trust, respect and reciprocity

amongst various stakeholder groups works together to improve the working conditions and status of teachers.

Elsewhere (Sachs 2003:27) I argued that the new discourses of managerialism offer new subject positions and patterns of identification – those of management as opposed to professionalism. These discourses in turn give rise to different forms of professionalism which I refer to as managerial and democratic professionalism respectively.

In her recent work Evatts (2011 and 2008) distinguishes between two discourses of professionalism - *occupational* and *organizational*. These competing forms produce different outcomes and serve different interests by government and the teaching profession. In her terms occupational professionalism is a professional project such that it is

a discourse constructed within professional occupational groups and incorporates collegial authority. It involves relations of practitioner trust from both employers and clients. It is based on autonomy and discretionary judgement and assessment by practitioners in complex cases. (p. 23)

Alternatively, management is enacted through organizational professionalism, which for her is

a discourse used increasingly by managers in work organizations. It incorporates rational-legal forms of authority and hierarchical structures in decision-making. It involves increased standardization of work procedures and practices and managerial controls. It relies on externalized forms of regulation and accountability measures such as target setting and performance review. (p. 23)

Occupational professionalism aligns with what I described as democratic professionalism with its focus on collegial relations and collaborative work practices, while organizational

professionalism reflects managerial professionalism with its focus on performance and accountability. These types of two forms of professionalism are ideal types and their application in practice may not necessarily be as clear cut as I am suggesting. Nevertheless, there is a chasm between the desires and expectations of teachers and governments to the extent that governments are drawn to and endorse organizational / managerial professionalism while teachers favour occupational/democratic professionalism.

Clearly while teacher professionalism remains a contested site the opportunity for capability building of teachers' practice and the improvement of systems becomes limited. I now turn to focus on teacher professional development as an intervention to improve the practice and teaching of teachers.

Teacher Professional Development as a Strategy to Shape Professionalism

Professional development is a key process within the wider agenda of raising standards and increasing societal growth capacity by improving policy and practice in ... education." (Evans 2008:35). Furthermore, if we take as our starting point that on-going teacher professional development is complex and political and agree that it is pivotal to the development of a mature profession, then we need to look at both the contexts in which this operates as well as examine the types of professional development opportunities that are available. Bolam and McMahon (2004) argue that teachers and school leaders increasingly work within a political context in which external, 'restructuring' changes, initiated by national, state or local authorities to raise standards of achievement, exert priority over their vision of desirable improvements. Unsurprisingly, governments are primarily concerned to ensure that CPD enhances education quality (p. 35). This in turn fosters a technical approach to professional development.

Evans (2008) conceptualises professional development around two approaches to change: functional development and attitudinal development. The major driver behind functional development is improvement in people's performance and is usually attained by imposition. Attitudinal development, on the other hand, focusses on people's attitudes to work, it is intellectual and motivational and is concerned with improvement of individual practice. For Evans (2008:33) "an ideally constituted professional development incorporates both attitudinal and functional development, since either without the other is unsatisfactory". Similarly, Sachs (2011) identifies two tracks for CPD, a traditional training approach and a teacher learning orientation. The training approach is very much a practical view of teaching, in which relevance and an immediate application within classrooms is a prime objective. Teachers are presented as the manager of student learning rather than reflective practitioners or inquirers who considers how appropriate the pedagogy is for the students s/he teaches.

Like the functional development approach, the training approach with its focus is on improving instruction, does not allow any consideration of the social and cultural factors which influence the design and delivery of teaching and learning. As Day (1999:139) observes "it is likely to promote a limited conception of teaching and being a teacher". Concepts of practicality and relevance contribute to the development of instrumentalist ideologies which emphasise a technical approach by providers and consumers of CPD. This form of CPD encourages teachers to see their world in terms of instrumental ends achieved

- Accountability and control by Government
 - Compliance with Government change agenda
 - Upgrading of skills
 - Modify existing practices
 - Passive recipient of knowledge
 - Transmission of knowledge
 - Teacher as technician
- only through the recipes of tried and true practices legitimated by unexamined experience or uncritically accepted research findings (Sachs and Logan, 1990:479).

The teacher learning approach is transformative in its intent and practice, and will equip teachers individually and collectively to act as shapers, promoters and well informed critics of reforms (Little, 1994:1). It represents what Groundwater Smith and Mockler (2009:40) refer to as authentic professional learning. For them “it takes courage: first of all, it requires recognition of the complexity of school education and a desire for improvement and action”. It is highly political and serves to advocate and support change from a variety of perspectives and approaches. In this respect it aligns with Evans’ (2008) attitudinal development approach.

Given that this is political work, it requires building collaborative partnerships between various stakeholders whose task is to work together, combining their experience, expertise and resources. The strength here is that jointly planned activities are consistently more effective and more efficient than those planned by either school-based or district educators working alone. (Guskey 1999)

Such an approach demands courage to ask tough questions and have the skills to find honest answers. Teachers must regularly examine all forms of evidence on student learning to identify potential weaknesses in the curriculum or instructional program (Guskey 1999). Furthermore, it requires that teachers “engage in professional knowledge building whereby practitioners can challenge, defend, explicate and question not only the information that comes their way, but also the policies that emerge from it” (Groundwater Smith and Mockler 2009:52). Clearly then, when teacher learning is the focus of CPD, more generative and transformative outcomes are delivered. When the outcomes are transparent and apparent – that is a focus on improving student learning- teacher accountability is vindicated and at the same time teachers expands their personal and professional horizons. Evans’ claim for both functional and attitudinal approaches to teacher CPD, and Sachs’ (2011) traditional training and teacher learning approaches operate in a balance and mutually beneficial way.

Different types of CPD contribute to the production and reinforcement of various kinds of teacher professionalism. Below I present four versions of teacher professionalism which reinforce different kinds of CPD

TYPES OF CPD and PROFESSIONALISM

Functional Development



- Rethink and renew practices
 - Proscribed collaborative learning networks
 - Teacher as reflective learner
 - Knowledge creative and productive of new knowledge
 - Practitioner enquiry - teacher as researcher
-

To this point I have identified the factors that shape teacher professionalism and how these influence the form and content of professional development programs delivered. I have also suggested that the current political contexts with their focus on accountability and verification are shaping policy and practice what room then is there for a teaching profession that is not compliant but rather active and confident. Is this challenge I now attempt to address.

A Mature Profession

I deliberately use the language of a mature profession as it presents a view of teaching that is no longer questioned or contested. It is mature because it has the confidence to represent itself to others in ways that are trusted, valued and respected. Its members share a common set of values, are guided by ethical practice and are have a knowledge base that is robust and can be defended. A mature profession is complex and is continually evolving but there are four elements that help to develop and sustain it: The development of trust; autonomy and standard setting, recognising that at the core of teacher practice is judgement and professional decision-making and that continuing professional learning must be a shared commitment by all members.

A mature profession takes a transformative view of teacher professionalism which seeks to develop teachers who are creative developers of curriculum and innovative pedagogues (Mockler 2005). Such teachers value divergent and risky thinking in themselves, their colleagues and their students, and in doing so assist their students in the development of their own critical and transformative capacities. Transformative teachers also “collaborate at a deep level with colleagues, students and other stakeholders, and necessary for such collaboration is a willingness to be open to change and transformation in themselves” (Mockler 2005:742) Given these observations I assert that a mature profession needs to recognise that political acuity and nuance may serve pragmatic purposes. Members of the profession must establish trust among and between various stakeholders and constituencies and be prepared to take risks in shifting boundaries that may act as impediments to change, to be prepared to question taken for granted assumptions about how they teach and what they teach as well as the outcomes of particular assessment regimes.

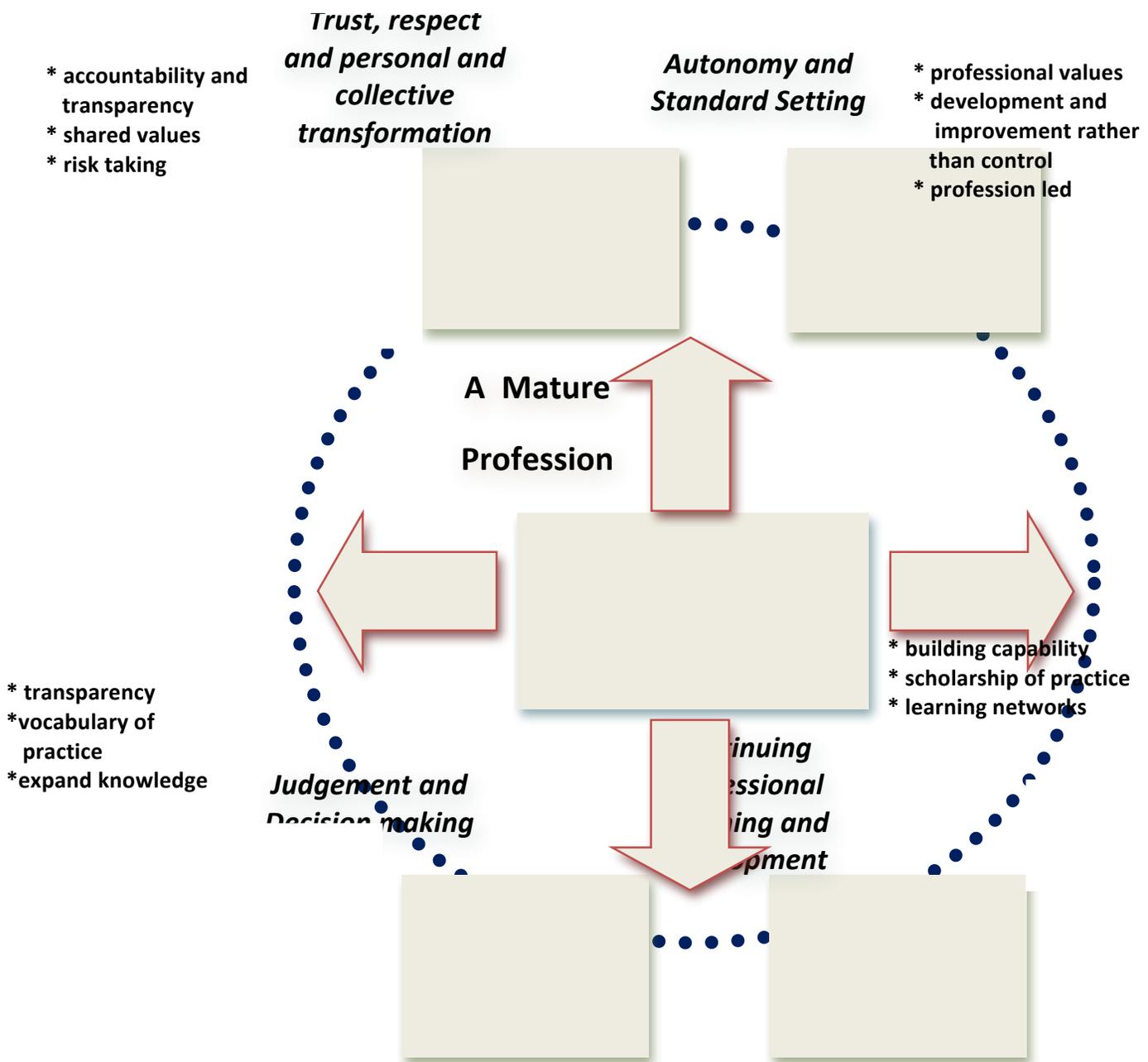
Earlier I argued that standards regimes are casting teachers into roles of compliant practitioner, and also suggested that different types of teacher continuing professional development produce different kinds of teacher professionalism. The reality is that there is value in recognising that both types of standards do important professional and political work. Accordingly, there is a need to ensure that in their enactment there is a balance between regulatory and development standards. Regarding regulatory standards, in the current external environment accountability and transparency stand at the core political discourse and practice - it would be foolhardy to speak against this. In the longer terms internal politics of the profession require a focus on developmental standards to sustain and reposition the profession. Miriam Ben-Peretz (2012) captures the core challenge by asking is it possible to create a balance between professional autonomy and societal obligations in the form of accountability? Her response is "That a balance between accountability and professional autonomy of teachers is feasible, allowing teachers the role of adapting their teaching to external obligations, on the one hand, and to their specific context on the other." (p. 64)

When teachers' judgement and decision-making is questioned it diminishes teachers self-confidence, creativity and the moral purpose that sustains them in ambiguous and difficult situations. It also corrodes their ability to act with confidence and authority and diminishes trust. A better understanding of the form and content of teachers' professional knowledge and how teachers arrive at judgements regarding the quality of student learning and the effectiveness of their own practice is required. The end point for Sachs and Mockler (2011:252) is, "in making the private public and the arcane understood, we will contribute to building a respectful culture for and about teaching".

Teachers, like any other professionals must commit to on-going professional learning. This learning must be fit for purpose and recognise that at different stages of their careers teachers require different types of activity to improve practice and extend their skill sets and should be personally transformative in its intent. Day (2012:10) captures the full extent of this challenge. He argues "...since it is teachers who will change the world of the student through who they are and what they do, those concerned with raising standards and promoting equity and social justice must invest in teacher and school development which is fit for purpose and sensitive to context". Teacher professional learning must have two outcomes: first is the development of competent practitioners who are able to deliver, assess and improve student learning; and second, which is probably more politically difficult, is remembering the important role of education and schooling as a broader social endeavour.

Teacher learning must be inquiry oriented, personal and sustained, individual and collaborative. It needs to be supported by school cultures of inquiry and be evidence based where evidence is collected and the complex nature of teachers' worlds of learning and teaching and where simple questions provoke thoughtful action. (Sachs and Mockler, 2011 252)

A mature profession is multi-dimensional, it is more than the sum of its parts, and while each of its elements can stand alone, their true strength and potential lies in their interaction and connectedness. Table two below captures the complexity of a mature profession.



Conclusion

I began this paper by asking why are we still talking about teacher professionalism? One of the major conclusions that can be drawn is that professionalism is a practice and concept that is plastic, and is constantly being challenged and changed as a result of internal and external pressures. At present performance cultures, premised on increased accountability and enacted through standards regimes, have created the conditions for a more conservative and risk -averse teaching profession, which I described as controlled or compliant professionalism.

Clearly there are benefits for government when the teaching profession is compliant, its focus on fulfilling the objectives of policy at the time, with a focus on producing and reproducing technical skills, accepting and delivering government policy. However, we need to ask will this type of professionalism support innovation, fulfil the needs of the future rather than the present and contribute to the production and co-production of new knowledge about

practice in order to improve it. We do not want teachers to become the silent witnesses of their own demise.

The challenge then is how to create discursive spaces whereby a more collaborative or activist teaching profession can develop and thrive. The development of a shared vocabulary about practice and how to improve that practice is a beginning. Furthermore, recasting ourselves as learners and committed to personal and social transformation for the betterment of all citizenry is also fundamental. And finally, a profession that engages in systematic inquiry, develops strategies to constantly develop innovative practice and to share that practice is a good starting point.

And back to why are we still asking the question. As far as I am concerned, it is better to continue to ask this question than to accept control and reduced autonomy in terms of how we teach the next generation of citizens who are able to work towards the betterment of society. So I end this paper again with a call to action!

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Practices of an Expert Mathematics Teacher in Small Groups

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Abstract

Teachers have essential roles in supporting students in small groups to create effective conversations and questions rather than just physically create the groups and leave students to work. However, many times teachers have difficulty in managing small groups effectively. This study investigates an expert mathematics middle school teacher's small group practices by extracting and analyzing them. The data were collected for five weeks in a public middle school in Florida through different resources including videotapes of classroom sessions, teacher notes, students' artifacts, audiotapes of daily teacher interviews, weekly teacher meetings and classroom small groups. A case study was conducted in a design experiment environment where the instructional sequence was revised based on the classroom instruction. Transcripts were used to observe the action patterns of the teacher during teaching practices. By triangulating across the data eight essential teacher practices were extracted. The extracted practices were interpreted by using the teaching-in-context theory, which is based on the beliefs, goals, and knowledge of the teacher.

Keywords: teacher practices; beliefs, goals, and knowledge; integers

Introduction

Studies underline the lack of essential teacher practices for inquiry-based teaching (Franke, Kazemi and Battey 2007). Even when teachers have an accurate understanding of the goals of the inquiry-based instruction, they often struggle with determining which practices they need to employ for successfully implementing them in their classrooms (Hufferd-Ackles, Fuson and Sherin 2004). One of the important classroom practices that the teacher needs to support is developing small groups as communities of learners. Small groups can help create an environment where students make sense of mathematics collaboratively (Blunk 1998). However, the teacher has an important role in supporting the small groups (National Council of Teachers of Mathematics 2000). Even if the teacher knows that a collaborative working environment can be useful for students, she might not know what to do to facilitate discussions in these environments. For instance, a teacher might recognize the importance of small group activities to create a productive inquiry-based environment, but she might not know what her role should be, or how to meaningfully engage her students in small groups.

This study aims to shed light on these problems by extracting and analyzing the practices of an expert middle school mathematics teacher in small groups. The data were collected through different resources including videotapes of classroom sessions, teacher notes, students' artifacts, audiotapes of daily teacher interviews, weekly teacher meetings and classroom small groups in five weeks in a public middle school in Florida. During the data collection, the teacher taught integers to seventh grade students. The transcripts were used to observe the action patterns of the teacher during teaching practices in small groups. The extracted practices were interpreted using the teaching-in-context theory, which is based on the beliefs, goals, and knowledge of the teacher. A case study was conducted in a design

experiment environment where the instructional sequence was revised based on the classroom instruction.

Method

This study can be characterized as a particularistic case study since the aim was to investigate an expert teacher's classroom practices rather than investigating it for general understanding (Merriam, 2009). The overall intent of this study can be defined as an interpretive case study since it includes thick and rich description of a phenomenon similar to a descriptive case study. The study was conducted during the integers unit. Integers were chosen as a suitable setting that poses various challenges both for the teacher and the students such as the concept of negative numbers and the arithmetic operations that can be applied on them (Ball 1993). A case study was conducted in a design experiment environment where the instructional sequence was revised based on the classroom instruction. Different from many of the other design-based research studies, the aim of the research team in this study was to improve teaching practice rather than to test a theory. The design research team included the expert teacher (Dr. Stephan), the co-teacher (Mrs. Taylor), two other seventh grade teachers (Mr. Jones and Mrs. Wilson) that were teaching the same unit and the researcher of this study. Here it is important to note that Stephan presents the teacher's real name since she currently works as a researcher in a university. However, other names are pseudonyms since they teach in a public school. Even though, Taylor was also in the class during the research, many times Stephan was more active in teaching. One of the reasons that Taylor did not take part in teaching was the researcher's focus of extracting the practices of the expert teacher.

The research team met three times before the instruction began and every week after the beginning of the instruction. Additionally, the expert teacher and the researcher met after every classroom session. The expert teacher who had previous experience in conducting design research served as the team leader during these meetings. The teacher created a hypothetical learning trajectory (HLT) and based on that she also designed an instructional sequence on integer concepts and operations (Stephan, 2009). In the meetings, the expert teacher led discussions on the HLT as well as the activities and also encouraged the teachers to make decisions based on students' understanding. The HLT played an important role during the conversation about students' understanding and the big ideas for the integers topic. The main focus of the teachers and the researcher during these meetings was student learning. The team anticipated the different strategies students might invent, talk about the imagery and inscriptions that might support students' understanding, and conjectured about the possible topics that might evolve during the enactment of the activities in the classroom. The team also worked through the tasks of the sequence to anticipate how students might reason and to clarify the intent of the activities. These teacher meetings where the team anticipated and revised the conjectures became an important part of the current study. Thus, the design research supported an environment where the researcher could conduct a case study to investigate the cyclic process that consists of classroom and planning practices. The details about revising the instructional sequence are discussed in another study (Stephan & Akyuz, 2012).

Setting

This study was conducted in a public middle school (grades 6-8) in Central Florida. There were twenty-one students in the classroom, fourteen boys and seven girls. Three of the boys had identified learning disabilities. Only one student did not want to participate in the audio and video recordings. There was also an experienced co-teacher, Taylor, who specialized in special education to support Stephan during the instruction. The expert teacher, Stephan, holds a doctorate degree in Mathematics Education from Vanderbilt University, and she actively continues to carry out research on student learning. She has been successfully designing instruction that is consistent with the tenets of the NCTM Standards and that facilitates students' mathematical inquiry. The effectiveness of her instruction is reflected by the high achievements of her students on standardized tests and on the teaching awards she has received. Taylor was also a teacher with 10 years of teaching special education experience. Stephan and Taylor had co-taught in an inclusion setting for three years.

At the back of the class there were two big labels on the wall: conjectures and theories. Under these labels students' conjectures that were made during the class were posted. Once the students proved the conjectures and all the community members agreed, these conjectures were moved to the theories section of the wall. The desks were arranged in groups of three to allow the students to work collaboratively. The students had different responsibilities that changed every day in the small groups. One of the reasons for describing the classroom environment here is to help readers imagine the classroom environment during the small group activities.

Data Collection and Analysis

The data collected during the instruction of the integers topic included interviews with the teacher, audio and video tapes of the classroom sessions, field notes, teacher notes, research meetings, and a collection of students' work accumulated through a period of five weeks.

Data analysis was performed using the constant comparative method of grounded theory (Glaser and Strauss 1967). During the analysis of the data first a theoretical framework was used in order to interpret the teacher's practices based on her beliefs, goals, and knowledge. These elements were extracted from the teacher meetings, interviews, classroom sessions, and teacher notes using the constant comparative method. During the grouping of data, sub-categories (i.e. beliefs into learning, teaching, and mathematics; goals into overarching, content, and local; knowledge into content, pedagogical, and curriculum) were created. Grounded theory was used to compare and contrast the teacher's behaviors. Once the practices were extracted, they were grouped under different categories which themselves were created from the logical relationship between the practices, the teacher notes and the literature. These practices are discussed in the dissertation of the author (Akyuz, 2010). However, in order to give the readers insight related with these beliefs, goals, and knowledge examples are given from different categories in the following. For example, one of the categories was the teacher's beliefs. The beliefs were separated into three categories such as learning, teaching and mathematics. Pertaining to beliefs about learning, the author obtained nine different beliefs and each of them was given in detail in Akyuz (2010). One of these beliefs was "each student may learn differently". Another category was related with knowledge which was separated into three categories as content, pedagogical and curriculum knowledge. Finally, there was also a category related with the goals comprised of

overarching goals, content goals and local goals. We refer the interested readers to Akyuz (2010) for more details.

Theoretical Framework

The main framework that guided this study was developed by the Teacher Model Group at Berkeley (Schoenfeld, 1998). The aim of this theory is to explain how and why teachers do what they do in the classroom. The model describes teachers' moment-to-moment decisions and actions based on their knowledge, beliefs, and goals. When a teacher enters the classroom, she carries a substantial body of knowledge, which may include knowledge about the students, the school environment, and the content. She also carries a set of beliefs about how teaching should be done. Based on these, the teacher develops goals that she wants to achieve through executing a series of actions. It is these actions and decisions that the theory of teaching-in-contexts attempts to explain using the teacher's knowledge, beliefs, and goals (Schoenfeld 1998; Aguirre and Speer 2000). The theory brings together several pieces from the literature including teacher knowledge (Fennema and Franke 1992; Shulman 1986), beliefs (Thompson 1992), goals (Clark and Yinger 1987) and a descriptive model of the teaching process (Borko and Putnam 1996). It is important to note that the theory mainly explains the reasoning behind the actions from the teacher's perspective since it is based on the teacher's knowledge, beliefs, and goals.

Results and Discussion

The teacher has essential roles in supporting the small groups such as encouraging students to explain their results to each other, collecting data for the whole class discussion, and asking students to explain their solutions. The expert teacher in this study formed the small groups heterogeneously. During the formation of the small groups, she tried to bring together the students who have different academic success. She also considered the students' personalities and placed the ones that would be more likely to collaborate with each other in the same group. Although the groups occasionally changed within the academic year, they stayed constant during the instruction for the integers topic. Additionally, sometimes the teacher used different strategies such as asking students to form a pair in the classroom and discuss their solutions with their partner to keep the discussions interesting.

Practice 1: Encouraging students to explain to each other

In the current study, one of the teacher's small group actions was to encourage students to compare their answers and explain their solutions to each other as illustrated by the following excerpt. Here, the students were asked to find the net worth of a person who had debts of -\$1000 bank loan, a -\$15,000 car loan, a boat loan of -\$45,000, and an asset of \$60,000 retirement fund. The teacher first encouraged the students to find the net worth on their own and then to check their answers in their small groups:

T: When you get done you can start talking to your partners and see if you got the same answers or different answers. If you got different answers, check your calculations.

T: Did you get \$121,000 for this one?

Tisha: Yes.

T: You all need to talk. Charlie, you got way less than her. You got -1000, right?

Charlie: Yes.

T: Tisha talk to him. How did he get that?

Charlie: You add the positives and you subtract negatives that is how much she's worth.

Tisha: That is what I did. Ohh, yes, I did not see the signs, I got it.

After the introduction of the task, the teacher encouraged students to check their answers with their partners and if they got different answers she wanted them to go over their calculations. Comparing the answers with their partners was useful in different ways. First of all, it gave the students a chance to see their mistakes before the classroom discussion and to try to think about if it was a conceptual error or a computational error. This way, the different answers that were openly discussed in the class did not include many computational mistakes. Rather the focus was put on the mistakes that stemmed from students' conceptual difficulties about that task. The teacher's belief that learning is both an individual and a social process and explaining answers to each other helps students to reorganize their ideas seemed to motivate her to first ask students to work on the activity individually and then share their answers with their friends. These beliefs also activated the goal of reminding students of the social norms as necessary. Here, consistent with the *NCTM Standards*, the teacher's knowledge about student learning that students organize their mathematical thinking through communication appeared to have a crucial role in her practice.

Practice 2: Asking students about their solution methods

On the following days students were given problems where they were asked to compare net worths and find the differences between them. Once the students started working in small groups, the teacher walked around the classroom and stated that she saw \$1000 and \$5000 as answers (the question asked for the difference in net worth between asset of \$3000 and debt of -\$2000) and reminded students to prove which one they agree with and be ready to defend it for the classroom discussions:

T: I keep seeing around the room. Some of you said he is worth \$1000 more and some of you said he is worth \$5000 more. Show on your paper which one you agree with and defend it by writing an explanation, why you believe [she goes around the classroom].

Gage: I already got it.

T: I do not see any words.

Gage: It is the same thing with this [he shows some calculations].

T: Say out loud what you did?

Gage: I got -2000 plus 2000 to get to zero.

T: Okay.

Gage: And then I added 3000 to get up there [pointing to 3000].

T: Why did you do all that? You did not say why?

While she was walking around the small groups, Gage stated that he already got the answer. At this point the teacher encouraged him to write down his explanation on the paper. However, instead of writing his explanation he showed his calculations and stated his answer. The teacher then asked him to explain why he did those calculations. One of the teacher's practices was to ask students to explain their reasoning of the answers while she was walking around the room and then to bring those answers to the whole class

discussions. In doing so she was collecting data for the discourse. However, since there was not enough time for this activity to make a classroom discussion, the teacher encouraged students to write down those explanations on their papers. This way at the end of the class when she collected the students' papers she could analyze their solutions and decide on the following day's classroom conversations based on them. The teacher's belief that being able to explain shows students' understanding seemed to motivate her to ask students to write their explanations to defend their answers. As she walked around the room, she noticed that some students just wrote the answer and thought that they were finished. In order to encourage them to think more on the question, she first asked them to explain what they did on their paper and then, if they just wrote the answer, why they did it.

Practice 3: Encouraging students to draw on their previous images

Another action of the teacher was to encourage students to draw on their previous images. The following excerpt was taken from the classroom discussion where students solved transaction problems. The problem asked for the new net worth when a person had a starting net worth of $-\$10,000$ and lost $\$8000$ worth of coins. The teacher asked students to work on the problem in their small groups and started to circulate around different groups:

T: How did you find that?

Charlie: She lost an asset and I put negative so now she owes $\$18,000$ because she lost $\$8000$ which was an asset.

T: Can you show it on the number line? Work on the number line. I need someone to help me in that [she walks away from the group].

Charlie: How did you do it? [He asks Tisha since she used the number line in her solution and they talk about it].

Tisha: They are both negative and you have to add on the number line.

T: [She comes back after few minutes] Tisha you have the same number line as him. Is this your writing? Tell me what you have written?

Tisha: Isn't this positive [she shows 8000]?

T: It is $\$8000$ how much the coin is [she walks away from the group, this time Charlie explains to Tisha]

Charlie: And then she lost it. That means her asset is lost, it is like taking away asset.

While the students worked on the problems first individually and then with their friends, the teacher walked around the classroom to examine their solutions. In the example above, she first asked Charlie how he solved the problem. After he explained his answer, the teacher encouraged him to prove his solution by using the number line and then left the groups to visit the other groups. The reason that the teacher was stopping by the small groups and asking questions might have stemmed from her knowledge about the students' behavior (e.g. some students were shy) and her belief that the teacher needs to help students to become comfortable with this environment. The teacher's goal of supporting the development of imagery might have encouraged her to ask Charlie to explain his solution by using the previous images. One of the reasons the teacher asked Charlie to use the number line might have been to bring the number line idea to the classroom in order to help students who struggle with the computations. Another reason is that she might have noticed different uses of the number line where students used it without making sense. This gave the teacher an opportunity to remind students of acceptable ways of using the number line.

Practice 4: Collecting data

As the teacher walked around the classroom during the small group discussions, she learned more about the different kinds of solutions that students came up with. Often, she used this action to help her engineer whole class discussions both for the current class and subsequent classes by incorporating this data into her planning. The solutions that she focused on changed with her goals about the big ideas of the classroom. For example, while sometimes she focused on the misconceptions, at other times she focused on the solutions that included conceptual explanations. The following excerpt shows the teacher's practice of collecting data during the small group discussions and bringing it up in the whole class discussion. In this episode, the students were asked to determine the outcome when the original net worth was \$298 and the transaction was +(-\$427). During the small group discussion, the teacher first asked Marsha to explain her work to the small group and then asked Marsha if she would share what she said with the entire class later:

T: Why do you subtract? Talk about these jumps?

Marsha: Because when you add a debt you have to take away part of your asset so that is why you subtract

T: But how do you know 129, the second jump? [Marsha has number line on her paper that goes from 298 to zero and zero to -129. The teacher shows the second arrow on her number line that goes from 0 to 129]. That is what I am asking about.

Marsha: Because to get to zero he has to minus 298 and he subtracts 298 from the four hundred number [she means 427].

T: Why?

Marsha: Just to know how much he has to jump up.

T: Can you say it in whole class?

Marsha: Yes.

T: [T starts whole classroom discussion] Marsha is going to explain that. All right Marsha we'll count on you. Why don't you listen to Marsha and ask her questions if you do not get what she says?

During the small group discussion, the teacher asked Marsha why she did two jumps on her number line. As Marsha could explain it the teacher wanted to bring it to the class discussion and encouraged other students to listen to her and ask questions if they do not understand. Thus, circulating around the classroom and learning as much information as possible (i.e. collecting data) about students' solutions by asking them questions and highlighting ones that she thought might further her agenda was an essential action of the teacher in the small groups. The teacher's practice of asking students how they solved the problems as well as asking them to explain their reasoning was prominent in the dialogue above. This was primarily rooted in her belief that students learn mathematics by making sense. The reason the teacher might ask students to listen to her and ask questions might be based on her goal of reminding students of the norms. One of the reasons she asked Marsha if she would like to share her solution in the whole classroom discussion might be due to her belief in supporting an environment where students represent their ideas willingly.

Practice 5: Clarifying the task before students start to work in their small groups

When students worked in small groups, they had different roles in the group namely the leader, the policeman, and the author. Since the small groups included three students, the

teacher categorized each student's place as windows, wall, and door based on their proximities to those parts of the physical arrangement of the classroom and then posted the role of each place on the board (e.g. windows: leader, wall: policeman, door: author). The role assigned to each place changed everyday allowing students to take on different roles. The leader's role was to decide the group members' jobs such as how they should share the workload of the activity. The authors were supposed to write the final answers that the group members agreed on and give them to the teacher at the end of the class if the teacher asked for them. The policeman's job, on the other hand, was to check if everyone shared the work equally.

The reason that the teacher gave different jobs to the students seemed to have originated from her belief that taking responsibility is important for learning and the teacher should be fair in the classroom and provide equal opportunities. The teacher's knowledge of students' behavior such as the tendency of not sharing the jobs equally seemed to have an important role in giving different assignments to the students in collaborative groups. Additionally, in order to keep the discourse alive and interesting in small groups, sometimes the teacher used different strategies such as asking students to form a pair in the classroom and discuss their solutions with their partner.

Practice 6: Encouraging students to ask each other for help

Once the students were given the net worth activity that asked for applying different transactions to the original net worth, they started to solve problems and the teacher walked around the small groups. There were around 10 problems in the activity, and the students first started to work on them individually within their small groups. While the teacher was walking around the room, she noticed that Gage seemed not to help his group friends even though he solved many of the problems confidently and his group mates had some difficulties in some of the problems. The following excerpt is taken during the students' working of the number sentence problems:

T: Are you done with the whole page?

Gage: This is so easy.

Mark: I do not understand this, number seven [net worth \$800, transaction: take away debt of \$200].

T: Talk to your partner, he thinks it is so easy.

Mark: He does not help.

T: That is not acceptable Gage, even though you might not have finished, you can still help.

Gage: Okay [He starts to work with Mark].

While the teacher circulated around the classroom observing how students were dealing with the activity, she asked Gage if he had finished all of the problems. He stated that the problems in the activity were very easy for him. At this point, the teacher saw that Mark was struggling on one of the problems on the page and he stated that he did not understand number seven. The teacher encouraged him to ask his partner to get help and Mark stated that he did not help him. The teacher emphasized that it was not an acceptable behavior and encouraged Gage to help his partner. Stephan's belief that the teacher is not the only source of knowledge in the classroom as well as her belief that an environment that nurtures a

sense of community plays an essential role in learning seemed to have been the reason for her encouragement of the students to ask each other for help.

Practice 7: Encouraging students to come to an agreement

As the instructional sequence moved forward, students continued to solve the problems related to transactions. The excerpt below is taken from the discussion of a problem where the teacher asked students to find the different ways of writing +50 and -50 with multiple transactions. She asked them to share their solutions with their group members and decide whether they agree or not for each different way. She also added that during the classroom discussion she would ask each group to state one transaction that they all agreed on, thus agreement within a group was important:

T: If you got the first one (+50) start the second one (-50). What are the different ways to write the second one?

Brad: We got the first one altogether. But I think mine is wrong.

T: Which one is yours? [Since there are three different ones, the teacher asks which one is his].

Brad: This one.

T: You do not like that one? You guys like the first one? When I mean "like", I do not mean whether you like it or not. Do you think it works mathematically?

Danny: Yes [he thinks Brad's solution is right].

T: If you all figure out the first one, start the second one.

While students were working in small groups, the teacher walked around the room to see the different solutions. She encouraged students to start working on the second one if they solved the first one. At this point, Brad stated that although each member of the group including himself found one transaction equivalent to +50, he stated that he was not sure about his solution. The teacher encouraged the group members to work on it together and decide whether each expression was mathematically correct and then move on to the next one. After the teacher left the group, the students continued to work on the expressions to come to an agreement on each representation. One of the reasons that the teacher asked them to come to an agreement regarding the solutions seemed to stem from her belief that analyzing solutions is important to understand mathematical ideas. By analyzing the different ways, students would have opportunities to make sense of mathematical expressions and also would have the idea that there could be different correct answers for the same mathematical problem. Here it is important to note that the routine of the teacher in small groups was to first introduce the task and then ask students to work on it individually for a few minutes, and then share their answers with the group members. However, in order to make the small group discussions alive, she used different strategies such as asking the leader to decide how the groups need to work or asking students to find a partner to work together instead of their group members.

Practice 8: Not correcting students' mistakes immediately

Towards the end of the instruction, the students were given problems that included only one sign such as $5 - (-3 - 2) = ?$ After the teacher asked the question, she started to walk around the classroom:

T: Why are you paying? I do not get that [she encourages Gage to use asset and debt concepts to help him make sense of “pay off” idea is not correct here as -2 indicates going more in debt instead of paying off debt].

Gage: Pay some of your debt.

T: All right, we will see. Do you have some proof? [to Mark who is in the same group with Gage]

Mark: Yes, I do.

T: Explain to me how that part is on the number line.

Mark: It is first negative 3.

T: So you put it first.

Mark: Yes, and then I saw the next symbol is negative and there will be also a positive sign in front of 2 [Marks seems to think -2 as -(+2)].

T: How do you say that?

Mark: Taking away asset and I knew that it is bad.

T: So you went up? [She shows Mark’s number line]

Mark: So negative 3 minus asset of \$2 so you will go up, you are confusing me!

T: I am confused by what you are saying. You start with -3 and then taking away asset and you go up, is it what you said?

Mark: I think, I need to go down.

While the teacher was circulating the small groups, one of her practices was to ask students to prove their solutions. When she asked Gage to prove his solution, he just showed his answer but had difficulty proving it. Here it is important to note that although Gage’s answer was incorrect, the teacher did not try to correct him at this point. She encouraged him to use the previous images of assets and debts, but when he still had difficulty she continued with Mark who was in the same group. Mark’s solution was different from Gage’s; rather than a computation there was a number line on his paper. While Mark was explaining his solution, he stated that he first went down 3 and then stated that -2 is the same thing as taking away asset which is bad. However, in his paper the arrow was going up 2 instead of going down. Thus, the teacher asked him whether he must be going up or down. At that point Mark stated that he was confused since probably his words contradicted with his number line. After the teacher left the group, Mark continued to work on the problem and decided that he needed to go down.

The teacher’s belief that students learn from their mistakes might have motivated her to not to immediately correct the mistakes but let students think more on their own and discuss with their group members. This was an important practice of the teacher. She knew that the mistakes would be discussed in the whole class discussion and would play an important role in contrasting different solutions. She also thought that if all mistakes were corrected on the spot, then the students might not absorb what was wrong and there wouldn’t be much to discuss in the whole class discussion. The teacher’s belief that students reorganize their thoughts when they explain seemed to be the reason for why she asked Mark to explain his solution.

Conclusion and Discussion

The teacher had an important role in developing small groups as communities of learners. In order to keep the small group discourse alive and give equal responsibilities to the students the teacher applied several strategies. In general, the teacher’s practice was to ask students

to think about the problems first individually and then share their answers with their friends in the small group. To keep the discussions interesting and allow students to interact with their friends other than those in their small groups, the teacher also sometimes asked the students to find themselves a partner to discuss their solutions. If she asked them to submit one work from each group, she gave each student a different role and switched them every day in order to give equal opportunity for all students. Before asking students to work in their small groups, she always explained the task as well as the students' role very clearly. During the discussion in small groups, she walked around the classroom to collect data rather than fixing students' answers. In order to understand students' solutions, she also asked them to explain their answers. This helped her to understand their reasoning and decide whether she needs to bring those ideas to the whole classroom discussions. When she noticed that students had difficulties solving the problems, she encouraged them to talk to their group members and compare their answers.

Previous studies point out that teachers' practices are not always consistent with their beliefs and goals (Thompson 1992). Although many teachers believe that they apply the practices that are essential for a standards-based classroom, they do not change the very essence of their practice (Stigler and Hiebert 1997; Hiebert et al. 2005). For instance, even though teachers physically support the environment that standards suggest such as creating small groups or using manipulatives, they do not use this environment effectively to promote student understanding. This is ascribed to several reasons such as not having the required knowledge (Borko et al. 1992), having superficial beliefs (Kaplan 1991), relying too much on mathematical beliefs while undermining teaching and learning beliefs, time constraints, and the pressures of standardized tests (Raymond 1997). In the current study, however, the teacher's practices were found to be consistent with her beliefs and goals. One reason for that could be the rich and connected body of knowledge she brought to both classroom and planning that includes knowledge about students, mathematics, curriculum and standards, and literature. The findings of this study can be used by teacher educators to create opportunities in professional development as well as pre-service teacher courses to help teachers understand the dynamics of an inquiry-based environment. Educators might create similar types of environments to those described in this study and observe which actions the teachers have difficulty to apply, and give them opportunities to improve on those actions. Additionally, the lists of practices that are found by this study might help educators to evaluate whether pre-service teachers teach aligned with the standards during their internship.

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New Era Teacher Education: Creating Teachers as Professionals

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Abstract

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 almost been accomplished, now it is time to focus on the quality side of education.

We have witnessed some reform movements for a few decades. However, it seems that these reform movements have not been accepted or implemented thoroughly by teachers who are the central elements of success in education. If reforms are supposed to be successful, we must be sure that these reforms are accepted by teachers fully and have entered in every classroom in the country with no exception.

If schools are going to be successful in making significant improvement in the education of children, teachers entering the profession must possess the knowledge, skills, values, attitudes, and strategies that will enable them to work effectively with students from diverse backgrounds. However, teacher education programs still remain the stepchildren of most universities, underfunded and under-resourced by many and treated badly in most universities.

Turkey is at the edge of another reform of teacher education and this presentation aims to focus on what redesign of the teacher education programs should seek to in order to be successful and create the professional person power that will educate the workforce competing for Turkey's ever increasing global preeminence.

Keywords: teacher education, professionalism, reform, Turkey

Introduction

The new millennium came with a dramatic technological revolution. We now live in an increasingly diverse, globalized, and complex, media-driven society. It became 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, ever changing globalized society. Most reformers now agree that increasing teachers' expertise and effectiveness is critical to the success of ongoing efforts to reform any education systems.

If students are to be well-served, education systems must be able to recruit teachers who will be effective in the classroom and if teachers are to be effective and ready to meet the needs of the students, Faculties of Education must be able to produce teachers who will be ready to meet these challenges.

For a variety of reasons, qualitative aspects of the teaching career emerged as key focal points in employment policy. Judgments of quality and decisions about how to recognize and reward quality have been given rise to difficult issues. These need to be addressed constructively if teaching is to become a more creative and prestigious career.

Preparing teachers today requires critical examination of what it means to teach and learn in increasingly networked and technology-rich classrooms. The kind of pedagogy needed to help students to think critically, create, and solve complex problems as well as to master ambitious subject matter content became much more demanding than that needed to impart routine skills.

Making the teaching experience personally fulfilling and professionally rewarding for all teachers will definitely encourage them to perform to a high standard and to stay longer in the profession. The emphasis needs to shift toward quality of experience and quality of performance – in teacher education, induction, professional development, career planning and everyday life in the school.

Education, Teacher Education, Reform movements & Turkey

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 almost been accomplished, now it is time to focus on the quality side of education.

We have witnessed some reform movements for a few decades. However, it seems that these reform movements have not been accepted or implemented thoroughly by teachers who are the central elements of success in education. If reforms are supposed to be successful, we must be sure that these reforms are accepted by teachers fully and have entered in every classroom in the country with no exception.

If schools are going to be successful in making significant improvement in the education of children, teachers entering the profession must possess the knowledge, skills, values, attitudes, and strategies that will enable them to work effectively with students from diverse backgrounds. However, teacher education programs still remain the stepchildren of most universities, underfunded and under-resourced by many and treated badly in most universities.

Turkey is facing a radical reform in all aspects of education including the teacher education and this presentation aims to focus on what redesign of the teacher education programs should seek to in order to be successful and create the professional person power that will educate the workforce competing for Turkey's ever increasing global preeminence.

Teacher education is being challenged in the last two decades on every front by fundamental changes in the concepts about the nature of knowledge, the phenomenal speed at which knowledge is created and consumed, the merging knowledge-driven economy, paradigm shifts in the theories of learning, rapid developments in information technologies and globalization.

In this chaotic situation teachers are being held accountable for the failure of schooling and with the same token; teacher education programs held accountable for the quality of teachers and Turkey is no exception.

In their present form and formation Faculties of Education can be described as intellectual wastelands, accused of being impractical, irrelevant and the main cause of bad teaching and inadequate learning.

Teacher education programs have struggled for years to place student teachers in classrooms that reflect state-of-the-art practice and are in harmony with program coursework and with research on effective teaching. The articulation and sustenance of a common vision, and the development of a shared understanding of the goals of student teaching, are similarly long-standing challenges. The creation of a curriculum that is systematic and synergistic across courses and across the university and school components of preparation has been difficult in most institutions.

Turkish teacher education programs have up until now, except from “Village Intuitions Model” which can be considered a copy of Social Reconstructionist Tradition, in a somewhat eclectic fashion, reflecting aspects of all four of Zeichner and Liston’s 1990 reform traditions, can be described as basically following the Academic tradition. However, there is no a declared and strictly followed philosophy of teacher education. Therefore, Turkey should decide immediately, 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 such as, Finland.

Zeichner and Liston’s 1990 reform traditions are as follow:

Academic Tradition: Academic tradition focuses on the importance of disciplinary knowledge for pre-service teachers gained through a classical liberal arts education combined with an apprenticeship in schools. Here, the “mastery of subject matter is the most important goal in the education of teachers” (Zeicher and Liston 1990,4). As such, teachers should be educated in their subject matter at university, but should learn how to teach is the company of more experienced teachers once they get to the schools (a disciplinary and apprenticeship model)

Social Efficiency Tradition: Advocates of this model claim that the scientific study of teaching provides the best basis for building a teacher education curriculum. This tradition has tended to examine the nature of teacher work in order to provide a basis for studying teaching and has largely influential in developing Competency/Performance Based Teacher Education, especially in the US in the 1960s and 1970s.

Developmentalist Tradition: This tradition asserts that the “natural development of the learner provides the basics for determining what should be taught both to pupils in the public schools and to their teachers (Zeichner an Liston 1990, 9).

Social Reconstructionist Tradition: In this tradition, “schooling and teacher education are crucial elements in a movement towards a more just society” (Zeichner and Liston 1990, 12). This tradition encourages student teachers to take a critical look at the prevailing social and political orders that are associated with education, and aims to break the poverty cycle by preparing teachers to teach in low-income areas.

For example, in n response to the Bologna Declaration, schools of education in Spain have initiated a significant reform of initial teacher education programs so that diversity and special

/ inclusive education content will be infused across the curriculum where all instructors will deal with SEN within subject areas (Cardona, 2009).

On the other hand in Finland training is not organised in disability-oriented streams but rather aimed at providing teachers with a wide variety of knowledge and skills that they can apply in various settings and situations (Savolainen, 2009).

Whatever model is followed, a critical consideration for teacher education is how expertise develops. Kershner (2007) makes reference to Glaser's (1996) interactive phases of development to gain a sense of the combination of scaffolding, collaboration and developing action involved in gaining the know-how of an expert teacher. These phases are: externally supported, transitional and self-regulatory which all depend on a transformational approach to learning involving seeking meaning and looking beyond the immediate task.

Therefore, Policy makers in Turkey should immediately decide on the type of model so that the programs can produce the teachers ready to serve challenges they will face in schools. For example, the Ministry of Education claims that they follow a constructivist education model in public schools for more than three years. However, novice teachers are not educated to teach with constructivist notion and not to mention the ones already teaching in schools.

Some very important recommendations have been proposed to the Ministry of Education during the "New National Teacher Education Strategy Workshop" in November, 2011 (see Altan, 2012 for details). Some of them have been implemented, such as, redesigning of the formation of Public Personnel Selection Examination (KPSS), stopping recruiting graduates of Faculties of Letters and Sciences as teachers, decreasing the number of students enrolling at Faculties of Education however, some basic and radical proposals still need to be focused and implemented, such as:

- A new student selection system should be designed to attract skilled, motivated and enthusiastic students into Teacher Education programs.
- Placing qualified faculty who have studied or studying subject matter teacher education in all programs. The weakest aspect, perhaps, of teacher education is the absence of professional preparation of teacher educators.
- Appointing deans and head of departments among those who have subject matter teacher education backgrounds.
- Starting field experiences as early as possible and designing them in such a professional way that to provide candidates with opportunities to relate principles and theories to actual practice.
- Professional development programs should be designed to include regular opportunities and experiences which are carefully and systematically planned to promote growth and development in teaching profession.
- Personal and professional development of the teachers should be compulsory, predictable and periodical.
- Faculty members with arts and sciences background and who have been working and producing academic articles on pure subject matter should definitely be guided to work on subject matter teacher education.
- Personal and professional development of the teachers should be compulsory, predictable and periodical.

- Alternative assessment techniques should extensively be used so that future candidates can use in their teachings more effectively.

Education & 21st century world: Teaching, students & teachers

The broader societal challenges for schooling outlined earlier has resulted in an increased recognition of the complex and demanding nature of teachers' work, and requires radical rethinking of how we recruit, prepare and deploy teachers. There needs to be a rethink of the aims and processes in initial teacher education and of teacher professional development.

The new teacher preparation model should equip new teachers with appropriate knowledge, skills and professional values, which will in turn bring about professional teaching (Cochran-Smith, 2004).

There is an urgent need to recognize teachers' work as complex and demanding, and improvement in teacher quality requires a re-conceptualization of how we prepare a new generation of teachers.

Teaching should be recognized as an academically taught clinical-practice profession. Teachers need both breadth and depth in their preparation and an assured capability to be able to respond positively and creatively to changes in the wider environment.

The new teacher education programs should include an emphasis on Universal Design for Learning (UDL), continuous field experiences, an extensive professional education core of knowledge and skills and teaching specialization.

UDL is a set of principles for curriculum development that give all individuals equal opportunities to learn. It is based on research in the learning sciences, including cognitive neuroscience that guides the development of flexible learning environments that can accommodate individual learning differences. UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone--not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs.

There is now a premium in all workplaces on higher level skills, entrepreneurship, flexibility and a well educated and capable workforce. No less important are the parts played by knowledge, understanding and interpersonal skills in the conduct of everyday life at home and in the community. Teachers are challenged to shape their thinking and their practice so as to enable students to become effective knowledge workers and highly competent citizens. There is a consistent emphasis on students becoming thinkers in action, capable, resourceful, and forward looking.

To enhance student learning requires teachers to have both a wide body of *knowledge* and the *ability* to use this knowledge appropriately in a variety of institutional contexts. For teachers, their own enhanced knowledge and advanced skills are resources for fostering student learning and developing their capability. For these resources to be enriched and kept up to date systematic, structured lifelong learning is needed. This need, however, is not as yet adequately acknowledged in the practices of the teaching profession in Turkey.

As the 21st century began there was wide agreement that teacher quality is essential to educational reform but disagreement about what teacher quality is and which teacher characteristics are linked with desirable outcomes.

The concept of the “teacher as professional” has emerged from within the social efficiency tradition with terms such as “outcomes” and “standards” being used increasingly in mainstream literature.

Here we need to discuss the concept of teacher professionalization. Professionalization can be defined as the drive towards creating teachers as professionals. A professional is a person who has the ability to “continue learning throughout his/her career, deepening knowledge, skills judgment, staying abreast of important developments in the field and experimenting with innovations that promise improvements in practice” (Sachs 1997, 266). Teacher professionalism in Turkey should reflect the idea that in a society where the continuous creation, acquisition and communication of knowledge are central, teacher education needs to be understood as a lifelong learning process.

The image of education and the status of teaching need to be improved too. Teachers are frequently contradictory about their chosen career, due to what many perceive to be a poor public image and low social status. While teachers recognize that educational attainment is valued and qualifications are recognized, many claim that education as a cultural force in Turkish society is seriously undervalued. Teaching and the value of education- both school and lifelong need to be talked up by teachers and trainee teachers to their students, by political and community leaders, by academic and business leaders, by unions, NGOs (Non Governmental Organizations) and intellectuals. The teaching profession must itself take more responsibility both locally and in the wider society to communicate a positive and convincing professional image. Educational scholars, researchers and policy makers need to draw out and publicize the absolute dependence of the knowledge society and economy and of an innovative culture on high quality schooling and therefore teaching.

Teacher Education Programs

Redesign of the teacher education programs in Turkey should seek to:

- Develop a coherent program organized around Professional standards and a common vision of good teaching;
- Strengthen knowledge about how to teach challenging content to ever changing diverse learners;
- Support stronger links between theory and practice; and
- Contribute to the re-shaping of teaching and schooling by creating powerful opportunities for student and teacher learning (Hammerness & Linda-Darling-Hammond 2002, 18).

Creating a profession of teaching and a Professional preparation program depends upon the widespread availability of knowledge and standards for practice that provide a basis for teacher development and for program decisions. This could be achieved by a Professional Teaching Standards certification process. These standards should provide a foundation for practice that is grounded in leading edge knowledge about content pedagogy, sensitive to

the diverse needs of learners, committed to equity and more importantly to excellence, and supportive of powerful professional development that deepens teachers' learning.

Almost as important as the process of undertaking these reforms has been the process of evaluating them, both as a means for developing a cycle of continual improvement and for developing knowledge about teacher education. Cochran-Smith (2001) notes that

The question that is currently driving reform and policy in teacher education is what I refer to as "the outcomes question." This question asks how we should conceptualize and define the outcomes of teacher education for teacher learning, Professional practice, and student learning.... (p. 2).

Cochran-Smith (2001) identifies three ways that outcomes are currently being constructed: through evidence about the long-term impacts of teacher education on teaching practice and student learning; evidence about teacher test scores; and evidence about the professional performance of teacher candidates.

All Teacher Education programs should share important characteristics:

- All programs should be placed with quality faculty members with content teaching backgrounds. It is totally clear that the education and training of a prospective teacher will be effective to the extent that it has been carried out by teacher educators who are competent and professionally equipped for the job. The quality of pedagogical inputs in teacher education programs and the manner in which they are transacted to realize their intended objectives depend largely on the professional competence of teacher educators.
- All programs should be field-based.
- Students should spend one to two days per week working in school classrooms during the semesters leading up to full-time (i.e., five days per week) student teaching and teaching internship semesters.
- Field experiences, student teaching, and teaching internships should be effectively designed and implemented and wisely integrated with the university coursework.
- University faculty should partner with school administrators and mentor teachers to support and assess the progress of students throughout their programs.
- Mentor teachers should be given opportunities, e.g. master's degree without thesis, to upgrade their subject-matter knowledge and skills through specially designed programs at Faculties of Education.
- All teacher education programs should incorporate experiences in planning, implementation, and assessment of national teacher standards and student content and performance standards.
- The programs should also share a common mission and conceptual framework that runs throughout Faculty of Education undergraduate and graduate programs.

The following values and principles should provide the foundation for all activities in the Faculties of Education and reflect desired dispositions of professional educators (students and faculty). These values and principles should be threaded throughout the vision and the goals of the Faculty, as indicated below. I strongly believe that professional educators in a global, multi-cultural, democratic, ever changing society should be

- Knowledgeable: Possess content and pedagogical knowledge, as well as an understanding of human development and learning;

- Collaborative: Work friendly and collaboratively with colleagues, other professionals, and members of the educational community;
- Embracing: Mix multiple perspectives, respect diversity, and honor democratic principles;
- Investigative: Ask critical questions and work to integrate theory and practice; and
- Reflective: Thoughtful and constantly reflecting upon one's own standards, performance, and ethics. (Adapted from Hitz and Walton 2004, 26)

As for the knowledge of teachers, Shulman (1987) proposes some very basic guidelines. According to Shulman, categories of teachers' knowledge should include:

- Content knowledge;
- General pedagogical knowledge, defined as broad principles and strategies about classroom management and organization that appear to transcend subject matter;
- Curriculum knowledge, with particular grasp of the materials and programs that serve as tools of the trade for teachers;
- Pedagogical content knowledge – that special amalgam of content and pedagogy that is unique to the province of teachers, their own special form of professional understanding
- Knowledge of learners and their characteristics;
- Knowledge of educational contexts, ranging from the working of the group or classroom, the governance and financing of school districts, to the character of communities and culture;
- Knowledge of educational ends, purposes and values, and their philosophical and historical grounds (Shulman 1987, 18).

Considering the list above, Faculties of Education in Turkey desperately need action for two of the items. The first one is pedagogical content knowledge. Pedagogical content knowledge has been defined in various ways. Shulman (1986) defines this kind of knowledge as the particular form of content knowledge that shows the aspect of content most appropriate to its teachability and includes an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of the most frequently taught topics and lessons.

Since most of the faculty members at the Faculties of Education in Turkey do not have content knowledge teacher education backgrounds, programs lack the cooperation between subject matter and content and how to teach that subject matter content. As a result novice teachers graduate with very little knowledge of how to teach their subject matters for successful learning.

The second item which needs a careful and immediate attention is the knowledge of learners and their characteristics.

Beginning teachers must be able to connect their understanding of knowledge with their understanding of learners by being assessment centered. Assessment allows teachers to figure out how to pursue their curriculum goals in ways that will work for the students they teach. Assessments, and the feedback they can provide, are actually another source of learning, not just an evaluation of it. Teachers need to know how to construct, select, and use formal and informal assessment tools to show them how students are learning and what they know, so that they can give constructive feedback that guides further learning and informs instruction. A in depth knowledge and practice on alternative assessment techniques

and individual differences in learning would help novice teachers a lot to accomplish this task.

Learning is influenced by the way people interact in the classroom as well as the home and broader community. Teachers need to know how to create information-rich classrooms and social networks where students can learn from each other and the materials in the environment. They need to build upon the “knowledge pools” that exist in their students’ communities and link their students’ prior experiences outside of school to those within the classroom.

Conclusions

Although we live in the 21st century, our Faculties of Education, teacher educators, schools, classrooms and more importantly our teachers are not there, and our challenge now is to reinvent all these for the 21st century for the sake of our children, our students and the welfare of our country. Making such a paradigm shift is not easy. After all, when any of us thinks of education, we usually think of what we knew as school - the way it has always been. That is how parents, policy makers, politicians and many students think of school. But we have to make the paradigm shift to 21st century education. The new schools should be flexible, creative, challenging, and complex. They should address a rapidly changing world filled with fantastic new problems as well as exciting new possibilities.

Improvement in teacher education is an ongoing process. The important reforms planned to be implemented should definitely be directed to improve the quality of teacher education programs and make the experiences of teacher candidates more meaningful and responsive to both their needs as beginning teachers and the needs of the society.

A powerful organizational purpose is a must in order to succeed in a productive organizational change. A systematic process which is usually called as strategic alignment is one the key elements of such a productive organizational change. Strategic alignment occurs when the structure, policies, procedures, and practices of the organization totally support the organization's vision.

Teachers may be eager to change, and the emotional aspect of a reform may be taken into account. However, if teachers do not given time to learn about, implement, and reflect on the change, then the effects will be questionable and bound to fail. In order to change teacher thinking, values and behavior, training is required. This takes time, especially at the beginning of the process. Not only is some sort of professional development necessary for teachers to understand the introduced reform, but they also need time to understand what is expected of them and time to reflect on it. Teachers need opportunities to share their success stories concerning the reform initiative if they are to maintain momentum and “sell” the idea to colleagues and even to students. The time element is a crucial, but often overlooked aspect of an educational change.

We have no idea of what the world will look in five years, much less 60 years, yet we are charged with preparing our students for life in that world. Our students are facing many emerging issues such as terrorism, ethnic cleansing, global warming, famine, poverty, health issues, a global population explosion and other environmental and social issues. These issues lead to a need for students to be able to communicate, function and create change personally, socially, economically and politically on local, national and global levels.

Faculties of Education in Turkey should be able to produce teachers whose primary role is going to be a dispenser of information to orchestrator of learning and helping students turn information into knowledge, and knowledge into wisdom rather than dispenser of information as it is the case in its present form.

Teacher education in Turkey desperately needs to change immediately. Some might think that it is too late to begin the changes, as we need new competencies in teaching right now and the number of the present teachers makes it difficult to start a reform movement and make all teachers effectively absorb these changes. However, if teacher education in Turkey follows the right and well decided tradition along with the effective and well organized professional development programs and it remains practical, flexible and child/learning-centered, there is a hope that the next generation of learners will get the support and skills they need in life during their schooling years from their own teachers.

The need of a generation of professional teachers, who aim to develop learners instead of teaching them, who help their learners to become independent and responsible from their own learning, who provide students with motivation and interest for life-long learning and urge them to become autonomous learners and entrepreneurs is essential in the education of the future.

Teacher preparation programs require continual innovation to develop a new generation of teachers who have the ability to promote “complex learning” in students.

The responsibility of governments, higher education institutions, and mostly teacher educators both in pre-and in-service education, is huge.

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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, Non-Governmental Organizations, 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: Turkey, teacher education, redesign

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

Recommendations

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. Quality of the 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, 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 assess 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 800,000) 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 the readers.

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Investigating Representations of Ratio among Prospective Mathematics and Science Teachers: An International Study

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Abstract

The importance of teachers' content knowledge *for* teaching is acknowledged as a factor of teacher quality in mathematics and science. At the 2011 annual conference of ATEE in Riga, the Science and Mathematics Education RDC initiated a study of our prospective teachers' content knowledge of *ratio* for teaching mathematics and science using a grounded theory design. An analysis of the meanings and representations offered by the participants indicated emergent themes leading to the following conjectures. Participants who associated meanings that reflect two variables while providing many, varied, and relevant representations possessed relational understanding of ratio (Skemp 1976). The RDC proposes how further study with other participants will begin the process of establishing the validity of these conjectures.

Keywords: teachers, knowledge for teaching, prospective teachers, mathematics, science, ratio

Introduction

A major goal of the ATEE Research and Development Centre (RDC) 'Science and Mathematics Education' is to conduct international research studies that address significant problems related to the preparation of prospective teachers and the professional development of classroom teachers. At times the studies include both primary and secondary mathematics and science teachers, and at other times the RDC members work on problems in their own disciplines. Previously we studied the content knowledge and pedagogical content knowledge held by prospective teachers in five different countries concerning concepts relevant to both mathematics and science teaching (for example Berenson et al. 1997; Frederik et al. 1999; Oldham et al. 2000; Van Driel, De Jong, & Verloop 2002). While the annual ATEE meetings provide face-to-face meetings for the research group, e-mail is a major communication tool during the year. Considerable time is spent during the annual meeting in our RDC deciding on a significant problem relevant in our varied contexts of teacher education. It is necessary that the parameters of the problem allow for data collection in a variety of settings. Rather than conducting comparative studies in different settings, we examine our data for similarities across countries and universities. This leads to greater

understanding and a base of knowledge of mathematics and science teacher education within the international education community about mathematics and science for teaching.

This paper describes the first phase of a new RDC project on investigating prospective teachers' knowledge of the concept of *ratio*, a key idea in both mathematics and science education. In the following section of the paper, the background to the project and choice of topic is described and research questions are stated. The methodology, implementing a grounded theory design, is then outlined. Initial findings are presented and emergent themes identified. The discussion that follows proposes the conjectures taken from the emergent themes and provides supporting evidence from existing research of the viability of these conjectures. Finally, the RDC proposes how these conjectures will be tested with other participants to begin the process of establishing their validity.

Investigating meanings and representations of ratio: beginning the project

The importance of teachers' content knowledge *for* teaching is acknowledged by many as a factor of teacher quality in mathematics and science. Hill and Ball (2004), among others, advocate that it is important for teachers to understand deeply the discipline concepts for their levels of teaching *and* the associated methodology for teaching those concepts. Research with regard to both mathematics and science teaching suggests that teachers' knowledge of the discipline, in particular knowledge of the subject-specific methodology in relation to teaching, emerges as a key factor in student learning (Darling-Hammond 2000). As teacher educators who prepare prospective teachers for primary and secondary teaching, we recognize this important link between what teachers know and what their students come to understand about fundamental principles of mathematics and science.

At the 2011 annual meeting of ATEE in Riga, our RDC coalesced around a research problem related to our prospective teachers' knowledge of ratio *for* teaching mathematics and science at primary and secondary levels. There are a number of definitions for ratio but clearly, no one definition has emerged that satisfies all educators (Lamon 2007). Clark, Berenson, and Cavey (2003) report on the multiple models held by mathematics educators and propose a model that situates part-whole relationships in the intersection between ratio and fraction. Our approach to defining ratio is to view the term as a comparison of like or unlike elements. While we include rates in the category of ratio, we do not include fractions that express part-whole relationships.

Ratio is an important concept in many middle and secondary school curricula. For example, probability, slope, trigonometry, and the derivative are just a few examples of mathematical concepts that use ratio as a tool. Mixture, solutions, moles, simple machines, and acceleration are some concepts in the physical sciences that depend on ratio and proportional reasoning; proportional thinking is relevant also in the use of chemical formulas and equations and photosynthesis rate. Clearly ratio is a key tool to proportional reasoning and fundamental in terms of higher order thinking and problem solving in multiple mathematics and science content areas (Verghnaud 1997).

Difficulties associated with the ratio concept are documented in the literature. Researchers have studied the problem from a number of perspectives, contexts, and subjects. Interest in Piaget and Inhelder's work on children's reasoning became a focus of science education research beginning in the early sixties (eg. Lawson 1986). In general, both science and

mathematics educators focused on children's ideas of ratio over the intervening years. More recently Livy and Vale (2011) summarised evidence that students in the middle years of schooling have poor understanding of ratio and proportional reasoning. Evidently, little has changed over the past 50 years in terms of children's understanding.

The intersection of ratio between mathematics and science concepts makes it an interesting area of study of teacher knowledge, not only of teacher content knowledge but also of methodological knowledge. Recently Livy and Vale (2011) reported that 297 prospective teachers gave low levels of correct responses to relevant ratio and proportion test items. The implications of such findings are worrying. However, few studies seem to focus on teacher education and few have examined teachers' knowledge of ratio *for* teaching (Ball, Lubienski, & Mewborn 2001). Since ratio is such a valuable tool of proportional reasoning in mathematics and science, it is useful to study *representations* that teachers associate with ratio across the two disciplines.

Representations are defined here as any ideas associated with another idea in mathematics or science that is written, drawn, or spoken. A prospective science teacher may recall using ratios to draw a diagram of a lever or a description of a lab to measure speed. A prospective mathematics teacher may associate ratio with slope on a graph or the scale on a map or the odds for dice. Representations are useful tools for researchers in mathematics and science education to study students and teachers' ideas (see for example Janvier 1987; van Someren 1998; Arcavi 2003; Lee, & Luft 2008). It is with the study of teachers' representations of ratio that we began our study using a *grounded theory* research design (Strauss, & Corbin 1990).

A grounded theory approach seeks to develop conjectures derived from a given sample of participants. The literature of published research is studied to find evidence for continuing study of the conjectures. These are then tested and retested with different samples and/or populations of participants (for example Birks 2011). In this initial phase of our study we chose to study the following questions.

- a) What meanings do prospective teachers at primary and secondary levels in Ireland, Portugal and the USA give to the term 'ratio'?
- b) What multiple representations do these prospective teachers associate with the term 'ratio'?
- c) Do the prospective teachers' descriptive meanings and representations indicate different levels of understanding for teaching ratio?

Once the questions were identified, we agreed on a methodology that would accommodate our various settings, research control boards of human subjects, and participants. This is described in the next section.

Methodology

As indicated above, the four authors met together during the Riga ATEE Conference, in 2011; they designed the research project, selected the data collection technique and prepared the data collection instrument. It was decided to collect data from classes made up of, or attended chiefly by, prospective teachers in their four institutions, as these were easily available to researchers and were judged appropriate for fulfilling the research objectives settled for this paper. Some of the classes catered chiefly for prospective primary teachers, for whom mathematics and science education were only two strands among many in their teacher education programmes. Other classes catered for prospective secondary teachers, chiefly those choosing mathematics or science as a major or minor second-level teaching subject.

As data were to be collected in three different countries (two English-speaking but still with some English language variations, and a Portuguese-speaking country), the authors chose the questionnaire technique. This makes it easier to minimize language differences than conducting interviews would do.

Then, the authors prepared a questionnaire with five items focusing on the ratio concept:

1. What does the term ratio means to you?
- 2a. When do you use ratios?
- 2b. Who else uses ratios?
3. How do you represent a ratio using mathematical symbols?
4. Draw several representations of how ratios are used

Afterwards, three versions (for USA, Ireland and Portugal) were prepared. The questionnaires were anonymous but they ask respondents to give some information on the school level and the school subject that they were preparing to teach. To facilitate administration, the questions were arranged on a sheet of A4 (European) or Letter size (USA) paper as shown in Fig. 1. It was envisaged that they could be completed in a short period, say ten minutes at the end of a lecture. This would not unduly disrupt the running of the class.

<Place Fig. 1 about here>

After obtaining permission from the relevant board in each of the four institutions, the questionnaire was administered in the selected education classes. Administration was carried out by the relevant researcher or by a trained colleague who was given the appropriate instructions.

Questionnaires were received from 171 respondents. However, thirteen Portuguese students took the word '*razão*' in its everyday rather than its mathematical sense; '*ter razão*' means to be correct or to put forward correct arguments. These respondents – chiefly prospective science teachers rather than mathematics teachers – were excluded, and 158 questionnaires were analysed. The distributions across the school level at which the respondents were preparing to teach, their main subject areas (where relevant), their professional stage, and the country in which they were studying are shown in Table 1. The data are presented in order to give an overall picture of the responding cohort; however, other than noting some variations that may reflect other differences in understanding or culture between students in different countries, analysis by sub-category is outside the scope of this paper.

As far as data analysis is concerned, data from each institution were examined by the relevant author. Responses (converted into English when necessary) were tabulated for each question and codes were devised. Afterwards, codes were entered into spreadsheets which were shared among the authors and adjusted to facilitate comparability of answers among countries. Then, relative frequencies per question and category (code) were calculated. In addition, interesting responses (that is answers that include quite deep explanations) were examined in more detail so that emergent themes were identified. Addressing the research questions for this paper, reporting is restricted to data from questions 1, 3 and 4.

Table 1: Characteristics of the achieved sample

Category	Sub-category	#	Total for category
School level	Primary	101	158
	Secondary*	53	
	Other	4	
*Secondary school subject	<i>Mathematics</i>	14	53
	<i>Science</i>	32	
	<i>Other</i>	7	
Professional stage	Pre-service	149	158
	Other	9	
Country	American	127	158
	Irish	16	
	Portuguese	15	

Findings

Responses were very varied, some participants offering rich meanings for ratio and / or multiple representations, while others provided little information. Findings are presented for instrument questions 1, 3 and 4 in turn. They are described here in terms of response clusters that were identified from the coding process and frequency counts. Emergent themes reflecting deeper analysis and comparison with the literature are presented in the following sections of the paper.

Question 1: What does the term ‘ratio’ mean to you?

Response cluster 1.1: Comparison / relationship

Many responses included mention of comparison or relationship. Participants used words or phrases such as 'compare', 'comparison', 'compared to' or (to a lesser extent) 'relationship', 'related'. Portuguese participants were less likely than were American or Irish participants to use this category.

Response cluster 1.2: Fraction / percentage / proportion / splitting

A second theme reflected in many responses referred to topics typically associated with elementary or junior second level curricula: fractions, percentage, proportion and splitting (as in 'a bag of 15 sweets is divided between John and Jane in the ratio 2 : 3; how many does each child get?').

Response cluster 1.3: Other

Occasional references were made to rate, scale and odds.

Question 3: How do you represent a ratio using mathematical symbols?

Response cluster 3.1: Use of the colon or equivalent notation

The most usual response involved the colon (:) notation, either on its own, or in the form ___ : ___ (such as $x : y$ or $3 : 2$). In some cases, the word 'to' replaced the colon. Usually it was the only notation offered (with or without the provision of examples). All the Irish participants included the colon notation in their responses, though one did so incorrectly. This notation was frequently used by the American participants also.

Response cluster 3.2: Fractions

Some participants used fraction notation. This was notably prevalent amongst Portuguese participants.

There were few other responses.

Question 4: Draw several representations of how ratios are used

Responses here can be divided into two categories, depending on whether or not the participants interpreted the word 'draw' literally or chose to provide written or symbolic responses. It should be noted also that several students made no response to this question.

Response cluster 4.1: Drawings, diagrams and other pictorial representations

This cluster displayed considerable variety. One form of response reflected numerical comparisons or representations and is illustrated in Fig. 2. Other responses in this figure indicated comparisons of one and two variables usually reflecting an everyday context.

<Place Fig. 2 about here>

A second form of response – not used by many participants – showed a mathematical diagram or chart, reflecting geometrical properties (for example similarity) or statistical presentation (for example a bar chart highlighting relative heights of bars). Examples are shown in Fig. 3.

<Place Fig. 3 about here>

A few participants tried to capture the idea of scale, for example by sketching a map. Finally, some participants provided drawings that illustrated applications of ratio – for example cookery, architecture and design. In some cases the drawings were labelled with numbers or algebraic labels so as to make the ratio aspects explicit.

Response cluster 4.2: Numerical, algebraic or verbal representations

The responses here included examples that were similar to those for question 3, for instance of form 2 : 3, 4/5 or $\frac{2}{3}$. A few students answered using words, for instance ‘assets : liabilities’.

Emergent themes

We answer the research questions with the identification of emergent themes arising from the participants’ accounts of the meanings and representations they ascribe to ratio. Some descriptions, including representations, emphasize or allow us to infer that the participants’ concept includes the notion of two variables; some appear to refer to uses or applications or special types of ratio; and some relate to part-whole relationships. Table 2 shows typical instances of responses illustrating the three themes. The themes can be seen also in the wide range of representations offered in answer to question 4. For example, Fig. 2 above shows instances of pictorial representations with one and with two variables (with or without labels) as well as a typical representation of a part-whole relationship, while Fig. 3 above illustrates comparisons.

As noted in the introduction, we prefer to define ratio in terms of a comparison of like or unlike elements (the first theme), and to exclude the part-whole relationships often reflected in use of fraction notation (the third theme). Thus, we infer that participants who make use of the latter notation – and especially those whose responses did not include any reference to the comparisons revealed in the first theme – *may not have adequate knowledge, or a full understanding*, of the concept of ratio.

Table 2: Emergent themes for participants’ descriptions of the meanings they ascribe to ratio

Infers two distinct variables	Types / uses / applications of ratio	Part / whole relationships
Comparison	Rate	Fraction
Relationship	Scale	Decimal
	Odds	
	Proportion	
	Division / splitting	
	Percent	

Discussion

This study examined the meanings and representation of prospective mathematics and science teachers to determine their knowledge for teaching of the ratio concept. Knowledge and understanding are addressed in a variety of ways in the literature, often in terms of a dichotomy: for example conceptual versus procedural knowledge (Hiebert 1986), relational versus instrumental understanding (Skemp 1976), and knowing ‘why’ versus knowing ‘that’ (Shulman 1986). Both elements in such dichotomies are important (National Research Council 2001). In fact it is more appropriate to think of ‘both ... and’ than of ‘either ... or.’ However, the first element in each case is of particular value with regard to sense-making and meaning-making, currently key phrases with regard to the implementation of ‘reform’ curricula. Moreover, according to Hiebert and Grouws (2007), a feature of good teaching is that the teacher can highlight connections, or relationships, between different concepts. This guided our decision to employ Skemp’s terminology. In particular, we looked for indicators of *relational understanding*: understanding of ‘why’, of how the concepts involved in ratio are linked to each other and to other mathematical or scientific concepts. Using this language indicates that some prospective teachers have stronger relational understanding of ratio than others. Additionally, the conjectures define the parameters of that relational understanding (See Table 3). The finding infers that these participants will be able to make more meaningful connections between ideas related to proportional reasoning and problem solving for their students.

We may not be able to form conjectures with regard to *instrumental understanding*, or understanding ‘how’ – for example, how to calculate the answer to a particular example involving ratio. Our instrument did not require participants to carry out calculations, so in general did not allow us to draw inferences in this respect. Some responses did include arithmetic or algebraic calculations, mostly correct but some containing errors. However, the majority did not include calculations. It is noted also that the responses to question 3 do not always contribute to the identification of relational understanding. The responses revealed in general that the participants had Shulman’s knowledge ‘that’ (for example, that the colon symbol is used to represent ratio). The form of the question did not require them to expand their answers or to display their relational understanding, though some participants did so.

We point out above that, in responding to the questionnaire, some participants provided multiple meanings or representations. In some cases these were instances of the same basic representation (for example, $2 : 1$ and $x : y$); in other cases, the representations were fundamentally different. Crowley and Tall (2006, 57), seeking to understand differences in subsequent performance between two students who initially achieved similar test scores, propose a theory suggesting that ‘mental structures ... [are] rich and well-connected in those who succeed, but limited and poorly connected in those who eventually fail.’ The successful student ‘demonstrated links between graphical and symbolic representations, as well as links to and between procedures’; the unsuccessful student ‘merely learnt a set of procedures’ which were ‘not organized in a useful way that would allow her to build on them’ (Crowley, & Tall 2006, 64-65). The descriptions highlight the essential difference between relational and instrumental understanding. From examining our data in the light of this work, we conjecture that the participants using more representations, and especially representations of different types, are displaying more relational understanding.

Table 3: Conjectured indicators of presence or absence of relational understanding

Displays relational understanding	Does not display relational understanding
Meaning of ratio reflects two variables	Meaning of ratio does not reflect two variables
Provides many representations	Provides few representations
Uses multiple types of representation	Uses few types of representation
Cites / draws relevant applications	Provides symbolic representations only

A further feature of the responses especially to question 4 was the presence or absence of drawings or other attempts to show applications, rather than (or as well as) repeating symbolic representations from question 3. It can be inferred that familiarity with the contexts in which ratio is used is another indicator of relational understanding. Hence, overall, we *conjecture that the elements listed in Table 3 are likely indicators of whether or not participants have relational understanding.*

As pointed out in the introduction, the aim of our study is to examine our data for *similarities* across sites (such as countries, or universities within countries); this is not a study of between-country differences. However, Nunes and Bryant (1997) assert that mathematics is a cultural invention; moreover, as Nunes (1997, 32) points out, the subject is learnt in the context of cultural practices. Thus, there may be culturally specific elements in our data that need to be identified and borne in mind during the search for similarities. The clearest example above occurs in the case of the Portuguese students who interpreted the Portuguese word for ratio – *razão* – in terms of its everyday, rather than its mathematical meaning. As this occurred chiefly for prospective science teachers rather than prospective mathematics teachers, a subject-specific culture may be operating here. For native speakers of English, the problem did not arise. In the findings section, we draw attention to other instances where cultural practices within a country may well have affected the style and/or scope of the responses, and may mask underlying regularities in students' understanding. A related point arose when this paper was presented at the ATEE conference in Eskisehir (August 2012). Turkish members of the audience reacted negatively to the representation of 'one teacher to three students' (Fig. 2), as the use of labels as illustrated in the figure was regarded, not as evidence of identification of two variables, but as being fundamentally incorrect. Such cultural variations add a layer of challenge to international studies, but we do not regard them as invalidating the findings.

Conclusion

One of several limitations of this study stems from the fact that the research on novice teachers indicates that they may use representations and definitions incorrectly in their teaching especially if student questions arise that stray beyond the novice teachers' scripted lessons (Hogan, Rabinowitz, & Craven 2003). A limitation of the instrument is that the participants in this study may not have taken the time to think deeply about their responses and therefore their ideas were not fully communicated. However, a benefit of the instrument is that it can administered in about 10 minutes of classroom time, a scarce commodity for

every teacher educator, and perhaps several of the questions may prove to be viable for use as a quick assessment tool.

Future research plans for the RDC may include the development of an interview protocol to capture more in-depth knowledge for teaching of ratio among prospective mathematics and science teachers. It may prove useful to incorporate lesson planning to enhance the findings and to perhaps investigate whether prospective teachers depend on both instrumental and relational knowledge when planning a lesson. Another approach may study in-service teachers' meanings and representations of ratio. We have already recruited researchers from other countries to participate in our next investigation with a view to presenting their work at the annual meeting of ATEE in 2013.

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Introduction / explanation

Qu. 1 **Fig. 1: Layout of the questionnaire** Qu. 2a

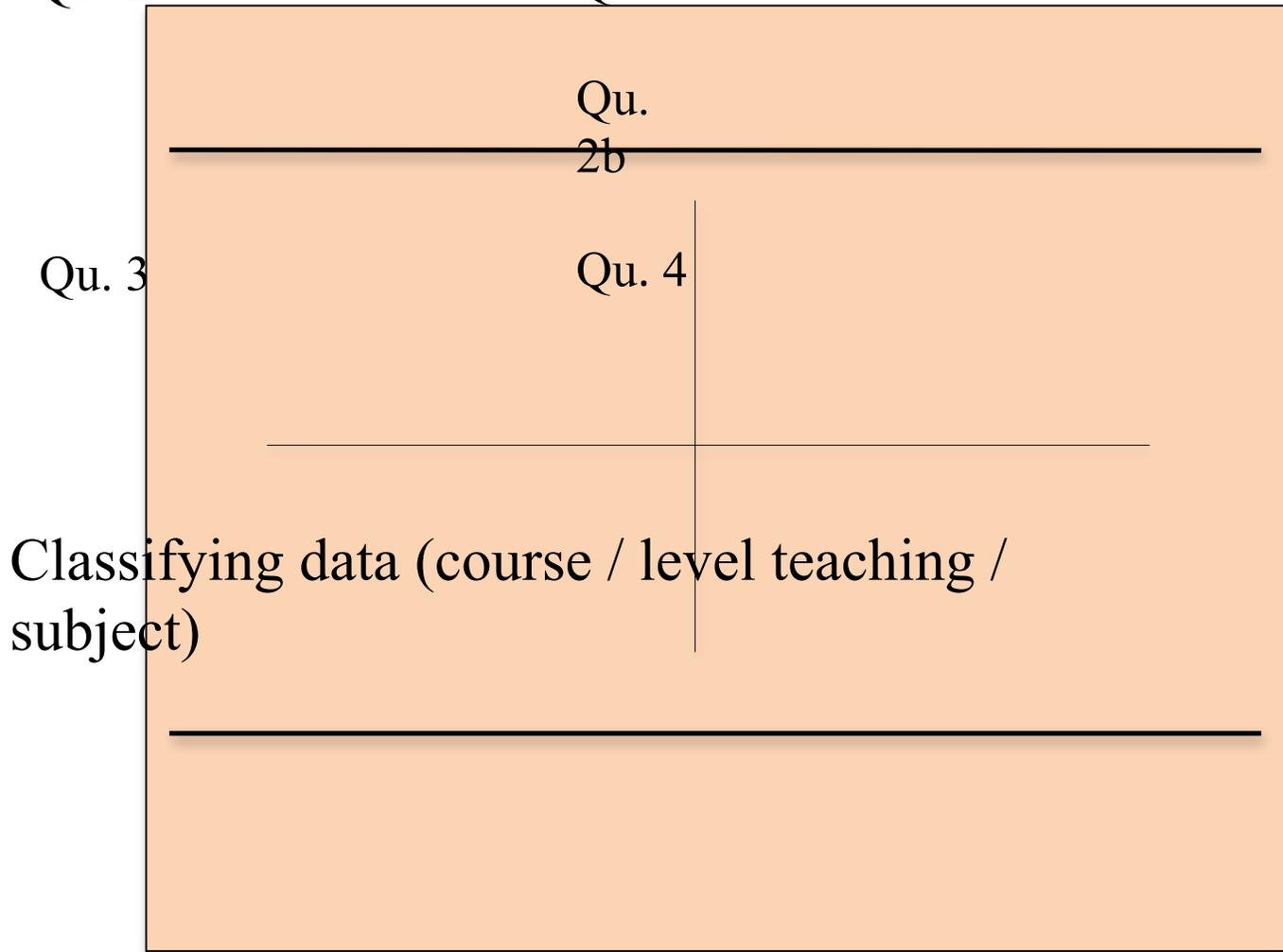


Fig. 2: Examples of numerical comparisons and representations

[to/:]
:

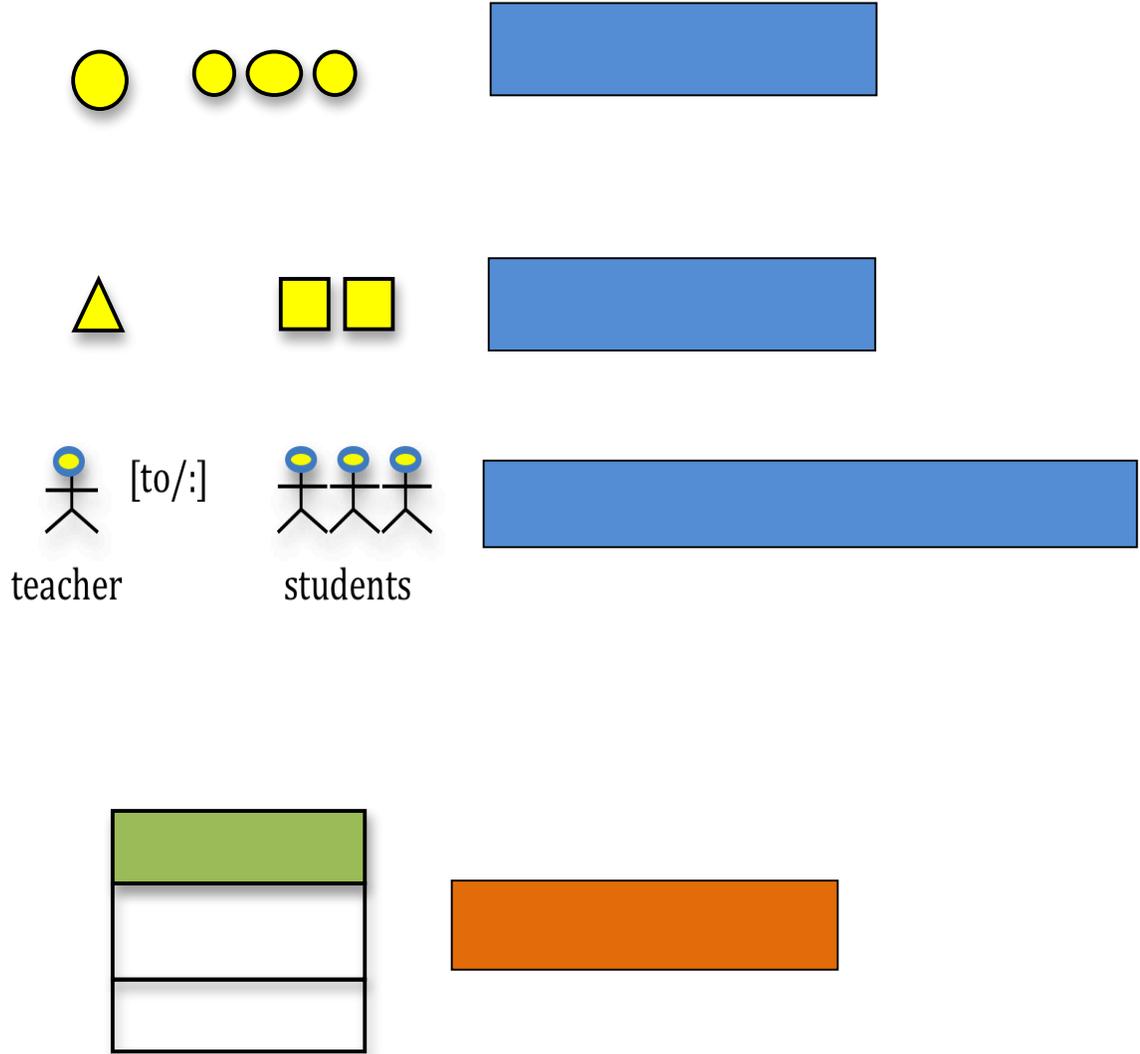


Fig. 3: Examples of mathematical diagrams and charts

Razão =

1

2

6

6

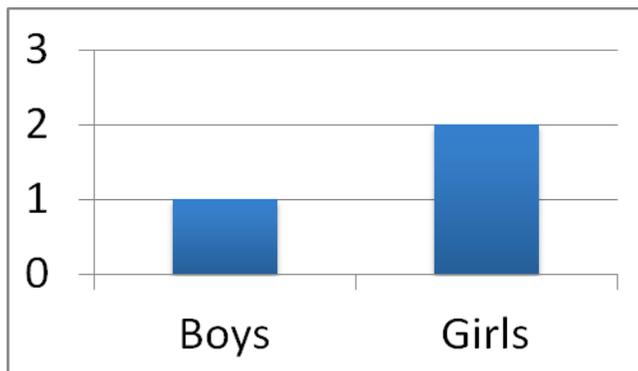
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3



6

3



Developing An Instrument to Assess Teacher Educators' Readiness For 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', (Pg 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', (Pg 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', (Pg 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, Pg 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, Pg 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 on-going 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, Pg 13).

Considering this range of pedagogical scenarios, the greatest challenge for teacher educators is to familiarise themselves with this uncharted 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 work-plan (2008, pg 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, 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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Technical and Vocational Teacher Education Practice: Profession or Semi Profession?

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Abstract

The article discusses the meaning attached to the concept profession, and in that context, it has been examined whether the practice as teacher in technical and vocational education can be defined under the concept of profession or semi-profession. For us, it is interesting to examine the concept profession through the professional demands within the frame of an academic education and the work performed by a teacher in vocational education. In Norway, a teacher in technical and vocational education has no academic background, but has, instead, a combination of expertise in a craft or/and the vocational training as the basis for his/her teacher education. In the final discussion we emphasize that vocational teacher can be considered a profession today if we consider the European Qualifications Framework (EQF) as a basic standard.

Keywords: Professions, TVET, EQF, Educational system

Background

The purpose of this paper is to discuss changes that have taken place in Norwegian Higher Education after the reform of 2005 (KD, 2005), which introduced a new structure in higher education in Norway and it consists today of 3 years for bachelor degrees and 2 years for master degrees. Such reform was carried out in agreement with recommendations made by the European Union for member countries, and also non-member countries, such as Norway, to follow the Bologna process. The new structure has had an important impact on education for professions in Norway, specifically on teacher education for vocational teachers, which is one of the professions we discuss in more depth in this paper.

Prior to the reform in higher education (HE) professional education within universities and colleges was based on levels of education defined by labour requirements and it consisted of two-year programs. Due to the length of the education, two years, these programmes were considered as semi-professions. Vocational teacher education was among these programmes and it was considered a semi-profession. In addition to the Bologna process, other changes taking place in the European educational scenario, such as the European Qualifications Framework (EQF), are also having an impact in Norway. They are affecting the education of teachers in vocational education, and the profession of vocational teachers. In Norway, the EQF has been translated into the National Qualifications Framework (NKR), and its consequences on the education of vocational teachers are next discussed.

The national qualification framework in Norwegian higher education (NKR)

The Norwegian Qualifications Framework NKR builds on the European Qualifications Framework for lifelong learning (EQF). Most European countries have, or are in the process of developing national qualifications framework of their education systems (KD, 2011, p. 4). Therefore, we will briefly present our use of the EQF as a background for the discussions in this article.

Vocational teacher education structure, form and content can be integrated into European Qualification Framework (Artinger, 2005; EQF, 2012). Although the development of professional studies for vocational teacher differs from the general teacher education, they have still the same professional level as prior to 2005. This means that both types of teacher education are placed in EQF standard Level 6. The intention of the EQF is to absorb the variations that occur in educational systems. It could mean that teachers in vocational education can also have their professional practice approved as part of the Bachelor program, even if it is not acquired through college or university studies.¹ EQF will be an assurance of vocational teacher education so that it meets the requirements that we describe in relation to a profession.

Professions and semi-professions

A brief clarification of the concepts of the authors' understanding of "profession" and "semi-profession" is necessary here. We start by stating that professional practice is related to specialization. Freidson (2001, p. 89) describes three different categories, which are known as craftsman, technician and professional. In the category craftsman, he means occupations characterized by having the training at the workplace and requiring a public certification such as a trade or journeyman's certificate. Craftsmen that have this certificate can work as teachers and instructors (Freidson, 2001, p. 89). In the category technician, he refers to technical occupations, such as a professional who has various forms of formal education as opposed to one who has an artisan training (p. 90). The characteristic of the third category, professions, is that the education is controlled and carried out by members of the profession, as for example in nursing, engineering and others.

Although we have outlined some characteristics of professional term, it is difficult to determine the distinction between defined academic professions and other occupations that university colleges have worked with such as teacher training. Molander and Terum describe these occupations by stating that "professions are occupations that have achieved professional status" (Molander & Terum, 2008, p. 17). Freidson goes further and expands the description of the term professionalism by including institutions. He states "Professionalism is a set of institutions that allows members of a profession to make a living where they control their own work and work is defined as an activity that is valuable for others (Freidson, 2001, p. 17).

As we have pointed out above, when professional education received from a college consisted of two years, which was shorter than the education of other professions, the degree gave entrance to what has been previously called a semi-profession. Such semi professions gave the professionals freedom to make choices and take decisions in their professional practice (Blom, 2007, p. 13). However, it is important to notice that Johansen

¹ Here, we consider the knowledge and skills acquired by means of non-formal/informal learning at the workplace or somewhere else, as defined by CEDEFOP (Cedefop, 2009)

(2009, p. 26) emphasizes that the term refers to the semi-professions in which professional practice is research based.

If we assume Blom and Johansen descriptions, we can say that the vocational teacher can be a professional, not a semi-professional, because the exercise of judgment is a significant part of his/her professional practice as vocational teacher, and he/she has freedom to make his/her own choices and decisions.

We claim that a profession's practice is central to the recruitment of a vocational teacher that works in upper secondary schools. In our discussion, we choose therefore to put more emphasis on the profession's practice, rather than on the length of the academic education, which is the basis for the work of vocational teacher educators. However, academic knowledge is also very important for the profession, because we need to understand the abstract formal systems knowledge, their origin, and thus their impact on the profession's discretion (Abbott, 1988, p. 53).

However, Abbott writes that, although it is the abstract knowledge that serves to legitimize the professional work, it should not trivialize the other functions of a profession (p. 55). Central to the abstract knowledge of vocational teacher are the vocational pedagogy and vocational didactics, in addition to the framework of understanding.

Characteristics of Education for the practice of Vocational Teacher

The characteristic of education for the practice of vocational teacher is that teachers are members of the profession they are trained for, which (Freidson, 2001, p. 93) describes as "always" and in the Norwegian context is described as "in some cases, teachers in schools / instructors: always in the company". This is related to the Norwegian structure of technical and vocational education, which consists of two years as a pupil at school, and two years as apprentice in the work life. This duality of education, 50% at the school and 50% at the workplace is also described in the third characteristic, where basic education takes place at the workplace. In Freidson's description, it is used forever, and for the Norwegian context, it then becomes a 50/50 split school / work life (See Figure 1).

The fourth feature in Freidson's table (2001, p. 93) is about the teacher or instructor working as full time teachers. Freidson says that this is rarely the case for craft teachers/instructors. In the Norwegian context it is described as: Largely (most time in the school) in the school, and in small degree at work.

The last two characteristics are linked to academia, where our description of the Norwegian context is similar to Freidson's description. We claim that vocational teachers are not engaging in scientifically based research, and that schools are not normally associated with the college-university sector (Figure 1). However, it is important to mention the development that has occurred in vocational teacher education. From the late 1970's there has been a research-based graduate / master's degree in vocational education, which opened the possibility for vocational teachers to work at colleges and become college professors.

Therefore, we can see a relationship between Freidson's model for professional education, and the traditional training of vocational education teachers, although it cannot be regarded as purely academic education (see figure 1).

Characteristics of training	Crafts	Vocational Teacher profession
Proportion of time spent at school and workplace	50% at school, 50% as apprentice at the workplace	To have the 50/50 model is the core of vocational education
Teacher's membership in the occupation	Partially necessary for teachers working in schools / always necessary for instructors in companies	Teachers: Rarely Instructors: Always
Basic education at the workplace	50% as apprentice at the workplace	To some degree, through practice periods in a companies
Full Time Teachers	Largely in school, to a small degree in the crafts.	Full time at school
Engagement in research	No	Yes
University / University college attachment	No	Yes

Figure 1. Characteristics of education

Since a vocational education teacher is an academic who has the same basic education as a journeyman, we chose in addition to set up the characteristics of education as vocational teacher in the same table that shows characteristic craft and handicrafts education (Figure 1), in the same way as Freidson makes it in his description (Freidson, 2001, p. 93).

It ought to be mentioned that a vocational teacher might receive his initial pedagogical education at a college or university that offers a one-year practical pedagogical training. Although the colleges' teacher educators are professionals in the field of education, they are not necessarily members of their students' crafts or occupations. The student-teachers are required to go through a twelve weeks training that is carried out as a teaching internship in the vocational education program of an upper secondary school. The teachers at colleges are full time teachers, while practice supervisors are practitioners of the occupation that they teach in the upper secondary school.

Structure of Vocational Teachers Education,

In this part of the paper we discuss the requirements for becoming a vocational education teacher. The vocational education teacher's background differs from the other Norwegian teachers in two significant areas. One is that a vocational teacher has an upper secondary education that consists of two years at school and two years in the work life. The second is that after receiving a trade or journeyman certificate, the vocational teacher must have a minimum of two years experience as a professional in the field before he/she can apply for vocational teacher education. Vocational teacher education consists of a three-year bachelor's degree, at a college or university that integrates subjects, pedagogy and didactics.

The requirement for becoming a teacher in general subjects at the upper secondary level is different from what is required for vocational education. A general subject teacher must have

fulfilled 3 years at the upper secondary level and completed a bachelor degree at a college or university, prior to attending a fourth year of pedagogical training. The purpose of this comparison is to show how the two types of education – general and vocational education – differ, while they are considered equal in regard to their classification as a profession.

Professions Seen in Relation to the Vocational Teacher' Role

Another important aspect to be considered in vocational teacher education is the tradition that masters and learners work and learn together. This is what happens with apprentices in the companies when they learn from and work together with instructors. The same happens with the student teachers when getting their bachelors in vocational teacher education. The university teachers are their role models. This has been an important aspect kept up in vocational teacher education, in spite of reforms not emphasising this important aspect.

In an empirical study from 2010, the results show that school reforms did not lead to major changes in the schools' professional understanding (Møller, Ottesen, & Hertzberg, 2010; Seezink, Poell, & Kirschner, 2010), and may therefore be an indication that professional interpretation is not directly affected by changing curricula. Just as significant others serve as role models for students in school (Sjaastad, 2012) can also teachers who educate vocational teachers serve as role models for these teachers. This is therefore an appropriate topic for further research on teacher educator's professionalism and how they function as role models for future vocational education teachers (Lunenberg, Korthagen, & Swennen, 2007). This means that we as teacher educators should act as role models for future teachers, and thereby develop their professional identity (Lamote & Engels, 2010). This is an area in need of further research (Swennen, Jones, & Volman, 2010), and in particular within the vocational part of teacher training.

A special feature of the role of vocational teachers is their profession's double practice field, which is thoroughly discussed in the white paper "Quality Reform for new teacher education Diverse - Demanding – Relevant (St.meld. nr. 16, 2002, p. 114).

The 3-year vocational teacher education is a practice-based and occupation-oriented study which differs from other teacher education by the fact that all students have completed vocational or professional training and, in addition have experience from the work life before starting their teacher training. Another important characteristic and basic principle of the 3-year vocational teacher education is its anchoring in the dual field of practice (St.meld. nr. 16, 2002, p. 114).

The particularity of the dual field of practice is that it qualifies for the teaching profession and professional life just as vocational training qualifies for occupations such as technician or engineer in industry. At work, this means that a vocational teacher is qualified to work as a vocational teacher in vocational programs of upper secondary schools within their own disciplines, and be qualified to work in a private vocational training in the work life outside schools. This distinguishes vocational teachers from other professionals involved with teaching activities.

The two most general properties required for calling an occupation a profession, is, according to Freidson a profession that is so specialized that it is not possible for those who lack the education and experience to work within the profession and that the profession can

not be standardized and rationalized (Freidson, 2001, p. 17). Slagstad describes professionalism as a distinction between professional experts and lay people (Slagstad, 2001, p. 31). With this description of an occupation as a profession, for example careers as electricians and plumbers fit well. Both of these occupations require education and certification. The profession is to some extent standardized, but many decisions must be taken by the individual practitioner and cannot be rationalized.

One of the key concepts to consider here is specialization as defined by Freidson. In the context of professions he makes a distinction between three types of specializations - mechanical specialization, manual judgment specialization and intellectual judgment specialization. Manual judgment specialization is associated most often with professions that involve practical work by making something, i.e., producing something. Intellectual judgment specialization is associated with intellectual occupations on the basis of a university education such as education in law, medicine, theology and philosophy (Freidson, 2001, pp. 19-21). A vocational teacher has a sound foundation in both specializations here described. He/she has a practical vocational training (manual judgment), and then an intellectual judgment specialization through earning a teaching degree at a university or college.

Although a vocational teacher has previously practiced as a skilled worker, and he/she was thus placed in a manual judgment discretionary specialization, he/she is no longer a practitioner in the craft, and might have a moderate knowledge of his/her craftsmanship. However he/she has become a practitioner as vocational teacher.

Discussion

A special feature of the vocational teacher's role is the double practice field, which is referred in The White Paper no. 16 "Quality Reform for new teacher education Diverse - Demanding – Relevant" (St.meld. nr. 16, 2002, p. 83). The specificity of the double practice field is that it qualifies both for the teaching profession and for the work life, within the specific occupation for which one has been trained during the vocational training, as for example, a technician/engineer in the industry.

For us as teacher educators, this means that we should look into the perspective that we act as role models for future teachers (Zhu, Valcke, & Schellens, 2010), especially those of us who previously served as vocational teachers in upper secondary schools. All teacher education programs are based on pedagogical and didactical subjects, which are made visible in different ways. Vocational teachers have different demands. In the electrician trade, for example, the teacher works with a subject that is in continuous development and requires a close connection to the trades and professional communities that work daily with technical issues. Thus, in technical and vocational teacher education, the studies are carried out by means of lectures, study groups and self-study. In addition, the student must seek out businesses and professionals outside the campus in order to develop the professional expertise that is required to be able to work as a vocational teacher.

In summary, vocational teacher can be regarded as belonging to a profession today if we consider the European Qualifications Framework (EQF) as a basic standard. Prior this EQF standard, the vocational teacher belonged to a semi-profession because there was no clear requirement for research based teaching. However, after the reform, research was given a

clear mandate and has become part of to the colleges' work tasks. The educational programs at professional colleges can then be defined as education for professions.

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How Students spend their Time and the Impact on Study Performance and Progress

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Abstract

National and international research shows that students are devoting less time to their studies. There is also evidence that full-time students do not fulfil their studies on time. Many factors have an impact on study performance and progress, some at student level, some at institutional level and others at governmental level. In this article we will discuss which student-related factors that seem to have a bearing on performance and progress. The analytical model includes motivation, ability, sex and age, social background, hours spent on studies and how much and when the students have paid work. Based on a sample of 168 kindergarten teacher students, the authors have found that many students cannot be considered as full-time students. Five factors seem to have a bearing on performance and progress: Ability, motivation, time on studies, time on paid work and social background.

Keywords: Teacher education, paid work, performance, progress

Introduction

Low progression rates and dropout is a problem in higher education. This is costly for both the individual and for the institutions. Because the financial system for higher educational institutions is based on the number of students passing exams the institutions discuss remedies to rectify this problem.

Many factors have an impact on study performance and progress. Some factors are at student level, some at institutional or programme level and others at the structural level (Van den Berg and Hofman 2005). In a comprehensive study in the Netherlands they find that variance in study progress and performance is largely determined by student factors. Manthei and Gilmore (2005) find that family matters, illness, motivation, relationship problems, parenting and living costs influenced study situation. In a study which tries to isolate most of these factors, Nonis and Hudson (2010) conclude that time spent on paid work is the factor which has the greatest influence on academic performance. As time at work increased, academic performance decreased.

Empirical research on the relationship between study time and performance is inconclusive (Nonis and Hudson 2010). Some even find that study time is negatively correlated with academic performance, while others find that it is positively correlated (Khron and O'Connor 2005; Becker 1997). The lack of consistency in the findings might be due to intervening factors between time spent on study and performance.

Many studies report high employment levels among students (Cox 2009; Holmes 2008; Hlavac, Peterson, and Piscioneri 2010; Manthei and Gilmore 2005; Metcalfe 2001; Moreau and Leatherwood 2006; Otnes, Thorsen and Vaage 2011). Researchers discuss how many hours students can work without adversely affecting academic performance (Hlavac, Peterson, and Piscioneri 2004; Hunt, Lincoln, and Walker 2004; Manthei and Gilmore 2005; Moreau and Leatherwood 2006; Holmes 2008; Van der Berg and Hofman 2005). Moreau and Leatherwood (2006) argue that the tendency for English students to work more hours during term-time is a consequence of reduced financial support.

In the present article we will discuss which student-related factors seem to have a bearing on performance and progress. The analytical model includes motivation, ability, sex, age and social status as background variables. In addition we include how many hours the students spend on their studies as well as how much and when the students have paid work. Many of these variables are interrelated. For instance may ability influence how much time students will need to work on their studies in order to perform well.

Methodology

Data was gathered in a quantitative study using structured questionnaires, administered between February and April 2012 during compulsory lecture time. The questionnaire includes background variables (sex, age, living situation, parents' education, stream and grades from upper secondary school), reason for study choice, notes, evaluation of study programme, study progress, time used on study, time used on paid work and other activities, motivation and questions on finances. The respondents are full-time campus students at Hedmark University College Faculty of Education and Natural Sciences, Kindergarten Teacher Education Programme. In Norway kindergarten teacher education is a three-year university college study leading to bachelor degree. <http://www.regjeringen.no/en/dep/kd/Selected-topics/kindergarden/early-childhood-education-and-care-polic.html?id=491283>). A total number of 168 students completed the questionnaire. The response rate is 89. Compared to other studies the response rate is high, which strengthens the significance of the findings.

For analytical purposes we have created two indexes, one for performance and one for motivation. The performance index is composed of the following variables: the academic results in their latest exam, whether they had ever failed an exam, and if they had had a normal study progression. Normal study progression is weighed by 2, because normal progress is seen to be of greater importance than if they have a low result or have failed once. By the index the students are divided into three groups; low, medium and high performance; 45% of the students have high performance and only 25% have low performance.

Motivation is an important factor in all studies discussing study performance. However, it is difficult to find valid indicators of motivation. In order to raise validity we have several indicators /questions that seek to reveal the students' motivation. These are: how sure the student is on study choice, whether it is regarded as important to fulfill on time, how motivated the student is to work with the study, how important is achieving good marks, how motivated the student is with regards to future occupation. We have developed a motivation index based on these variables. Each variable has the same weight. By the index the students are divided into three groups; low, medium and high degree of motivation. 32% of

the students have a high degree of motivation, 8% have a low degree of motivation. When further discussing performance and progress we relate to these indexes.

Factors influencing Performance and Progress

Female students perform slightly better than male students. Almost half of the female students get top scores on the index, i.e they have never failed an exam, they normally get good marks and they have normal study progress. Among students performing low, there is no difference according to gender.

Age is a factor that influences performance. Younger students perform better than older. Among students under 25 years 52% have high performance, in the eldest group only 26% fall into this category. Older students are also more often low performing than younger students.

Ability is difficult to define. In the present study we have looked at results from upper secondary school. We find that there is a positive correlation between results from upper secondary school and performance. However, the findings are weakened by the fact that only 79 out of 168 students have answered this question.

Students with both parents having higher education are more seldom low performing and more often high performing than students coming from homes with a weaker academic background, though we have to take into account that there are few students (N=24) with both parents having higher education.

We find a strong correlation between the indexes for motivation and performance. The better motivated the students are, the better they perform (table 1). This is not surprising. Thus motivation for studies seems to be a crucial factor for good performance.

Table 1. Motivation and performance. Percentages (N)

	Low performance	Medium performance	High performance	Total
Low motivation	62	23	15	100 (13)
Medium motivation	26	32	42	100 (91)
High motivation	14	27	59	100 (49)

Time spent on studies is a factor we would expect to have a bearing on performance. On average the kindergarten teacher student uses 25 hours a week studying, though there is wide variation. Most students spend fewer hours than full-time study should demand. The students who spend most hours on their studies perform highest. The more days per week the student is present at campus, the better he/she performs. Students who spend many hours on self-study/home-work perform slightly better than those who put in fewer hours.

Paid work during term is expected to influence performance negatively. 65% of the kindergarten students have paid work during term. On average they spend 12,7 hours a

week on paid work, but there is wide variation. 25% have never done paid work during term time. Whether paid work influences study performance negatively depends on the number of working hours. Those who work more than 15 hours a week perform slightly lower than the students who do not have paid work or work less. Thus, how many hours the students are in paid work has a bearing on performance; not whether the students have paid work or not. Another factor to take into consideration is the time when the paid work is performed. Students who work daytime perform lower than students who work during weekends and evenings.

Conclusion and Discussion

In the present study we have five explanatory factors that have a bearing on performance and progress: ability, motivation, time on studies, time on paid work and social background. However, social background has only a weak influence and needs to be studied in a larger study. Some of these factors are interdependent. For example motivation might be negatively influenced if a student gets negative feedback such as low marks. Sex and age are not predictor variables but influence performance through some of the five explanatory factors.

Our findings partly support findings in other studies. Like Manthei and Gilmore (2005) we find that motivation and ability influence performance. We find that 65% of the students have paid work during term. This is close to findings in other studies (Hlavac, Peterson, and Piscioneri 2010). The students on average worked between 12-13 hours a week, which is the same result as in many other studies (Manthei and Gilmore 2005; Holmes 2008). We also conclude that there are few detrimental consequences for academic performance when the students work a moderate number of hours.

Our findings are limited to kindergarten teacher students. We do not know if there are specific aspects of this programme which lead to our findings. Some study programmes are more demanding than others and students must put in more hours in order to progress. Van den Berg and Hofman (2005) in their comprehensive study of factors influencing performance conclude however that study programme have little explanatory value on students' performance and progress.

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Standards for Student Teaching Portfolios – Chances and Challenges

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Abstract

Portfolios are expected to play a key role in gearing the culture of learning in teacher preparation away from the mere acquisition of knowledge and towards fostering self-reflection and dispositions for a life-long self-organised development of professional teacher competence. This requires a clear-cut and widely acceptable model of teacher competence with empirically validated levels as benchmarks for self-assessment and self-organised learning.

But such models are not yet available. How do teacher educators deal with this? Our synoptical meta-analysis identifies two approaches:

- where portfolio work stretches across modules and phases of teacher education, ad hoc-defined standards or standards aimed primarily at social validity can be found;
- where no standards are provided and exigent ideals of teaching are out of the novices' reach, personal guides (lecturers, mentors) retain a crucial role in aiding reflection.

In five case studies from Germany and Finland, the potentials and problems of both makeshift solutions are illustrated.

Keywords: portfolio; teacher competence; standards; validity of competence models; development of reflective practitioners

Portfolio Work in Teacher Education

Portfolio work has become increasingly popular in teacher education across Europe. In many universities, it has become a compulsory element of bachelor and master study programmes. Certain hopes related to portfolio work may explain this trend in teacher education. Teaching is seen as a complex and open process. Thus, teachers are required to continually review and reflect on their work – teaching is a lifelong challenge. The traditional learning culture in tertiary education, on the other hand, is focused on knowledge absorption, logical reasoning and argumentative performance. Some goals which are important in the context of the development of professional teachers may thus be missed: the building of reflective skills, the ability to self-assess and critically review one's own learning as well as to form an individual idea of the future profession. Portfolio work is expected to facilitate exactly such skills and habits of self-organised professional development. It has been demonstrated (Brunner et al. 2009; Paulson et al. 1991; Zubizarreta and Millis 2009) that portfolio work can help students

- to reveal, rearrange and organise their learning processes
- to individually design their learning processes
- to connect many different and sometimes apparently isolated parts of the education

- to shift the focus away from the students` deficits and towards their talents and progress
- to closely connect professional contents with the individual learner and his opinions and goals
- and to create an individual and profound idea of the future professional self.

In short, portfolio work is popular with teacher educators because it mirrors the open-endedness, the complexities and requirements of the professional field and the process of professionalization. You cannot instruct people to become good teachers, but if portfolio work helps students to become “reflexive practitioners” (Schön 1983), who seek to continually improve their professional performance, adapt to new developments and contribute to innovating the systems they work in, then a lot may be gained for our educational systems.

But does it? And if it does, under which circumstances? The meta-analysis presented below sought to understand one specific factor and its role for successful portfolio work in teacher education: teacher standards and teaching competence models students are presented with as frames of reference for their student teaching portfolios.

Valid Competence Models and Their Role in Portfolio Work in Teacher Education

Why should standards and competence models be helpful for students who work on their teaching portfolios?

Working on their portfolios, students no longer closely follow the footsteps of a guide (lecturer, mentor etc.); they must find their own trails and paths of development. To be able to do so, one needs, to stay within this metaphor, a good map. A valid model of the competences one needs in a specific domain can be such a map – in our case, a model of teaching competence or competences.

To fulfil this function, a model of teacher competence – or indeed any competence model used for portfolio work – must define its domains and levels in ways which are socially (McClelland 1973), psychologically (Hartig and Klieme 2007) and mathematically (Häcker and Winter 2006, 230) valid. The example of the Common European Framework of Reference for Languages, which fulfils this function for portfolio work in foreign language learning (e.g. with the European Language Portfolio), illustrates what this means and why it is so important.

A competence model is **socially valid** if it comprises what most practitioners, researchers and society consider to be relevant. In our metaphor: Does the map show a city, region or country, whose geographical data many people want to know about? The CEFR for languages is highly socially valid because its domains (reading, writing, listening, spoken interaction, spoken production) correspond with what most people understand by “being proficient in language X”. Foreign language learners can, thus, trust the framework to include all relevant skills. Aiming one`s self-organised learning efforts towards, say, acquiring proficiency level B2 in English, and taking the trouble of documenting it in one`s portfolio seems worthwhile because learners know that they focus on what relevant social actors (universities, employers etc.) value and require. In the case of teacher competence, its social validity depends on the inclusion of (and only of) what most teachers, teacher educators, education researchers, education managers and education policymakers consider to make a good teacher.

A competence model is **psychologically valid** if the definitions of its domains and levels correspond with soundly empirically observed performance patterns. In our metaphor: Does the map depict the surface accurately? The CEFR for languages is highly psychologically valid because its domains neither lump together unrelated performances, nor separate performances which clearly correlate with each other. As a consequence, language learners can test each of their competences with a plethora of objective, reliable and valid tests and find out e.g. if their listening skills have reached level B2. In the case of teacher competence models, psychological validity would mean that its domains like e.g. “diagnostic competence” must be empirically verified so that they are testable in an equally reliable way.

A competence model is **mathetically valid** if the definitions of its domains and levels allow learners to actively work towards taking the competence to the next level. In our metaphor: Does the map show all the broad streets and maybe also some narrow pathways between any two points? The CEFR for languages is mathetically valid because its domains and levels refer to different types of variable situations, where each competence is needed and can be acquired, and the specific nature of these situations can be grasped by learners, so that they can actively seek to partake in them. If you know that your listening skill is on level B1 and you want to take it to B2, then you also know that you must listen to more texts on a broader choice of topics. To do that, you could either choose appropriate audio learning software, or watch films in English, or listen intently to the lyrics of songs etc. In the case of teacher competence models, mathetic validity would mean that students know what e.g. “pedagogical content knowledge” is and what they can do to acquire it.

The problem is that there is no such highly valid model of teacher competence yet (Frey and Jung 2011). There have been numerous attempts at modelling teaching competence, both nationally and internationally (Baumert et al. 2009; Beck et al. 2008; Blömeke et al. 2007; Chung and Pecheone 2006; Oser and Oelkers 2001; Ständiges Sekretariat der Kultusminister der Länder in der Bundesrepublik Deutschland 2004; Selvi 2010; UK Department for Education 2012; US Council of Chief State School Officers 2011) – but each model defines its own, different set of domains, and they arrive at these via very different paths, some by psychometric testing, but many more by politically framed expert discussion. Some “domains” appear in only one of these models (e.g. the command of academic language in Chung and Pecheone (2006), “environmental competency” in Selvi (2010) or a professional conduct that does not undermine “fundamental British values” in UK Department for Education (2012)). But even those elements which seem to recur provide problems. Despite considerable research efforts (Beck et al. 2008; Bromme & Hörnberg 1990; Chi, Siler and Jeong 2004), little is known about the psychological nature of a “diagnostic competence” (Schrader 2011). The psychological basis and acquisition processes of classroom management skills are more thoroughly researched (Cruickshank and Metcalf 1990; Freiberg et al. 1995; Havers 2010; Helmke 2007; Kounin 1970; Merrett and Wheldall 1993; Wang et al. 1993), but the concept of classroom management has recently faced fundamental criticism (Bohl et al. 2010; Freiberg 1999), which throws its social validity as a domain of teacher competence into doubt. Also, it is questionable whether catchphrases like “professional ethos” could be fashioned into verifiable competence domains at all.

Methods of our Synoptical Meta-Analysis of Different Approaches towards Teacher Competence Models as Frameworks of Reference for Portfolio Work

This begs the question: How are teacher educators in different countries reacting to this lack of a widely embraced, clear-cut model of teaching competencies as a framework for orientation when they introduce portfolio work into teacher education and specifically student teaching elements?

In order to identify different approaches to standards as reference frames for portfolio work – and, as a next step, to find out about their contributions to learning outcomes –, our study had to undertake several methodological steps.

Identification of Institutions where Portfolios are used in Teacher Education

We had to identify teacher education institutions which implement portfolio work, especially in the context of the practical elements of their curricula. This was mainly done through document analysis (of curricula, project descriptions of intervention studies, and course materials) and supplemented with questionnaires sent to selected centres for teacher education, departments of education etc. For our purposes, it was not necessary to gain a complete overview of all institutions that implement portfolio work in teacher education. But a larger list of institutions from different countries offering differently structured programmes for teacher students was certainly required in order to isolate the contribution of any given set of standards from other factors that also influence professional development and learning.

Identification of Standards, Reconstruction and Categorization of Underlying Competence Models

Are teacher students in the different institutions confronted with teacher standards as reference frames for their portfolios? The above-mentioned document analysis and questionnaires allow the sorting of cases into two categories: those with and those without explicit reference to standards in portfolio work.

To reach a coherent understanding of a specific set of standards means to reconstruct its underlying competence model. Where no explicit reference to a competence model is given, the re-construction is a hermeneutical process.

The re-constructed competence models can then be analysed along different criteria: which domains and levels can be found? How was the model established? What was its main focus (e.g. evaluation vs. empirical research)? Two kinds of results are possible: Either all or most underlying models of teacher competence share certain characteristics. Or they differ with regard to some or all of the outlined criteria, in which case several tentative categories must be formed. (Tentative because only a more in-depth analysis can bring forth a useful categorization of different models of teacher competence and their role for portfolio work.)

Selection of Cases

After the cases are sorted into the different categories, several examples from each category should be selected for an in-depth analysis of student teacher portfolio work with or without teacher competence models (of potentially different sorts). Selecting examples from different countries with differently structured programmes in teacher education is important in order to isolate the effects of the standards from other factors which shape learning culture in teacher education, too.

Case Studies including Context and Outcome of Differently Structured Portfolio Work in Teacher Education

For the cases selected, both the context in which students wrote their teaching portfolios and in which they are (or are not) presented with standards, and the outcome of their portfolio work in terms of the development of more reflexive and self-organised professional learning habits must be elucidated. The predominant method here will be a meta-analysis of existing research and evaluations. Where necessary, it is supplemented with inquiries of our own in the form of guided interviews conducted with students and teachers from the programmes or institutions in case, and questionnaires directed at the same group of persons.

Presentation of Results: Five Case Studies

For brevity's sake, only the five case studies shall be presented here in full, while the process of their selection and the establishment of tentative categories shall be summed up.

Portfolio work has become popular in teacher education at universities and in-service training providers all across Europe. It enjoys great popularity especially in Great Britain, Switzerland, Germany and Finland. Whereas in Great Britain and Switzerland, teacher standards and competence models are ubiquitous, in Germany and Finland, we find cases of portfolio work both with very explicit and detailed standards as well as without any reference to standards at all. A sub-categorization of those cases where standards are defined does not suggest itself, since underlying competence models appear to be mostly of administrative or political provenance, aiming, if anything, at social validity. Their definitions of domains and, in some cases, levels show a great deal of variety, but no patterns emerged that would allow the models to be sorted in any meaningful way.

Therefore, three cases with standards were selected for in-depth study – two from Germany (one dictating standard-oriented portfolio work in all Bachelor and Master programmes of all teacher-educating universities in one land, the other an intervention study spanning across a Master practicum and the two-year in-service training phase) and one from Finland (not limited to school practica) – as well as two cases without standards – one from Germany, one from Finland, both in the context of a semester-long practicum.

Case 1: North-Rhine Westphalia, Germany

In North Rhine-Westphalia portfolio work has become a mandatory part of all four practica with a new law structuring Bachelor and Master of Education studies in 2009. Its legally defined goal is to bring forth reflective practitioners and to build up teaching competences gradually over the course of the Bachelor and Master studies (LZV 2009 §13). Starting even before the first semester, portfolio work is expected to achieve this by encouraging personal reflection. To this end, the portfolios are not reviewed and not graded at all, although portfolio work is by law compulsory for all teacher students (LABG 2009 § 12 (1)).

For each practicum there are standards defined, in part by commissions including representatives of the Ministry, the universities and teacher educators from the initial in-service training phase (*Referendariat*), and in part by the universities only. These standards are not consistently orientated on one specific model of teaching competence, as the following overview may outline:

The standards of the first practicum (Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen 2010a) ask students to:

- a. discern and reflect on the fact that students are individual learners,
- b. discern and reflect on the role of the teacher,
- c. discern schools as organizations and places of employment/or to discern and reflect on fields of teacher tasks/fields of learning,
- d. make first steps towards taking over the role of a teacher.

Although these standards directly call on students to reflect on the teaching profession, its requirements and one's personal compatibility with them, they do not describe a coherent set of domains of teaching competence at a beginners' level. Standard **a** shows some resemblance to a description of diagnostic competence at a beginner's level, but whilst a competence is defined as an ability to act independently and flexibly in a specific situation, standard **a** merely calls for the acceptance of a specific view. Likewise, standards **b** and **c** describe topics and desirable attitudes towards them, not competences. Almost all the domains into which teacher competence is often differentiated seem to be coalesced into standard **d** – it comprises elements of all four domains of the teacher competence model underlying the German national standards for teacher education: the competency to teach, the competency to educate, the competency to assess and the competency to innovate (Sekretariat der Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland 2004).

The second practicum's standards partly aim at linking theoretical knowledge and practical experience (LZV 2009). Students are asked to:

- e. explore the complexity of school-related task fields under a professional and system-oriented perspective,
- f. connect knowledge based on educational theories with particular experiences during the practicum,
- g. actively partake of teaching,
- h. reflectively contribute to one's own professional development and course of studies.

Evidently, these standards do not build on those from the first practicum – they mostly introduce new “competences” instead. The only exception is standard **g**, which bears resemblance to standard **d**. Unfortunately, standard **g** is neither a clear progression from standard **d** – also, a possible connection is not made transparent to the students –, nor a word-by-word repetition; it is more of a paraphrase, which dodges the question of levels and progression. Standards **e** and **h** refer to skills which may or may not be competences: standard **e** aims at being able to apply research methods to school as an object, while standard **h** describes a “competency to reflect”. Either way, neither of them is in any way related to anything students were required to accomplish in their first practicum. Standard **f**, finally, clearly is not a competence in itself, but a cognitive process necessary for the building of any competence: the proceduralisation of declarative knowledge (Mandl, Friedrich and Hron 1988).

The standards of the third practicum must be excluded from this case study, since each university is free to define them and most universities have not implemented this element of

their Bachelor programmes yet. The last four standards concerning the *Praxissemester*, a whole semester spent in school, roughly correspond with the above-mentioned national standards for teacher education (Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen 2010b). They ask students to:

- i. plan, conduct, and reflect on essential parts of teaching and learning on the basis of pedagogical content knowledge, subject didactics and technical knowledge,
- j. apply and reflect on concepts and methods of testing and assessing learners' performance and supporting individual development
- k. understand the role of schools to educate young people and engage in it,
- l. plan, conduct, and evaluate small research projects and to develop theoretical interest out of selected experiences in school,
- m. develop a concept of one's own professional self.

Standard **i** for example is linked to the competence to teach, standard **j** to the competence to assess and standard **k** relates to the competence to educate. The national standards are mentioned as their source. A reference to standards **d** and **g** is not made, though. Standard **l** can be conceived of as a progression of standard **e**, which also referred to research methods, but again, this link is not made transparent to students. The last standard is not linked to any competence at all; its wording is similar to standard **h**.

In summary: The standards of the consecutive elements do not form a coherent system. Although the gradual building up of competences is the declared overall goal of the practica and the portfolio work accompanying them, the links and possible progressions are not made transparent. No level seems to follow the systematics of a precedent one. Thus, the mathetic value of these standards across the entire course of studies is very low. In addition, as the formulations at every level appear somewhat creative and are obviously vessels of education policies instead of relying on empirically verified competence domains, their psychological validity is questionable. With regards to social validity, we have a mixed picture. The national standards, which underlie the standards for the last practicum, enjoy a certain degree of social validity in Germany. However, the ad hoc-defined standards for the earlier phases do not.

Although this mandatory portfolio work in North Rhine-Westphalia is a very young phenomenon, research into the effects of the first phase is already available (Bellenberg and Reintjes 2011). To a certain degree, it attests the portfolio work in this framework a positive effect on self-reflection during the first practicum. Working with these portfolios does seem to have a positive effect on self-organization insofar as in these rather unstructured and poorly assisted first internships, students turn to their portfolios to find out what they can do in their internship and what they have already done. But on the other hand, Bellenberg and Reintjes also observe that the formulations of the standards induce teacher students to overestimate their levels of teaching competence even at the beginning of their studies. To remedy this, they call for a clear progression from the first to the second practicum, which the standards evidently do not provide.

Even though insights about the first phase must not be generalised, it appears that this centrally defined set of standards works to some extent as a frame of reference that

facilitates self-organised learning within one phase, but not self-determined, reflective long-term development across the entire Bachelor and Master studies.

Case 2: “Vom Lehren zum Lernen und zurück” in Thuringia, Germany

In the second case from another German land, Thuringia, portfolio work is implemented in the context of an ongoing project (2010-2014) that translates “From teaching to learning – and back”. Here, students make contact with portfolio work during their semester-long practicum, which is a part of the curriculum at the University of Jena. They continue to work on the same portfolio during their two-year training in school after university (Referendariat).

The guidelines for portfolio work provide both a model of teacher competence as frame of reference, and some methods of reflection and metacognition. They were, in this case, developed by representatives from both the University of Jena and the teacher training institutions in Erfurt and Gera. In some seminars, students’ portfolios were presented and discussed. The trainees’ portfolios were regularly discussed with their trainers (Gläser-Zikuda et al. 2012, 31ff.).

In contrast to Northrhine-Westphalia, the guidelines provide a coherent frame of reference for portfolio work across the two institutions. As a common frame of reference for both phases, the German national standards for teacher education, which were already discussed with regards to case no. 1, were chosen (ibid., 36). The German national standards for teacher education constitute a competence model with a relatively high degree of social validity, at least in Germany. But its mathetic and psychological validities are low. The four domains are meant to encompass all that makes a good teacher. Despite their drawing on the findings of a committee of education researchers (Terhart 2002), lines between domains are not drawn on the basis of empirical research. This delineation of domains – and especially the absence of a beginners’ or intermediate competence level – neither facilitate the student teachers’ self-assessment (e.g. with regards to their level of “competency to teach”), nor their active seeking of situations in which to acquire and foster a specific competence (e.g. the “competency to innovate”).

Gläser-Zikuda and others currently analyse the outcome of the portfolio work in this project. An important first result of their study: Students felt a lack of orientation when they wrote their portfolios. Only when they presented their portfolios to others and discussed them with peers and supervisors did they feel that they made a significant progress with regards to reflection (Gläser-Zikuda et al. 2012, 38). The German national standards for teacher education do not seem to succeed as a frame of reference that would help student teachers to organise their own professional development.

Case 3: Jyväskylä University of Applied Sciences, Finland

At Jyväskylä University of Applied Sciences, portfolio work and Personal Learning Plans are compulsory for all vocational teacher students during their entire Bachelor/Master studies (Lepänjuuri and Pylkkä 2005). The university’s board has defined a curriculum, in which all courses for teacher students are sorted into one of four domains of teacher competence: “facilitation of learning”, “development of an educational environment”, “cooperation and

interaction” as well as “continuous learning”. Personal Learning Plans and portfolios are expected to be oriented on these competence domains, too.

The background and psychological foundation of this model of teacher competence is unclear. A study structure with modules for each competence domain on different levels in the Bachelor and Master studies can provide an orientation for one’s self-assessment, but here, these levels are not explained at length to the students.

Regarding the outcome, Lepänjuuri & Pylkkää (2005) found that portfolio work at the Jyväskylä University of Applied Sciences does support the reflection and integration of different learning processes throughout course studies. On the other hand, Groom and Maunonen-Eskelinen (2007) state that some students’ portfolios lacked focus in terms of teaching and learning issues because of the rather vague frame of reference and suggest that more structure should be proposed. Additionally the tutors’ guidance and support of the reflective practice were seen as essential by students.

Case 4: University of Potsdam, Germany

At the University of Potsdam, portfolio work is embedded into the semester-long practicum, which has been part of the Master of Education programme since 2008. Portfolios are compulsory. They are reviewed but not graded by the lecturers of the seminars which accompany the practicum. An interdisciplinary group of such lecturers developed the guidelines for these portfolios.

In these guidelines, there is no reference to any model of teacher competence, and no standards are defined. Instead, they ask students to integrate free reflective essays at specific moments during their practicum as well as written lesson plans (Zentrum für Lehrerbildung der Universität Potsdam 2009; 2012), which pertain to the culture of German in-service initial teacher training, into their portfolios. The pervasive traditions shaping the writing of such lesson plans and the reflective communication with supervisors after lessons, based on these lesson plans (Meyer 1980), confront student teachers with an implicit ideal of didactically airtight lessons, smoothly proceeding according to a meticulous methodical plan (Carl 2010). Inevitably, the student teachers’ performances in their first semester at school miss such an aim by far. To assess their progress, students thus rely on the judgment of professional observers. At two separate times during their practicum, these observers are their lecturers from the university; the rest of the time, their mentors at school serve in this function.

The meta-analysis of the outcome of portfolio work in the semester-long practicum at Potsdam draws on both a study of the students’ perceptions about their portfolio work (Gemsa and Wendland 2010) and a critical internal self-evaluation by Potsdam lecturers, who sought ways to improve this practicum-related portfolio work (Falk and Foltan 2010). According to these sources, students feel that while their portfolio work did help them with their self-reflection, they considered their encounters with students, the role of their mentors and the experience of attempting to teach very much more important. Students criticise that different lecturers set divergent demands with regards to their portfolio, and that in some cases, the resulting portfolios have little to do with what they thought was most important about their practicum (Gemsa and Wendland 2010, 233).

Lecturers, on the other hand, criticise a lack of depth in the students' reflections and that often, where students set themselves goals for future development, they choose basic recipes for classroom management and very rarely show even the slightest hint of being inspired by pedagogical or didactical theory (Falk and Foltan 2010).

Case 5: Abo Akademi, Finland

The last case, portfolio work at Abo Akademi, shows a similar approach.² Here portfolio work is compulsory in several modules, including the subject-centred courses accompanying the semester-long practicum for subject teachers. There are guidelines provided, sometimes issued co-operatively by all lecturers involved in a certain module, sometimes by each lecturer individually. These guidelines are mostly without explicit reference to teacher competence or standards. Instead, they include suggestions about criteria for "good teaching" and encourage student teachers to include written reflections on their lessons in the portfolio. During the courses, portfolios are frequently presented and discussed.

At Abo Akademi, a great amount of freedom in the design of the portfolios is given. In principle, any form and content is possible, provided that the student reflects on his own teaching and his future role as a teacher. With the guidelines, students receive a list of criteria for "good teaching". These criteria serve as suggestions for possible topics or questions, but implicitly confront student teachers with a very sophisticated ideal of teaching. As in the case of the Potsdam guidelines, the student teachers' performances in their first semester at school likely are nowhere near this ideal.

The interviews conducted in the course of our analysis indicate that lecturers at Abo often guide the portfolio work in counselling interviews. With these interviews and more frequent visits in school, the lecturers play a much more direct role in providing a frame of reference for the students' self-assessment. Also, those interviewees whose portfolios were presented and discussed in class say portfolio work helped them considerably in reflecting on their strengths and weaknesses during the practicum.

Synthesis and Proposals for Improvement

In the absence of a widely accepted, valid model of teaching competency, there are many different ways of dealing with standards in portfolio work. Compared, the selected cases show two principal kinds of makeshift solutions: on the one hand an open approach like at the University of Potsdam and at Abo Akademi with no standards set and lecturer guidance only and on the other hand an approach based on sets of standards, which in each case are fraught with problems regarding the competency model mentioned above.

In general, standards are often defined where portfolio work stretches across courses, semesters and even degrees. Concerning the quality of the standards chosen, it has become clear that where standards are defined, domains are either delineated at random (cases 1 and 3) or following those models of teacher competence with high social validity (e.g. national standards in case 2). Although their goal is to gradually build up competencies, levels are either not defined (cases 2 and 3) or defined in arbitrary, inconsistent ways (case 1). Altogether underlying competence models are very low in mathetic and psychological validity, i.e. it is not ascertainable how to acquire a certain competence and there are no

² Here our insights are based on interviews and questionnaires, not on previous studies.

ways of testing (by oneself or others) how far one's competence is developed. In most cases students seem to show some progress in self-reflection. But since portfolio work itself is dedicated to intensive self-scrutiny and with the methodic and psychological validity of the standards being this low, the impact of the defined standards is presumably rather small. The standards themselves are most likely of little help for self-scrutiny and self-organised learning processes.

But neither does the information we have gathered suggest that the absence of explicit standards shows greater promise in fostering self-reflective professional learning habits. Where no standards are set (as in cases 4 and 5), implicit or explicit ideals of good teaching become the dominant frame of reference. All of the selected cases showed that guidance is an essential part of a successful outcome. Portfolio work not being pre-structured by standards seems to have an even greater need for tutoring. It seems that student teachers tend to follow the ideals of those professionals they are most attached to (either practicum-accompanying lecturers, as in case 5, or mentors, as in case 4). The contribution to the development of reflective and self-organised learning habits in such a context is questionable as well.

These results cannot claim broad empirical validity or representativeness for all European countries. Even so, institutions which aim to introduce portfolio work in their teacher education programmes, or seek to modify their existing portfolio schemes, may want to test the following proposals for improvement:

Where the idea of defining standards for student teaching portfolios in the absence of a perfect model of teacher competence is rejected and – thus – professional role models serve a considerably more important function in aiding student teachers' reflection (e.g. by assessing their progress in teaching and explaining what they look for, why and how), courses, modules and human resource planning by universities and other providers of initial teacher education should reflect this. In this case, highly qualified and motivated lecturers in the student teaching modules and favourable lecturer/student ratios are indispensable. Seminars accompanying practica must not be delegated to a fluctuating fleet of poorly paid external lecturers who must each read hundreds of portfolios per semester.

But if you aim to use the potential of standards as frames of reference for reflection and self-organised learning with portfolios, the choice of one underlying model of teacher competency is quite important. Politically formulated national standards, with their relatively high social validity, may seem the easiest choice. But where these are lacking in terms of psychological and methodic validity, one should look further. Where it is available, research into the acquisition processes of active teacher knowledge should be taken into account. The aim of standards should be to provide student teachers with concrete and detailed descriptions of what they can do to exercise their teaching skills and with tools to measure them. The necessary scientific fundament to define standards in such a way across all the competences teacher need is not yet complete. But why not go ahead with at least that core of teacher competence which researchers, practitioners and policymakers can agree upon? It may comprise a good deal of pedagogical content knowledge and some less controversial aspects of classroom management. Of course, it must be evident that this core is not all that there is to good teaching. But: If core standards based on competence models with high psychological and methodic validity prove to bring forth more fruitful portfolio reflections and a

higher degree of self-organised learning among student teachers, this will be a strong signal for more research into the less chartered territory of other domains of teacher competence.

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Using the Science Writing Heuristic to Enhance Learning from Laboratory Investigations in Eighth-Grade Science

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Abstract

The Science Writing Heuristic (SWH) is an instructional technique, developed by Hand and Keys (1999), that provides students with a scaffold for implementing inquiry science activities based on the use of critical-thinking and reasoning in writing. The SWH includes two distinct components: a teacher template and a student template that consist of a series of suggested activities aimed at involving students in meaningful thinking, writing, reading, and discussion about the laboratory concepts included in the topic under investigation.

The main purpose of this study was to examine the efficacy of the SWH for promoting students' conceptual understanding and reasoning in science, through involving them in productive activities for negotiating meaning about laboratory investigations, as an alternative to the format students often use in the traditional laboratory reports.

The study participants included two eighth-grade classes (30 students each) at a public girls' school in Amman, Jordan. Both quantitative and qualitative data were used to characterize students' achievement and scientific thinking processes during the use of the SWH as expressed by their own language. The results revealed that when students were taught by using SWH laboratory approach they achieved better of science and improved their scientific thinking processes.

Keywords: Science Writing Heuristic (SWH), Student Learning, Laboratory Investigations, Middle School, Science, Jordan

Background

The Science writing heuristic

“Writing is efficient: it works as learning. In labs, science teachers give students opportunities to learn science by experimenting with procedures and instruments. Writing can also let students experiment with concepts and processes. As they manipulate and test factual data and write, they actually learn science.”

(Strenski, 1984, p.61)

The use of writing as a learning strategy has received considerable theoretical support from scholars in a variety of disciplines (Vygotsky, 1962; Applebee, 1984; Scardamalia & Bereiter, 1986). Yore, Hand, and Prain (1999) have demonstrated that writing not only allows students to reflect on existing knowledge and experiences, but it also enables them to actively

construct new understandings. As Keys (1994) noted, "The task of creating a written product can be a powerful tool for developing science understanding because it requires the writer to retrieve, synthesize, and organize information" (p.1003).

The Science Writing Heuristic (SWH) is an instructional technique, developed by Hand and Keys (1999), for supporting students in their understanding of laboratory activities through report writing. Similar to Gowin's Vee Heuristic (Novak and Gowin 1984), a widely recognized device for connecting conceptual understanding with laboratory work, the SWH combines inquiry, collaborative work, and reflective writing, but differs from Gowin's Vee heuristic in

that it contains both teacher and student templates for idea expression, collaborative peer discussion and writing.

The SWH acts as a tool to guide both teachers and students in productive activities for negotiating meaning about laboratory investigations, as an alternative to the format students often use in the traditional laboratory reports, while the SWH inquiry-promoting template helps students reflect on their science questions in association with the laboratory. (See Figure 1)

Traditional Report Format	SWH Student Template
<ol style="list-style-type: none"> 1. Title, Purpose 2. Outline of procedure 3. Data and observation 4. Discussion 5. Balanced equations, calculations, graphs. 	<ol style="list-style-type: none"> 1- Beginning Questions- What are my questions? 2- Tests- What did I do? 3- Observations- What did I see? 4- Claims- What can I claim? 5- Evidence- How do I know? Why am I making these claims? 6- Reading- How do my ideas compare with other ideas? 7- Reflection – How have my ideas changed?

Figure 1. Traditional Report Format and Science Writing Heuristic Student Template

The SWH has two distinct components: a teacher template and a student template. The teacher template consists of a series of suggested activities aimed at involving students in meaningful thinking, writing, reading, and discussion about the laboratory concepts included in the topic under investigation. (See Figure 2).

A template for teacher-designed activities
<ol style="list-style-type: none"> 1- Exploration of pre-instruction understanding through individual or group concept mapping, or working through a computer simulation.
<ol style="list-style-type: none"> 2- Pre-laboratory activities, including informal writing, making observations, brainstorming, and posing questions.

3- Participation in laboratory activity.
4- Negotiation phase I- writing personal meanings for laboratory activity.
5- Negotiation phase II- sharing and comparing data interpretations in small groups.
6- Negotiation phase III- comparing science ideas to textbooks or other printed resources.
7- Negotiation phase IV- individual reflection and writing.
8- Exploration of post instruction understanding through concept mapping.

Figure 2. A template for teacher-designed activities

Research on the science writing heuristic

Several learning gains have been found in studies using the SWH approach. Research carried by Keys, Hand, Prain, and Collins (1999) showed that SWH promoted students' meta-cognitive skills and self-understandings, and enabled them to extend, elaborate, and enhance their science ideas. Keys, Hand & Yang's (2001) study revealed that students found SWH useful in the following ways: framing their own research question, participating in peer group discussions, making connections between concepts, and writing. Such an approach to laboratory work is advocated by the *National Science Education Standards* (NRC, 1996) that emphasize the need for students to formulate major scientific processes, such as, critically evaluating data, debating ideas, and supporting claims with evidence.

Research has revealed that laboratory activities which use the SWH approach improved the students' conceptual understanding and logical thinking (Hand & Keys, 1999; Hand, 2006). Studies reported that when students were taught by using SWH guided inquiry laboratory approach, where they were asked to complete science lab activities, peer discussion, and inquiry writing, it was found that they had gained significant knowledge and attitudes (Hand & Prain, 2002). Wallace & Hand (2004) indicate that SWH promotes students' conceptual and metacognitive understandings. They pointed out four distinct features of SWH compared to a conventional laboratory report: a) use of writing, before, during and after laboratory activity; b) emphasis on the collaborative nature of scientific work, such as the negotiation of meaning; c) encouragement to make connections among the different elements of the inquiry investigation, i.e., observation, data, claim, evidence; and d) reflection on personal knowledge growth. Hand, Wallace, and Yang (2004) carried on a study to determine whether student performance on conceptual questions improved when inquiry-based teaching using the SWH within a year 7 biology classroom. The results indicated that students who used the SWH performed better as a group than students in traditional classrooms. Moreover, students' interview responses indicated a development in understanding of science inquiry and an awareness of cognitive and metacognitive processes needed to complete the activities.

The study carried by Akkus, Gunel, & Hand (2007) indicates that the SWH inquiry-based approach has significant advantages in closing the achievement gap within science classrooms. Erkol, Kisoglu, and Buyukkasap (2010) conducted a study that aimed at evaluating the effect of implementing the SWH approach in the introductory physics laboratory on the mechanic unit and to learn students' views about the SWH. The results revealed that the SWH approach and the reporting format significantly increased students' achievement and conceptual understanding and attitudes toward laboratory. Nam, Choi, and Hand (2011) carried a research study aimed at implementing the SWH approach and examine its effect on eighth grade students in three middle schools in Korea. The results showed that the implementation of the SWH approach resulted in better student achievement. Tseng, Norton-Meier, and Hand (2012) carried a longitudinal study to examine the effect of the SWH approach on elementary students' ITBS Scores, after conducting the SWH approach for three years. The study results revealed that the experimental group scored statistically significantly higher in math and science than the students in the control group. It is worth mentioning that in 2009, researchers from the University of Iowa and Iowa State University were awarded a 4-year grant to conduct research on the SWH contribution to science learning, and the results thus far suggest that this approach continues to make positive impacts in Iowa schools.

The research reviewed suggests that implementing the SWH approach as a tool for learning from laboratory investigations promoted students' conceptual understanding, meta-cognitive skills, and logical thinking.

Purpose of the Study

The main purpose of this study was to examine the efficacy of the Science Writing Heuristic (SWH) approach for promoting eighth-grade students' conceptual understanding in science. Moreover, the research aimed at investigating the development of students' scientific thinking processes through involving them in SWH inquiry-based laboratory activities.

Methodology

The research sample included two eighth grade classes (30 students each), enrolled in a public girls' school in Amman, Jordan. Students in both classes were found to be equivalent based on their academic performance and average scores in science. The two classes were randomly assigned into experimental and control groups. Students in each class were ranked into two levels, high and low, according to their overall academic ability. The Science Writing Heuristic (SWH) teaching approach was applied for the experimental group during the laboratory activities, while the control group followed the standard conventional approach. Each student in the experimental group was asked to write six reports for each laboratory activity carried according to the SWH template for student-designed activities.

Students were encouraged to conduct the laboratory investigations, frame their questions, make their own claims and support them with evidence from the experiments, while students in the control group were asked to fill the typical lab reports. Both classes were taught by the same teacher. The teacher was trained by the researcher on how to implement the SWH approach in the laboratory activities and to introduce the teacher-guided activities to the students prior to the experiment to help them clarify their prior understandings.

The instructional material dealt with the physical science topics: light, sound and electricity. The study was conducted during the second semester of the scholastic year 2011/2012. Quantitative data were obtained through an achievement test that was administered to both the experimental and control groups at the end of the semester (with a maximum raw score of 100 points). The written reports of the experimental group students were analyzed qualitatively for the presence of different types of thematic propositions used, and to determine the degree to which students included propositions that attributed scientific meaning in their data, made claims, supported claims with evidence, formed hypotheses about data, and integrated data with its meaning in the written text. Analysis of students' written reports were guided by the previous work of Keys, Hand, Prain, & Collins (1999) and Keys (2000), where students' writing was coded according to the proposition coding categories as follows:

- Topical - introduces aspects of the study in a general descriptive way.
 - Method - describes procedures used in the investigation.
 - Observation - relates an observation or data point from the study
 - Inference – states meaning or conclusions.
 - Subcategories: General or Specific
 - Meta-knowledge – indicates reflection on writer's own thinking.
- The frequency for each proposition type for students' reports is shown in Table 2.

Study Results

Quantitative data were obtained through the achievement test of both groups, experimental and control. The following table presents the means and standard deviations on students' achievement scores in science for both the experimental and control groups, across the high and low ability subgroups (See Table 1).

Table 1: Descriptive Statistics of Students' Achievement Scores for both Experimental and Control Group Levels

Type of Instruction	<u>Low Ability</u>	<u>High Ability</u>	<u>Total</u>
Experimental	Mean = 60.50 SD = 4.6291 N: 15	Mean = 80.90 SD = 10.5054 N: 15	Mean = 70.70 SD = 13.0863 N: 30
Control	Mean = 55.46 SD = 9.9919 N: 15	Mean = 83.866 SD = 8.65 N: 15	Mean = 69.66 SD = 17.1169 N: 30

The results in Table 1 indicate that the experimental low ability subgroup scored higher than its counterparts in the control group, while higher scores were obtained by students with high academic ability in the control group. The mean of the total achievement scores of the students in the experimental group were almost similar to the mean of the total achievement scores of the control group.

Furthermore, the written reports of the experimental group were analyzed qualitatively to characterize students' thinking processes during the implementation of the SWH approach, as expressed in their own language. Students' written reports were checked for the presence of the different types of thematic propositions. Once coded, the frequency of each proposition type for students' six written reports was recorded. The frequencies of each proposition type are shown in Table 2.

Table 2: Frequencies of Types of Propositions Occurring in the Written Reports of Students in the Experimental Group

Report Characteristics	Report 1	Report 2	Report 3	Report 4	Report 5	Report 6
Topical	21	22	26	24	27	28
Method	23	23	25	27	26	29
Observation	22	20	24	24	25	27
Metaknowledge	7	13	9	16	21	23
Inference	12	15	15	17	22	23
General	9	11	11	10	15	14
Specific	3	4	4	7	7	9

The results revealed that students' understanding of how to use SWH templates evolved over the period of the study. During the initial implementation of the study, students' writing tended to be brief and superficial, where they reported mainly procedures and observations and a minimal number of written inferences, expressing only vague meanings for the data. Analysis of the first written reports revealed that the majority of the students exhibited no mental reflection during writing, recording only information about the procedures of the activities and their observations. Their reports lacked evidence, elaboration of meaning, and metacognitive thinking. During the use of SWH, the students had the opportunity for improving their understanding where they demonstrated more ability to interpret the results of the laboratory activities, state inferences, examine evidence, and make claims in their writing. Students' written reports also exhibited evidence of meta-cognition thinking, as they reflected on the sources of their knowledge and how their knowledge had changed over time.

Discussion and Conclusions

The findings of the study revealed that students who used the SHW laboratory activities achieved better understanding of science and developed their scientific thinking processes. Higher scores were obtained by students with low academic ability more than their counterparts in the control group. This can be attributed to the fact that the use of the heuristic created an environment in which students were encouraged to participate in knowledge construction while carrying on the laboratory investigations.

This study confirms the findings of previous research studies which revealed the efficacy of the application of the Science Writing Heuristic (SWH) instructional technique in facilitating students' conceptual understanding and in developing their scientific thinking processes. The SWH approach encouraged students to examine laboratory activities more carefully, get involved in expressive writing modes throughout the inquiry process, and respond to prompts eliciting knowledge, claims, evidence, descriptions of data and observations, and reflection on own thinking. The act of report writing assisted students in making well-reasoned links between their laboratory activities, observations and inferences and facilitated their understanding and retention of the subject matter.

Finally, there is substantial evidence that the SWH approach is beneficial and effective, that should be implemented in all science laboratory experiments to increase students' conceptual learning and organization in their thinking.

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Policies that support professionalization of teachers: Recognition of Non-formal and Informal Learning in Technical and Vocational Teacher Education

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Abstract

Given the nature of vocational education and training, many teachers of Vocational Education and Training (VET) programmes start their teaching careers having various certified awards and levels of experience. However, many may not have the required educational certificate and can be prevented from entering teacher education programmes in higher education institutions. The main reason is that such programmes normally require a certificate in upper secondary education or an undergraduate degree as a prerequisite for entry. As a consequence, prospective VET teachers with experience from their specific professions are prevented from becoming educators, thereby impacting adversely on the quality of VET offered to learners and for the VET system. The recognition and validation of prior learning (RPL) can be used to facilitate access, credit or exemptions for such persons. Recognition of prior learning (RPL) encompasses a range of situations that are placed under different titles or categories as for example Accreditation of Prior Learning (APL), Accreditation of Prior Experiential Learning (APEL), Accreditation of Prior Certificated Learning (APCL), Accreditation of Prior Learning and Achievement (APL&A), Recognition of Current Competencies (RCC), Learning Outside Formal Teaching (LOFT). The CEDEFOP guidelines for validating non-formal and informal learning note that the validation processes depend on professional input by counselors, assessors and validation process administrators. They also note that much progress is needed in making greater use of RPL in Europe (CEDEFOP 2009).

Different countries have already established rules and regulations for recognizing prior learning. Some have already accumulated some years of experience in this practice, while others are starting this practice. In this project 6 institutions in 5 countries (France, Ireland, Norway, Scotland and Turkey) have come together to share ideas, research results and policies about recognition of prior learning, with a specific focus on non-formal and informal learning in the education of teachers in vocational education and training.³ The aim of the partnership is to examine policy and practice in relation to RPL in VET teacher training and produce guidance to support progress in this area.

The purpose of this paper is to share the initial findings of the partnership. Although the partners are at different stages in their development and implementation of RPL policies, some contours have started to be delineated for producing an outline of the systems for Accreditation of Prior Learning for VET teachers within each participating country. Some of the questions being addressed are: What kinds of provisions exist and how are the assessments made? What progress has been made in RPL in these countries? What are the views and culture about application of RPL in the respective countries and to what extent are they accepted in the academic environments?

Keywords: non-formal learning, vocational teacher education, recognition prior learning

³ The authors are indebted to their colleagues in the Leonardo da Vinci partnership (RIPLVET) coordinated by Cathal de Paor, at Mary Immaculate College, and participants from from City of Limerick Vocational Education Committee, Gazi Üniversitesi in Turkey, and FLORIFORM – FNFF (Fédération Nationale des Fleuristes de France) for the information they have supplied during the meetings. This paper is based on their contributions, which have been interpreted by the authors.

Introduction

Recognition of prior learning (RPL) is often mentioned in lifelong learning programmes. According to UNESCO's definition RPL is "The formal acknowledgement of skills, knowledge, and competencies that are gained through work experience, informal training, and life experience." It covers, thus, the full range of a person's previous learning that has taken place in a wide variety of situations. Being part of the lifelong learning context, it is linked to some form of adult education. RPL is sometimes expressed as accreditation of prior learning (APL), which is defined as "formal acknowledgement (based on professional assessment), by way of granting credit of students' previous learning: credit is given towards a programme or towards professional body accreditation. Thus, in spite of being expressions sometimes used as synonymous and interchangeable, one should be aware of slight differences in their meanings. There are several other definitions of expressions that are synonymous with RPL such as Accreditation of Prior Experiential Learning (APEL), Accreditation of Prior Certificated Learning (APCL), Accreditation of Prior Learning and Achievement (APL&A), Recognition of Current Competencies (RCC), and others. These expressions refer to similar aspects of RPL aimed at different contexts. (<http://www.qualityresearchinternational.com/glossary/#apl>).

The discussions about the purposes of RPL have been around for a while, at least since before 2000. Several authors, among them Lave and Wenger (Lave and Wenger 1991; Wenger 1998) have referred to the importance of situated learning. The ideas expressed at that time were already supportive of other forms of learning consisting of activities outside the formal learning settings. Lave and Wenger's theoretical discussions supported the arguments that the space of formal learning is only one among several other spaces. However, the learning that happens outside the formal learning system is often very wide, making it difficult to define and validate the qualifications earned by the individuals.

The countries in Europe have been using RPL in different ways and various purposes, creating diversified but overlapping expressions that refer to the concept of recognizing the learning that takes place throughout our lives in formal as well as non-formal and informal situations. It has become common to hear RPL mentioned in connection with European lifelong learning programmes.

Lifelong learning in Europe

The educational scenario in Norway and in Europe has been submitted to several reforms and is undergoing various changes, especially in the area of adult education and lifelong learning. In the section on lifelong learning of the Berlin communiqué, ministers have emphasised the important contribution of higher education to making lifelong learning a reality. As part of this process higher education institutions have been urged to enhance the possibilities for lifelong learning at higher education level, including the recognition of prior learning. Non-formal/informal learning can occur at the workplace as well as elsewhere, such as in voluntary organisations, at home and through our life experiences.

In the past, learning that occurs outside educational institutions did not lead to formalised certificates. However today it is regarded as a resource to be more systematically valued and used. The interest in studying and carrying out research about learning outside formal education is reflected in recent legislation, projects and debates taking place in Scandinavia and other European countries since the beginning of 2000. Among such, one can cite the

Competence Reform in Norway (KUF, 1998), the DeSeCo project (OECD 2003; Rychen and Salganik 2003) the TRANSFINE project and initiatives to establish virtual communities to discuss the issues of non-formal and informal learning, such as the ones carried out by CEDEFOP in 2003. All these initiatives have a lot in common with the work done in the 1990s toward the establishment of Qualifications Frameworks, thoroughly discussed in a publication of the European Journal of Education (Young & Gordon, 2007). By examining the publications of these projects one finds several commonalities with the purposes of the qualifications framework. Among other motives for developing qualifications frameworks, Young and Gordon (Young and Gordon 2007) point out reasons that indicate a need for:

... providing a framework within which an individual's formal and informal learning can be recognised and accredited (for the purposes of study, training, employment, mobility, etc.) and ... providing a basis for the exchange, credit transfer and recognition of qualifications between different countries

Although RPL covers a wide spectrum of educational programmes, the focus of this paper is on Recognition of Prior Learning for teachers of Vocational Education and Training (TVET). Different countries have already established rules and regulations for recognizing prior learning. While some have a few years of experience in this practice, others are barely starting. In the partnership project "RIPLVET" here presented, representatives from five institutions located in five countries - France, Ireland, Norway, Scotland and Turkey - have come together to share ideas, research results and policies about recognition of prior learning, with a specific focus on non-formal and informal learning in the education of teachers in vocational education and training. This is a two-year project that started in 2011. Up to this point there have been two partner meetings, one in Ireland and one in Norway. Three more meetings are scheduled to take place in Turkey, Scotland and France, before the end of the project in 2013. The group is in the middle of this project and therefore only partial results are presented in this paper.

In this partnership, the participating universities are examining RPL in Teacher Education for Vocational Education and Training (TEVET) in their countries. Questions being addressed are:

- What kinds of provisions exist and how are the assessments made?
- What progress has been made in RPL in these countries?
- Can RPL be a valid form for recognition of learning in teacher education?
- What are the views and culture about the application of RPL in the respective countries?
- And, finally, to what extent are they accepted in the academic environments?

As the project is in progress, the group has not yet the answers to all these questions. Thus, the main focus in this paper is to present RPL in TEVET in Norway and contrast it with some of the findings related to the other participating countries.

Lifelong learning and recognition of prior learning in Norway

Norwegian authorities and social partners have since the end of the 1990s been concerned with the need for constant update of knowledge in society. In Norway, just as in several other European countries, the policy of lifelong learning has been directed toward adults with an emphasis on the recognition of prior learning (Skule and Ure 2004). The concerns for keeping up with the development of knowledge were behind the lifelong learning strategy which was launched under the label Competence Reform whose implementation started in 2000, with a special focus on the validation of non-formal and informal learning.

A very special aspect of the Norwegian lifelong learning efforts is its long term and close relationship with vocational education and training, as referred by Skule and Ure (2004, p. 3):

The ambition to put non-formal and informal competence on a more equal footing with formal competencies is not new. Since 1952, the Vocational Training Act has allowed individuals to take a crafts examination, provided they had sufficient practical work experience (to take a crafts examination normally requires two years of theoretical training and two years of apprenticeship). During the last ten years between 1/3 and 1/2 of the crafts examinations each year were passed via this route.

Skule and Ure add that in the area of adult education, organizations such as the trade unions and associations that provide adult education have for a long time validated learning acquired outside the formal educational system. Moreover, since 1976 the Norwegian Adult Education Act has made it an official right for adults to have their knowledge and skills documented at all levels and areas within the public education system, no matter where the skills were acquired and the learning has taken place. As one can see, the recognition of prior learning has a quite long tradition in Norway and it has been practiced for more than 50 years.

The teacher education program for VET at Oslo and Akershus University College of Applied Sciences (HIOA), which is involved in the partnership project RIPLVET, has been practicing the recognition of prior learning for many years by using the right to validate non-formal and informal learning of its student teachers. Next, Figure 1 makes a schematic presentation of evaluation of prior learning at HIOAs teacher education program for VET.

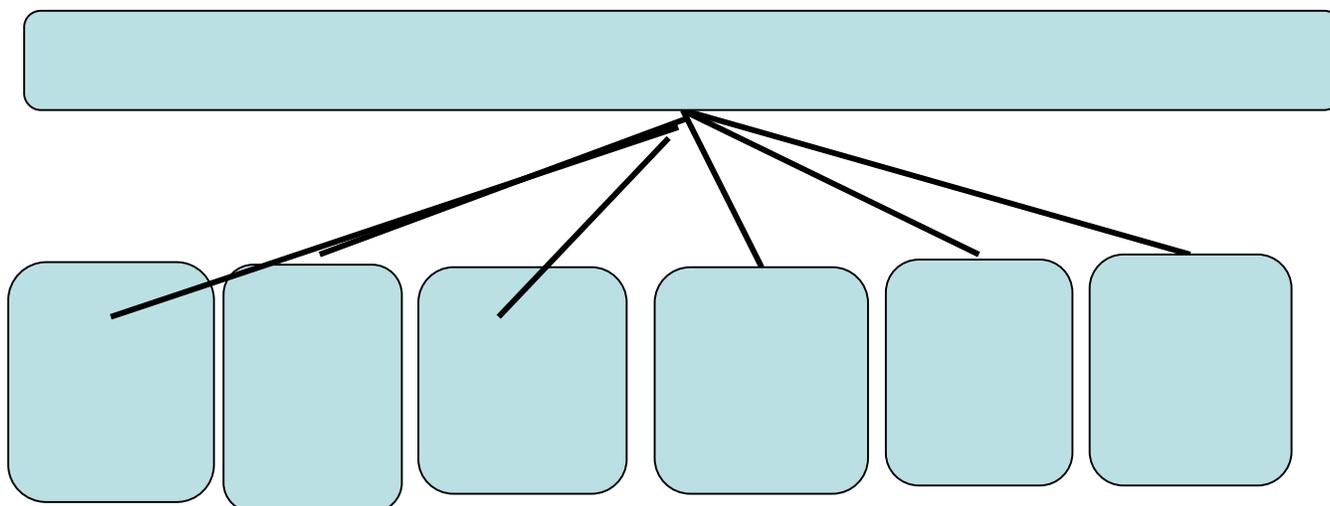


Figure 1: A schematic evaluation strategy in relation to non-formal and informal learning and the student's documentation process for learning outcomes. (Prepared by Roger Bakken)

Prior learning assessment of the student's competence (pt. 1)

Figure 2 presents the student teachers' background that is evaluated in terms of non-formal/informal learning vis-à-vis the requirements of the bachelor program of teacher education for VET. As one can see, the students' formal education in VET is part of the individual competence evaluated. The formal education corresponds to two years in upper secondary school and two years of apprenticeship leading to a trade certificate.

Bachelor of Technical and vocational teacher education (level 6 at EQF)		1	2	3	4	5	6	7	8	9
		1. Learning outcomes from higher education study's								
Individual Competence	1.									
	2.									
	3.									
	4.									
	5.									
	6.									
	7.									
	8.									
	9.									
	10.									
	11.									
	12.									

Fig 2: A system plan form for transfer between higher education (eg Bachelor) and student learning outcomes from non-formal and informal learning on the basis of the results from the real competence assessment in pt. 3.

1. Description of learning outcomes in the curriculum of higher education (eg Bachelor of Technical and Vocational Teacher Education) (EQF level 6)
2. The students learning outcomes from non-formal and informal learning on the basis of the result from the validation processes.

Figure 2: Similarities between the curriculum and the students' non-formal and in-formal learning. (Prepared by Jan-Erik Heimdal)

Explanation of validation strategy

1. Prior learning includes all of a student's competencies - formal, non-formal and informal - indicated by certificates, diplomas, evidences, courses, practice, etc;
2. Students start with the learning outcomes to have a clear view and understanding of the content. Every student has his/her status checked in relation to each learning outcome by asking:
 - a. What skills do I have?
 - b. What is the skills' level?
 - c. Which skills am I missing?
3. Students document their competence (learning outcome) by describing the practice of how competency was attained, indicating the literature, course, etc;
4. Student and tutor examine together point 3 (documentation) and point 4 (assessment process). As a conclusion of the student's status:
 - a. The tutor evaluates the documentation
 - b. Approved learning outcomes are entered into a form (figure 2)
 - c. Shortcomings related to learning outcomes are identified, then evaluation continues with other methods, such as interviews, tests, observations and discussions; after approval it is included in the form (figure 2)
5. Shortcomings in relation to learning outcomes are identified as learning needs and are entered into an action plan.

This is an example of how HIOA implements RPL in its teacher education for VET, which is in accordance with The Higher Education Act of 2001, which states that students are entitled to apply for exemption from parts of study programmes on the basis of RPL.

In summary, we can say that RPL is a process consisting of three steps:

1. Information and advice given to the applicant;
2. Mapping of the applicant's prior learning;
3. Evaluation of prior learning against fixed criteria;
4. In VET the applicant is evaluated by a professional by means of dialogue, assessment of documentation submitted or assessment of practical work performed by the applicant.
5. Admission to teacher education for VET on the basis of RPL requires the following:
 - a. Trade certificate, officially recognized certification or 3 years of vocational training in vocational areas;
 - b. Five years of experience from working area, or eight years of practice in professions when requirement 1 is not applicable;
6. The applicant must explain in a satisfactory way:
 - a. his/her motivation for applying;
 - b. what he/she believes the study will require to be fulfilled;
 - c. explain why he/she believes they are able to complete the study.
7. The applicant must have necessary knowledge and skills in Norwegian, written and spoken in order to attend the program.

In Norway, each institution is autonomous in setting up criteria for RPL. The Norwegian Agency for Lifelong Learning (VOX 2012)⁴ has conducted a national survey about the status of RPL. The results indicated that a total of 182 persons applied for exemption based on RPL at bachelor level during 2010/2011 and 170 were granted recognition. This means that 93% of the applications matched the requirements of the respective study programme.

However, as the report concluded, in spite of the possibility to apply for exemptions based on RPL, these are rarely used in Norwegian Higher Education Institutions. Among other findings, the survey points out that few institutions are responsible for the total number of exemptions and that the possibility to use RPL for exemption is not widely known among the staff of the institutions. It was also found that a lack of systematic information to students reduces the demand for this service. Another point emphasized is the common belief in the institutions that RPL processes require many resources. Concurrently, administrative and professional staff lack clear guidelines and criteria aimed at the RPL process. Finally, the survey report stresses that 'how to document prior learning' and 'how to prove equality and relevance between practical experience and theoretical knowledge' are two major issues faced by decision makers involved with RPL in the universities.

The majority of RPL exemptions in this survey were reported by HE Institutions educating vocational teachers. This is an interesting finding because teachers in VET are adults who have usually several years of practice in the work life outside the school system. Their practical skills and their experience from work are thus considered quite relevant for the exemptions by the higher education institutions. In addition, it seems that these years of

⁴ A summary of the report can be assessed at: Norwegian Agency for Adult Learning (VOX); (http://www.vox.no/PageFiles/15257/Realkompetanse_fritak_h%c3%b8yere_utdanning_web.pdf)

experience give them the opportunity to collect information about their non-formal/informal learning which can be documented through courses offered by the work place or perhaps through assessments and letters of recognition given by the employers. It appears that employers have a very important role which is often not taken into consideration and even neglected by the educational systems. The important role of employers in the education of their employees is quite an interesting area of research that ought to be more explored.

RPL in teacher education for VET – Norway vis-à-vis partner countries in a preliminary comparison

The countries participating in the partnership have different views and use various approaches to recognize prior learning in teacher education for VET. At first sight it seems that Norway has a slightly more liberal view towards recognition and validation of non-formal and informal learning. The reasons are historical with a strong emphasis on reducing social inequalities. According to Skule and Ure (2004, p. 9) “The tripartite dialogue that paved the way for the Competence Reform created a broad consensus among all the stakeholders that learning outside the formal educational system is valuable and that opportunities to validate this kind of learning should exist.” Following, some comparisons are made between Norway and other partners of RIPLVET.

Turkey and Norway

A very brief and preliminary comparison indicates that there are some similarities between Norway and Turkey in regard to some aspects of VET. In Turkey, vocational training has existed since the Ottoman period in connection with the Lonca (Chamber/Guild) organizations. In Turkey, as well as in Norway⁵, children were placed next to the masters, by their parents, in order to learn a profession by working there for a certain period, first by promotion to a semi-skilled worker, then to a master (S. Alev Soylemez, preliminary RIPLVET report 2012). In 1982, the Council of Higher Education (CoHE) was established, and Teacher Training Schools were connected to universities and converted to the Vocational and Technical Education Faculties.

The Turkish VET system is today divided into two basic fields, formal and non-formal vocational education. The formal system consists of Secondary level education provided by Vocational High Schools, and Higher education system, which includes a) Two-year Vocational Schools and b) Four-Year Vocational Schools.

The Vocational High Schools/secondary level prepares students for higher education and for an occupation according to their interests and abilities, and, in addition, knowledge about the world. They are divided into, *vocational high schools* and *technical high schools*. Following the 12th grade, students take the National University Entrance examination to continue their studies at a university or a two year school. This examination is centralized and based on the nation-wide administrated by the Student Selection and Placement Center (ÖSYM) within the Higher Education Council. The exam is extremely selective and takes place once a year. However, since 2002-2003, those who graduate from vocational-technical high schools have

⁵ The guild system has also existed in Norway, but it disintegrated with the advent of industrialization and increase in industrial employment. (Tarrou, A.-L. H. and I. d. S. Holmesland (2007). Technical and vocational education and its teacher training in Norway. International perspectives on teachers and lecturers in technical and vocational education. Dordrecht, Springer: S. 185-204.

an opportunity to be placed in two year vocational higher schools without taking any entrance examination.

Two-year Vocational Schools/higher education. Students who fulfill the two-year program receive an 'Associate Degree/Higher (pre-bachelor's) Vocational Education Diploma' (120 ECTS).⁶ One of the major aims of the two-year Vocational School is to translate students' theoretical knowledge into practical skills and experience. Thus, the theories and empirical knowledge acquired by students in any particular subject are directly applied and put into real-life practice. In addition, many of these institutions have partnership agreements and protocols with leading businesses and industries. In this way, students are better equipped with the knowledge and skills currently required by employers and the market. If a 'job pedagogy' course is taken, graduates of higher vocational school may be employed as trainers in non-formal education programmes.

Four-Year vocational/professional higher schools. There are three types of faculty in vocational training in Turkey: 'Faculty of Technology', 'Faculty of Tourism' and 'Faculty of Arts and Design'. These colleges provide bachelor level of education and the 240 ECTS requirement of the Bologna process is still fulfilled. The main objective of Vocational education faculties is to fulfill the vocational teacher requirement of the Ministry of Education along with the industry's demand for more practice-oriented engineers. Faculties of Technology and Engineering are to meet the demand for engineers, who can also become teachers at technical or vocational high schools if they have one-year pedagogical education. The curriculum for teacher education is organized by Ministry of National Education and Higher Education Council cooperatively. The Council of Higher Education (CoHe)⁷ currently works on setting a curricular framework for the Vocational Colleges in line with the Accreditation Board for Engineering and Technology (ABET) standards. The framework will also take into consideration the Bologna process in which Turkey is a participant (Çavuşoğlu & Günay 2010).

The description of VET and teacher education for VET in Turkey points out several similarities with Norway, and also with the other partners. One of the similarities is related to a one-year pedagogical education for professionals with a degree in technology, for example, who wish to become teachers in VET. However, a comparison with Norway suggests a difference in regard to practice-based learning. While in Turkey, the theoretical knowledge precedes practical knowledge, in Norway practical knowledge is regarded as an integrated part of theoretical knowledge. This fact might be one of the reasons for the resistance to the recognition of non-formal/informal learning in Turkey. Turkey differs from the project partners in regard to legislation for RPL. In Turkey, there is no national or institutional legislative framework so far designed to regulate the implementation of RPL. According to Turkish regulations and rules in higher education, only formal prior learning is recognized. No prior learning experiences (work experience, community services, etc.) are recognized in any HE programmes yet. But it is observed that, in recent years, the universities are placing more importance on non-formal education services through the *continuous training centers* that

⁶ The fields of study include a wide spectrum of professions such as Foreign Trade, Logistics and Transportation, Computer Technology and Programming, Graphic Design, Fashion Design, Commerce and Administration, Accounting and Taxation, Translation and Interpretation, Tourism, Culinary Arts, Mechatronic, and Automotive.

⁷ CoHe was established in 1982. After the creation of CoHE teacher Training Schools were connected to universities and converted to the Vocational and Technical Education Faculties.

have been established. As Turkey is a participant in the Bologna process (Çavuşoğlu & Günay 2010) one can perhaps expect changes in a near future.

Ireland and Norway

Concerning Ireland and Norway, a very brief and preliminary comparison indicates that elements of RPL in teacher education for VET are found in both countries. In Norway, since the Law for Teacher Education of 1975, teacher education for VET has been included in the higher education (HE) system, and RPL can be applied for the admission to teacher education in VET (see Figures 1 and 2). However, being part of HE, all teacher education programs must fulfill the general requirements established by the institutions in accordance with the National curriculum, which enforces the following:

Vocational Teacher Education (three year) qualifies for teaching in secondary education, in adult education and in subjects in middle and secondary education.

Teacher education (one year) is based on studies in the sciences or in a vocational education with practice and vocational theory. It qualifies for work in primary and secondary education and in adult education.

RPL is also quite structured in Ireland under the Further Education and Training Awards Council (FETAC). However, changes have taken place in recent years. In November 2009, the Teaching Council set out requirements for teachers who wish to register as teachers in the FE sector. As a result, with effect from 1 April 2013, applicants who wish to register with the Teaching Council as a qualified FE teacher will be required to hold either (1) a primary degree or equivalent (level 7 on the EQF, carrying at least 180 ECTS credits) or (2) an ordinary degree (also level 7 on EQF) with an additional qualification or certified accreditation of prior learning. In addition they will be required to have a teaching qualification for post-primary teaching or for the teaching of adults.

Another similarity is related to the adult education centers as described by the representatives of these organizations in the two countries, the *Norwegian Agency for Adult Learning (VOX)* and the Limerick City Adult Education Service (LCAES), respectively. Vox is a large organization that is under the Ministry of Education and Research. Among other responsibilities related to lifelong learning VOX is also an important body involved in the promotion and implementation of validation of non-formal and informal learning. LCAES is an example of the work done to support adults in their lifelong learning efforts. The staff at LCAES work in partnership with a wide range of adult learners and local and national stakeholders in order to identify and respond to the real learning needs of adults in Limerick City. LCAES learning programmes, support services and partnership activities are wide-ranging and constantly changing in line with the changing needs of adult learners in Limerick.

In Ireland much has also been done in RPL, which has similarities with Norway and is defined by the Further Education and Training Awards Council (FETAC) in Ireland as:

Recognition of learning that has taken place, but not necessarily been assessed or measured prior to entering a programme. Such prior learning may have been acquired through formal, non-formal or informal route.

In Norway, the official term for validation includes the three types of learning, as described by FETAC. The importance of assuring each individual the right to such validation is reflected in

key legislation and national strategies under the Competence Reform (“Realkompetanse”) for whose implementation VOX is responsible.

France and Norway

Further education in France and the training of trainers was established in 1949 with the creation of the Association for Vocational Training (AFPA) whose purpose was to help rebuild the country after World War II. From this point on, the National Education has also been in charge of training trainers of VET. The professional title is issued by the Ministry of Employment either through training or by requesting through RPL. The country has a quite structured system of teacher education for VET. The title is given either by universities, chambers of craft, chambers of commerce or associations of professional training accredited by the state. The prerequisite to be admitted to this training is to have the first level of qualification in the relevant industry with over three years of experience in the sector. The professional trainer of adults has a professional certification that corresponds to level 5 in the European Qualifications Framework (EQF). Different levels of certification of trainer of trainers have different requirements. It is necessary to follow a program for 8 months in a training centre (1155 hours). But one cannot teach at all levels despite his/her experience. A trainer in VET needs a professional certificate adequate to the level he/she wishes to teach.

It is possible to become a trainer in VET through RPL. Then, it is necessary to submit a request for validation of prior learning which shall include documents regarding one’s first professional degree level in the industry in addition to validated years of professional experience. It must also include information about professional and interpersonal skills, such as behavioural attitude, ability to create and develop interpersonal relationships, adaptation, capacity for self-analysis and reflection on professional practice. RPL makes the expertise clear and allows for example to establish a path for career training and development, or to shorten a training course.

In a brief comparison, it appears that there are quite a few similarities between Norway and France regarding the value attached to RPL for one’s career development as educator of trainers in VET. However, the system in France shows a higher degree of structure and hierarchy in terms of one’s career development in the education of trainers in VET and it is closely attached to the Ministry of Employment. A teacher educator in VET in Norway receives his/her title from the Ministry of Education and works mostly in the educational system.

Scotland and Norway

In a more detailed comparison carried out between Norway and Scotland, one finds quite a few similarities in the recognition of prior learning in TEVET. Perhaps the main difference is found in the structure of VET in these two countries. Vocational education in Scotland is taught in both colleges and schools, by lecturers who have had several years of industrial experience, a degree (or equivalent) in their subject and a teaching qualification. Vocational training also takes place in the workplace under the Modern Apprenticeship programme. The clientele consists of students aged 16+. In Norway it differs in the sense that VET is part of the upper secondary school system in the first 2 years (pupils aged 16 to 18) and it is complemented with 2 additional years in the apprenticeship system carried out in

enterprises.⁸ At the end of the 2-year apprenticeship program the pupils take an exam prior to receiving their trade certificates. However, both countries require a teacher qualification obtained from a higher education institution for working in VET.

But who trains the teachers for VET in Scotland as compared to Norway?

In Scotland, the Teaching Qualification for Further Education has been taught in a number of Higher Education establishments since the 1970's and has been a mandatory requirement for Scottish college lecturers since 2009. It follows the professional standards set out by the Scottish Executive (2006) and is approved by the General Teaching Council (Scotland). It is offered at undergraduate level (SCQF level 9, Ordinary degree) – to those who are qualified to Higher National Diploma (HND) or equivalent and postgraduate level (SCQF level 11, Master level) to those with degree qualifications. Those who deliver Modern Apprenticeship programmes are usually Assessors, who hold an Assessor/Verifier award, rather than a teaching qualification.

The TQ(FE) is awarded after the person has successfully completed an approved programme. There are several requirements for admission to a programme leading to a TQ(FE), as for example a relevant degree or diploma from a further or higher education institution in the United Kingdom (UK) or from a recognised institution outside the UK. Candidates can also transfer credit into TQ(FE) programmes when they have gained the initial teacher training Advanced Diploma “Teaching in Further Education” or another teaching qualification of equivalent standard. Other requirements include language and numeracy skills demanded by the course, Information and Communications Technology (ICT) skills, some experience of teaching and industrial, commercial or other relevant experience.⁹

In Norway, to become a teacher in VET, one has to go through a pedagogical program that focuses on didactical competency, social competency, professional ethics competency, and competency in promoting change and development work. The teacher is expected to be scientifically strong and master different approaches that facilitate learning. Thus, a certified teacher must have knowledge and experiences in the discipline taught and practice a variety of teaching methods. In addition, the teacher is required to have the ability to establish collaborative relations.

A large majority of the teachers in trade or industry subjects at Norwegian upper secondary schools have a trade or journeyman's certificate. They have attended a one year program in technical or vocational theory and have 4 years of practical experience in the actual trade or industry sector in which they teach. Most teachers are hired directly from the trade or industry into the teaching profession, under the condition that they pass the pedagogic exams within a period of 3 years. (This is similar to Scotland where lecturers from an industrial background can teach in a college, but have to achieve a teaching qualification

⁸ Tertiary education for VET is an alternative to higher education and is based on upper secondary education and training or equivalent non-formal and informal learning. Higher Education Entrance Qualification is not required. The education consists of vocational courses lasting from half a year to two years. Apart from the traditional schools of technical management and maritime subjects which are publicly financed (by the county authorities), most of the schools offering such kind of education are private. All courses must be accredited by the Norwegian Agency for Quality Assurance in Education (NOKUT).

⁹ A detailed list of all requirements is found at <http://www.ioe.stir.ac.uk/courses/undergrad/tqfe/entry.php>

within 3 years). With this background they can be admitted to a bachelor degree program in teacher education whose duration is 3 years. The program comprises 180 credits (60 ECTS per year) and leads to a Bachelor degree in higher education. After completion of the bachelor degree, teachers in VET can apply to a master degree. The three-year vocational teacher education qualifies for employment as a teacher in secondary schools, adult education and middle school and training activities in the workplace. The program is aimed at several occupational areas¹⁰, which correspond to the structure in basic vocational education and training. A lecturer in Scotland who has gained the TQFE, would not be able to teach in a secondary school unless they held a degree level qualification in their teaching subject and had taken a conversion course for secondary school teaching.

Concerning RPL for TEVET, a comparison between Scotland¹¹ and Norway points out the following:

In Scotland

- Those who have gained the Professional Development Award (PDA) Advanced Diploma, Teaching in Further Education - an Introduction, are given credit equivalent for one module (15 credits at postgraduate level and 44 credits at undergraduate level)
- Those who have taught on a part-time basis for several years are given credit for their accrued teaching hours and can go directly to the part-time, in-service programme.

Gaining the TQFE offers progression pathways at undergraduate (BA) and postgraduate levels of study (MEd) – 60 credits towards a master's programme is awarded for the postgraduate TQ(FE).

One point to be stressed is that there is no national framework for the recognition of prior learning in Scotland. All institutions offer RPL for the TQ(FE) as detailed on their websites.¹²

In Norway

RPL makes it possible for applicants, who are over 25 years of age, to enter higher education without an upper secondary school certificate and on the basis of recognition and validation of their formal, non-formal and informal learning. This possibility exists since year 2000, when the Competence Reform started to be implemented.

Summarising, an eye-ball examination of findings about TEVET suggests that Scotland has a structured TVET system linked to the Scottish Qualifications Framework. In Norway, the establishment of a National Qualifications Framework (NQF)¹³ has started and it might

¹⁰ Technical and industrial production; Electricity and Electronics; Building and construction; Restaurant and food processing; Health and Social Care; Design and crafts; Service and Transport; Natural Resource Management; Media and Communication

¹¹ Detailed information about RPL in Scotland is found at: <http://www.quality.stir.ac.uk/ac-policy/Recognition.php>

¹² Aberdeen: <http://www.abdn.ac.uk/tqfe/>

Dundee: <http://www.dundee.ac.uk/eswce/programmes/tqfe.htm>

Stirling: - <http://www.stir.ac.uk/undergraduate-study/course-information/courses-a-to-z/school-of-education/teaching-qualification-in-further-education/>

¹³ The Ministry of Education and Research in Norway approved in December 15, 2011 a National Qualifications Framework /NQF (Nasjonal Kvalifikasjonsrammeverk/NKR) for lifelong learning along the lines of the European Qualifications

influence the TEVET. Thus, one can perhaps expect that within the Bologna process, the initiatives taken by different countries will bring the countries closer in their initiatives regarding RPL for TEVET.

Conclusions

Returning to the questions asked in the introduction of this paper it is possible to state that there are several provisions and regulations for RPL in the countries participating in this RIPLVET partnership. Some of the countries have practiced RPL for a longer time, as in Norway, even before discussions about RPL and lifelong learning started in Europe. The reasons are historical and related to the needs of the country. The Bologna process seems to be an important instigator behind RPL for lifelong learning, and as a side effect, for TEVET. Turkey has not moved very much ahead in terms of some legislation for RPL in the country's educational system. However, being now part of the Bologna process one can expect that in the near future, RPL will also be part of the discussions around lifelong learning and TEVET in Turkey.

Based on the description of RPL in TEVET made in this paper, it is possible to state that France, Ireland, Norway and Scotland have moved quite a way forward in their legislation and implementation of RPL and TEVET, and Turkey is on the way. One can also state that while respecting their individualities, these countries are moving in a common direction. RPL is becoming a valid form for recognition of learning in teacher education. Several provisions and detailed legislation have influenced the acceptance of RPL in TEVET and are creating a positive culture for its application. Depending on the type of education, there are still restrictions in the academic environments. However, when one is referring to lifelong learning, it seems that its acceptance is quite wide and prior learning – formal, non-formal or informal – is a human capital that cannot be ignored. Prior learning is the basis for further development, once the programs take into consideration the competencies of each individual.

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Norwegian Teacher Education of 2010 – 4th Reform 18 Years

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Abstract

College based programs, offered at about 25 locations, were extended to four years in 1992, and have since then been changed about every five years (1999, 2003), the last reform taking place in 2010, establishing two versions, one for grades 1-7, one for grades 5-10.

This paper describes and analyzes the last reform, with reference to

- four external perspectives.
- an overview over earlier reforms.
- international literature on teacher education programs.
- the relationship between theory and practice.
- the governance of teacher education through objectives, based on the European qualification framework.

Keywords: teacher education, reform, theory and practice, qualification framework

Introduction

Traditionally, there are two main forms of teacher education in Norway, academic degree plus a one-year professional program (similar to the English PGCE, traditionally and primarily offered at four universities) and more integrated programs, offered at teacher education colleges. Recently, universities have developed semi-integrated programs, where students are offered an introductory course in education at the outset, and small educationally relevant components while they study their (school) subjects. This paper, however, focuses on the integrated programs at the colleges (of which three recently have become universities, actually a kind of 'mini-versities', as the criteria for being allowed to call themselves universities is limited to offering doctoral programs in four fields).

These college based programs, which are offered at about 25 locations, were extended to four years in 1992. The structure (but not the length) has since then been changed about every five years (cf under 'documents', below), the last reform taking place in 2010.

This paper describes and analyzes the last reform, with reference to 1) four external perspectives, 2) an overview over earlier reforms, 3) and international literature on teacher education programs. Major issues are the relationship between theory and practice, discussed with reference to Schleiermacher and Herbart (4), and the governance of teacher education through objectives (5), based on the European qualification framework.

Documents / Main Sources

The present teacher education is regulated through four documents, all published by the Ministry of Education. (The former programs, cf below, were also regulated by the ministry; the 1992 framework also names the Council of Teacher Education as publisher in addition to the ministry; this council was abolished soon after 1992):

- *Forskrift* (regulation) for curriculum framework for teacher education for elementary school (Forskrift 2010, a *forskrift* is a law-like instrument, not passed by the parliament, but issued by the government)
- *Rundskriv* (directive) from the ministry about the regulation (Rundskriv 2010)
- National guidelines for teacher education for grades 1-7 (Nasjonale retningslinjer for grunnskolelærerutdanningen 1. – 7. trinn)
- National guidelines for teacher education for grades 5-10 (Nasjonale retningslinjer for grunnskolelærerutdanningen 5. – 10. trinn).

Earlier versions of the integrated programs were regulated by

- Curriculum framework for 4 year general teacher education (Rammeplan for 4-årig allmennlærerutdanning 1992, adjusted 1994)
- Curriculum framework and directive. General teacher education. (Rammeplan og forskrift. Allmennlærerutdanning, 1999).
- Curriculum framework for the general teacher education. (Rammeplan for allmennlærerutdanningen, 2003).

Norwegian teacher education was formally evaluated by a panel appointed in 2004 at the initiative of the ministry, and working through the National Office for Quality in Education (NOKUT). The panel published its recommendations in 2006 (NOKUT 2006), thus evaluating the teacher education programs of 1999 (last students graduating in 2006) and 2003.

On the basis of the evaluation, the ministry sent a white paper with the title 'The Teacher – the Role and the Education' (St meld nr 11 2008-2009) to the parliament in 2009, outlining the reform to be implemented in 2010.

Four External Perspectives

The Effect of the Program can barely be measured, even in the Future

The first cohort of teachers educated under the new framework will complete their program in 2014, when they will be about 25 years old. If the program remains unchanged for five years, the last cohort under these regulations will graduate about 2020, and some will be active till 2065 or so. Till about 2045, teachers educated under the regulations from the 1992/94 framework will be active, the next two frameworks will have influence till about 2050 and 2055, respectively.

Attempts to measure the impact of the various programs on pupils' results and learning will barely be possible, since pupils in a given subject at a given level will most likely have had teachers from various programs. Their results at given time cannot reasonably be attributed to one teacher from one program.

Of course other kinds of evaluations and assessments of the program can be performed, including asking the graduates how they view the program. Results of this kind can be compared over programs.

Teacher Shortage: The Curriculum Framework will have Influence till at least 2065, but who teaches after 2020?

An important issue with regard to the future is to which extent students will be taught by teachers who have completed teacher education. The Central Bureau of Statistics has indicated that there may be a shortage of about 11000 teachers in 2020; that is more than 15 % of all positions in compulsory education (grades 1-10; there may also be shortages in some practical subjects in upper secondary education, but academic subjects positions in upper secondary will for the most part be filled with teachers who move on from grades 8-10). Limited recruitment of teachers is part of larger problem, namely recruitment to the caring professions generally, including e.g. nurses and preschool teachers.

Teacher shortage, in particular in the lower grades where learning to read and write is essential, can barely be solved through import, as is the case with regard to nurses, preschool teachers, and some teacher groups, in particular foreign language teachers. Till around 1980, outskirts, in particular in Northern Norway, suffered from considerable teacher shortage. It is likely that similar problems will be felt over larger areas, increasing towards and beyond 2020.

Thus, one aspect of the ministerial regulations, not covered in the documents mentioned above, is more important than decisions on how teacher education programs are designed, namely the question of who is accepted in these programs. Till 2005, all students who had completed academic upper secondary education, were accepted in the programs, even though some would not have preferred (Oslo, Bergen and other largish cities are popular, colleges in more remote areas are not). Since then, however, students need a 3.5 average from secondary school (on a scale where 6.0 is maximum score), and a minimum of 3.0 in Norwegian and mathematics. This led to a drop in formally qualified students, and more institutions were not able to fill their programs (the ministry decides how many to accept where).

In 2010, when it became possible to choose between a program for grades 1-7, with Norwegian and mathematics as compulsory subjects, and a program for grades 5-10, with no compulsory subjects (cf. below), about 20 of 30 of the former programs were not able to fill their quota. At the same time, the numbers applying to three year programs for preschool teachers dropped (by about 15 %); these are programs with very limited choice with regard to subjects. (In the university based programs, students are free to choose their subjects.) Also in 2011, more than half of the programs for grades 1-7 were not filled up; in addition, the problem spread to programs for grades 5-10, where one in three programs were not filled. This trend continued in 2012. (The number of applicants to preschool teacher education, however, increased in 2012, probably as an effect of a special campaign to recruit this group, related to the fact that there is already a shortage of 6000.)

Mathematics was recently made compulsory for two years in academic upper secondary education – the last year seen as being on a fairly high theoretical level. The combination of compulsory theoretical math in secondary education, and the availability of two teacher education programs without compulsory math (university based, and college based for

grades 5-10), will most likely contribute to teacher shortage in grades 1-7 and possibly also in preschools. This combination of two somewhat external factors will have greater impact on the quality of Norwegian education than details within the programs offered at the colleges.

Teacher Education as a somewhat unimportant Parenthesis

People in the field of education will tend to claim that education is important. Thus, teacher educators will see teacher education as important. But in a broader perspective, teacher education is relatively less important than other professional programs – as pointed out by Lortie (1975), teacher education students have 12-15000 hours of observation of teaching before they start their professional program (a 4 year teacher education program is probably less than 20 h x 40 weeks x 4 years = 3000 hours; in reality considerably less in Norway, since attendance is no more compulsory). It seems reasonable to suggest that prospective teachers learn both more in the school subjects material and more practical teaching *before* teacher education than *within* teacher education.

In this perspective, the idea that new teachers suffer from a so-called practice shock seems rather curious – one should think that only those with the weakest nervous system should be shocked by what they have observed for thousands of hours, even though they move from the pupil's desks to the teacher's platform (cf Jordell 1986). Nevertheless, with regard to learning to teach, the first year(s) of teaching should be seen as the most important learning phase for teachers, more important than observations as a pupil and practice as part of teacher education programs. In this perspective, it is of importance that the white paper on teacher education (not the curriculum guidelines) proclaim that all new teachers should be mentored. If the proclamation will be more than words remain to be seen – a game is on between the ministry and local authorities about who should pay for the mentoring system (cf also below).

The Government regulates the Content of Teacher Education, but the local Authorities may ignore Qualifications when assigning Subjects to individual Teachers' Jobs

As will be made clear, the latest reform has limited the number of subjects a student is offered in a teacher education program. The government also claims that it intends to limit teaching in a given subject to teachers who have studied that subject, through a so-called competency directive. However, due to protests from local authorities responsible for many small schools, this regulation has so far not been instituted. The link between program content and job content may be broken if teachers can be mandated to teach subjects they have not studied (since they were pupils themselves) – this of course adds to the limited relative importance of teacher education.

Similar to 1) the entrance qualifications that may result in teacher shortage and 2) the mentoring system for new teachers which supports learning in the critical first year of teaching, the resistance regarding the competence directive is an example that important issues are regulated outside the curriculum guidelines, which in the following will be discussed in some detail. The devil may not be in the following details, but at the circumference, as outlined above.

Change upon Change upon Change – the LEGO Phase in Norwegian Teacher Education

College based teacher education was expanded to three years in 1973, and, as stated above, to four years in 1992. The period 1992-2010 can be seen as the LEGO phase in Norwegian teacher education: Four times, that is every six years or so, new 'towers' have been built by combining the building blocks in different manners. And there are more than the four towers that have been formalized as programs: before the reform in 1992, a practice-based fourth year was suggested; before 1999, a committee was divided in its recommendations, and the Parliament altered the recommendation from the ministry, which was different from those suggested by the committee; in 2003, the Parliament once again altered the recommendations from the ministry. The story of the tower of Babel, which lead to considerable confusion, comes to mind. As already made clear, the major point in the reform of 2010 is that *two* towers have been constructed (one for teachers for grades 1-7; one for teachers for grades 5-10). As will be seen, the size of the buildings blocks in the two towers is also different.

We cannot go in great detail regarding each of the 3+ teacher educations from 1992-2003, but will focus on six parameters or aspects that have been prevalent in the period:

- Which school subjects shall be compulsory?
- What is the least number of school subjects that can be included, and how many is there room for?
- Which proportion of the four years can be used for electives?
- To what extent shall some subjects be studied in some depth?
- What is the minimum size a subject can have?
- How are the four years divided between school subjects, practice, and educational theory?

As a background for discussing these questions, it must be made clear that until 1973, it was possible to enter teaching without having completed the academic branch of secondary education (*gymnasium*) and passing the *examen artium* (similar to the German *abitur*): One could enter a four year program based on seven years of compulsory school plus three years of middle school; this was an alternative to the two year program based on *examen artium*. This arrangement reflects that the *gymnasium* was seen as part of teacher preparation.

This perspective is of some relevance today as well: The subject matter component of teacher preparation for grades 1-4, 5-7, and 8-10 is respectively nine, six, and three years of part time studies in all school subjects, plus studying these or some of these subjects in the four years of teacher education. A mildly heretic question is whether conditions and demands in grades 1-7 has changed so much that it is necessary to double the teacher education component, from two to four years. In any case, this illustrates the third perspective above: teachers do not only gain some insight in teaching from observing teachers for 12 or 13 years; those teaching in the lower grades also get a considerable proportion of their subject matter preparation before entering teacher education.

For teachers in grades 8-10, this is somewhat different. As basis for teaching the old middle school (that is, an academic version of grades 8-10, cf above), teachers had about five years of university education (of course on the basis of *examen artium*). With regard to teaching

requirements for this level, a reduction, from five to four years, has taken place. This reduction is, however, even greater for teachers on the *gymnasium* level. Their teacher education lasted 7-8 years, and is now reduced to 5 years, if one chooses the integrated programs offered at universities (cf the introduction, above).

Compulsory School Subjects

The two year programs (four years for students without *examen artium*) covered all or most school subjects, but *Norwegian* and *religion* were the main subjects (the teaching of religion, mainly Christianity/Lutheranism, was formally the religious training of the baptized members of the State Church till 1969). In 1973, these two subjects were made compulsory, as was *one practical or esthetical* subject (craft, home economics, music/song, and physical education). From about 1980, *mathematics* was also made compulsory. These four subjects should be taken as 1/4year units, but one of them should be studied in some depth, as a 1/2year unit.

In the first version of the four year programs, in 1992, a *combined science and social science* subject was made compulsory, as a 1/2year unit.

In the discussions leading up to the reform in 1999, the ministry wanted English as a compulsory subject, but this was not approved by the Parliament. Students were, however, obliged to study *one practical and one esthetical subject*, thus, in a sense there were six compulsory subjects; in two of these, the students had a choice between two (e g home economics or physical education); one other, namely science and social science, actually included two or several school subjects, (including history and geography; in the lower grades, science, history and geography were treated as one subject, called orientation).

In 2003, practical and esthetical subjects became electives. The ministry also recommended that religion and the combined science / social science subjects were made electives, but the Parliament kept religion as a compulsory subject (by this time, this subject included more on other religions and general ethics). Thus, the number of compulsory subjects was limited to three: Norwegian, religion, and math.

As stated above, in 2010, no school subjects are compulsory in the program for grades 5-10; in the programs for grades 1-7, the number is down to two – religion was taken off the list. Zero or two compulsory subjects is a substantial reduction over the eleven years from 1999.

Number of Subjects

Till recently, college based teacher education has been seen as providing a formal basis for teaching all subjects at all levels. The two/four year programs more or less covered all subjects. In the three year program from 1973, the students had to study a fourth subject in the addition to the three compulsory, but could limit the depth of subjects, and make room for six.

In the first version of the four year programs from 1992, students could limit themselves to the six compulsory subjects, but could choose to study these in limited depth, making room for at least four additional subjects. Due to requirements to study subjects in greater depth, the 1999 version only gave room for a maximum of eight subjects, and the number could be

limited to the six compulsory subjects. In 2003, the maximum was seven; the minimum four, that is one in addition to the three compulsory.

In The 2010 program for grades 5-10, students must limit themselves to three subjects; in the programs for grades 1-7, there are two or three electives, in addition to the two compulsory subjects. Thus, the maximum number of subjects is down to 50 % of what it was in 1992.

Electives

In the two year programs, students with an *examen artium* in modern languages could take a special program that included English, otherwise there were no electives. The change in 1972 was in a sense dramatic: One of three years was made available for electives.

In 1992, 1.5 years of four years were for electives, thus the proportion went up from 33.3 to 37.5 %. In 1999, it was reduced to 25 %, but went up to 50 % in 2003.

This level is kept in the new program for grades 1-7: The two compulsory subjects Norwegian and math must be studied for at least $\frac{1}{2} + \frac{1}{2}$ year, and educational theory must be studied for one year, leaving two years for electives. In the programs for grades 5-10, 75 % of the four years are for electives (educational theory covers one year). Thus, the proportion of time for electives has thus increased steadily.

Requirements for in-depth Studies

As mentioned, in the two year programs, Norwegian and religion were the main subjects (in addition to educational theory). In the three year program from 1972, *one* of the compulsory subjects had had to be studied as a 1/2year unit.

In 1992, it was decided that Norwegian should be the subject to be studied at this level (as mentioned, the combined science / social science course was also a 1/2year unit; similarly, the elective English could not be studied for less).

In the discussion leading up to the 1999 reform, the majority in the committee preparing the reform recommended that one school subject be studied as a 1year unit, but the end result was that two subjects were added to Norwegian on the list of subjects to be studied as 1/2year units: religion and math.

Recently, the government issued requirement that teachers in junior high school (grades 8-10) would have to have studied their subjects as 1year units; this is then followed up in the 2010 reform (now for grades 5-10). Also, teachers for grades 1-7 now have to study one subject as a 1year unit; however, this, however, does not have to be the compulsory subjects Norwegian and math.

In sum, the degree of in-depth study was steady from 1973 till 2003, as the requirement was limited to 1/2year units. But the number of subjects to be studied at this level increased, from one to three. Only from 2010 should all teachers study at least one subject for a full year.

Minimum Size of Unit

In the two year programs, many subjects were only studied in volumes that could be measured in weeks, but, as stated, most subjects were covered. This was in a sense also

the case in the three year program, through very short courses in what was called subject-specific didactics, compulsory in those subjects not studied as $\frac{1}{4}$ or $\frac{1}{2}$ year units.

In the four year program from 1992, the minimum volume was $\frac{1}{4}$ year units. From 1999, all academic (but not practical or esthetical subjects) had to be taken as $\frac{1}{2}$ year units. In 2003, even the practical and esthetical subjects had to be studied at this level; now, however, religion, kept as a compulsory subject, was limited to a $\frac{1}{3}$ year unit.

In 2010, $\frac{1}{2}$ year unit is the minimum for all subjects in programs for grades 1-7; as stated, in programs for 5-10, all subjects are studied as 1 year units.

Educational Theory and Practice

In the two year programs, educational theory was one of the main subjects, with a volume of about a third of a year. In the three year program, educational theory *and* practice in schools was given one of the three years. But practice was about 15 weeks, so the volume of educational theory was only slightly more than a $\frac{1}{2}$ year unit.

In 1992, educational theory was reduced to a $\frac{1}{2}$ year unit. However, the sum of time allotted to the school subjects was formally 3.5 years, as practice / student teaching was not included in the credit system, but given 20 weeks, in a sense in addition to the regular program, in a kind of double book-keeping (in reality, practice was of course taken during the academic year, this meant that the time available a $\frac{1}{2}$ year unit was 2.5 weeks less). This double book-keeping system has been kept ever since; the amount of practice is still about 20 weeks; the sum of the credits in subjects and educational theory amounts to 4 years.

The majority in the committee that prepared the 1999 reform recommended that educational theory should be increased to a $\frac{3}{4}$ year unit, and in 2003 the ministry proposed a similar expansion (now as an additional $\frac{1}{6}$ year unit in professional knowledge), but this was not approved by the parliament. However, expansion did not take place till 2010, when educational theory was allotted one full year.

Comments

If the later reforms should be characterized in just a few words, the following seems reasonable:

- 1973, few subjects and considerable room for electives
- 1992, many subjects and less educational theory; double book-keeping with regard to practice
- 1999, less room for electives, more in-depth studies, also in religion
- 2003, more room for electives, fewer subjects, reduction of religion
- 2010, two programs, even fewer subjects, doubling of educational theory, religion moves from compulsory to elective.

One stable factor has been Norwegian and math as compulsory subjects (math from about 1980). General trends have been fewer subjects, in more depth, and fewer compulsory subjects. Of course, a policy promoting in-depth studies, often seen as an indicator of quality, implies reduction in the number of subjects.

Religion has been a stable factor, till the last reform, on one occasion kept but reduced by a majority in parliament against the recommendation from a government that included the conservative and the Christian-democratic party. Also on at least one other occasion has the parliament voted down a recommendation from the government; to some extent, this has been possible since governments have not held a majority for most of the period covered here.

When 1 year units become the minimum, as in the 2010 program for grades 5-10, it also becomes difficult to argue that educational theory should be studied in less depth. And when this subject gets that much time in the program for older students, it becomes difficult to argue that it should be studied for only $\frac{1}{2}$ a year in the program preparing for younger pupils. In this sense, the promotion of in depth studies in school subjects has paved the way for the recent doubling of the time allotted to educational theory.

The 1992 version marks a final attempt to design a program suited for the Norwegian class teacher ideology, which also suits small schools. The class teacher ideology reflects the idea that the young child, leaving mom, should meet *one* adult, who would follow him/her through grades 1-7, later 1-6. Even as late as a couple of years ago, the chairman of the then merged teachers' union advocated this ideology, which had had its stronghold in the union organizing elementary school teachers. In society where children are placed in day care at the age of one or two, and taken care of by many substitute moms, this ideology is dying, if not already dead.

With regard to small schools, the 1992 version made it possible to run a school with one teacher, who had squeezed ten school subjects or more into her program, and thus was formally qualified in all. Under the latest version, a school with grades 1-7 needs three teachers, covering three subjects each, in addition to Norwegian and math. (Had the latter subjects not been compulsory, a small school could have gotten by with only two teachers, teaching five subjects each.)

This development is related to consequences of the game played by central and local authorities, with regard to how schools are financed. A change in the 1980s in the principles of funding and possibly also a decrease in funding, has resulted in many small schools being closed. In this situation, the policy on teacher qualifications may ignore the smallest schools, or at least pay less attention to the very limited number of pupils who attend these very small schools. These developments may lead to changes in where people want to live: When small schools become sub standard because of lack of teachers with formal teacher qualifications, parents have to choose between low quality schooling, long distance busing along fjords on winter roads, or moving (cf, however, the resistance touched upon in external perspective 4, above).

With regard to which subjects should be compulsory, one may question the wisdom in the provision that all teachers preparing for grades 1-7 shall study math. This probably reflects the status of the subject, which is also reflected by the fact that it is the only subject tested in four contexts: PISA, TIMSS, national tests, and the Council of mathematics. But some

potential teachers do not enjoy math; this lack of enjoyment will have grown more profound after math was made compulsory for the two first years in secondary school, thus making all prospective teachers study math for 10 + 2 years before entering teacher education. Of course, math at level 12 is fairly theoretical, and students who struggle, will tend not to choose higher education programs where math is compulsory (they will not know that math in teacher education programs is more basic than on level 12). The compulsory math is most likely the main reason why too few apply to the programs for grades 1-7 (20 of about 30 programs were not filled, both in 2010 and 2011).

It is possible that the requirements regarding in-depth studies has gone too far. As suggested, this kind of requirement is easy to defend – depth is easily seen to promote quality. In particular with reference to teachers for grades 1-7, one may take into consideration that a given subject is not only studied for half a year as part of teacher education, but part time for three plus three years before that. One might consider limiting the volume of those subjects that have been studied in some depth in junior and senior high school (Norwegian, math, English) to 1/4- or 1/3 units, and strengthen subjects not given priority in grades 7-13, in particular practical and esthetical subjects. If the 1 year unit in education is spread over the four years, the remaining $\frac{3}{4}$ years x 4 could be used for four $\frac{1}{4}$ units and four $\frac{1}{2}$ year units.

Traditions in Teacher Education

Teacher education can be characterized in various ways. An early contribution in this regard is Zeichner (1983), who, with reference primarily to US teacher education, distinguishes between behavioristic (including performance based or competency based), personalistic, craft oriented, and reflection based. In a 1997 contribution, Hopmann and Hopmann, referring to European authors, suggest five international tendencies in teacher education:

- *Expansion*, regarding time but also entrance qualifications
- *Didactization*, the relationship between school subjects and didactics
- *Academization* of the knowledge base, from being more school based
- *Assimilation*, institutions of teacher education grow more alike
- *Specialization*, teachers at higher levels teach fewer subjects.

With regard to the Norwegian scene, the last reform did not lead to *expansion* of teacher education, even though the NOKUT evaluation recommended five year master programs. In the white paper, the ministry says it will establish more five year programs, and the University of Tromsø has established a five year program that is open for students planning to teach levels 1-7. Some years before the last reform, there was, however, what could be seen as an expansion of entrance qualifications, as students would have to have certain grades to be admitted to college based teacher education (cf above). This may, however, not be the kind of expansion Hopmann and Hopmann refer to – the entrance requirement is still secondary school. (Possibly the reform in 1972, when teacher education no longer could be based on middle school, should be seen as an expansion of entrance qualifications.)

Hopmann and Hopmann suggest a model with four cells: school subjects, educational theory, subject-specific didactics, and practice. Within a certain time frame, expansion can

take place in one cell, leading to reductions in others. In the last reform, educational theory has expanded, at the expense of school subjects. The time for practice remains as before. We have not performed an analysis of the subject matter curricula, but the rhetoric of the reform indicates that the curricula have become less academic and more didactic – that is *didactization*.

In a historical perspective, *academization* in Norway is a development from what has been called the seminary tradition – small teacher education seminaries at locations where the students would not be affected by the worldly city culture (as if Norway had any cities in the nineteenth century!). From 1972, all teacher education was higher education, thus clearly academization on the formal level. Integration in the 1990s of the separate teacher education colleges into the regional college system can be seen as further development along this dimension. At least college, later the University in Agder, chose a model where teacher education was not established as a separate school or faculty; teaching in the school subjects was offered by separate departments. The five year program in Tromsø (cf above) may represent a further development with regard to academization, but this will depend on how teaching in the school subjects is organized.

The Tromsø model definitely represents a last final step with regard to *assimilation*, as the teacher education college (which there had been a separate entity within the regional college system) was merged with the University of Tromsø, which now offers teacher education for all grades, 1-13. The first step in this direction was taken in the 60s, when a teacher with a two year college program as basis could take two more years at universities, to qualify for the junior high school (grades 7-9) that was under establishment as an extension of the compulsory school (the middle school was abolished). Soon, the colleges offered this kind of supplementary programs themselves. It is also a form of assimilation that the equivalent of English PGCE courses was expanded from half a year to a full year around 1990. The clearest sign of assimilation is, however, that the training of lectors (for academic subjects in high school) has shrunk, from seven or eight years, to five. It used to be about four times as long as the two year college programs for elementary school teachers; now there is a difference of one year, and in Tromsø the difference is zero.

The old lectors studied three school subjects, but from the middle of last century, one did not have to be a subject taught in school, and at the PGCE course, they got method courses (later labeled subject specific didactics) in two subjects only. The new integrated lector programs barely imply further *specialization*. The development in the 60s and 70s, where teachers with a two year basis could take subjects at universities or colleges as supplements, implied a form of de-specialization, as the supplement could consist of four half-year units – teachers in the middle school had, like lectors, concentrated on three and later on two subjects. Over time, the de-specialization became even more dramatic – the four year teacher education programs at the colleges were considered as giving formal (but barely real, cf, however, references to the 1992 program above and below) qualifications for all subjects at all levels in the compulsory school (grades 1-9, later 1-10). The 2010 reform, however, represent a clear specialization: not only is the number of subjects limited to three in the program preparing for grades 5-10 (the same number of subjects as the old middle school teachers), but teachers for grades 1-7 shall also limit themselves, to four of five subjects.

In sum, it is evident that Norwegian teacher education has increasingly been characterized by expansion and specialization – the teacher follows longer programs, but studies fewer subjects. At the institutional level, there is clear assimilation at least in Tromsø, but there is also assimilation in the sense that programs that differed substantially in length, now differ with only one year. The evaluation of teacher education, as formulated by NOKUT, was that it was too academic, therefore, at least at the rhetorical level, didacticization of the school subjects is focused.

This combination of expansion, specialization, assimilation, and didacticization can, with reference to main themes in the Norwegian debate, also be characterized with terms closer to the Norwegian rhetoric: the class teacher, the competent teacher, and the integrated teacher.

The *class teacher*, one teacher for all or most subjects for seven years (cf above) was for long the ideal.

The term *competent teacher* alludes to the most influential sentence in recent Norwegian educational history, namely the first sentence in a committee report on higher education (NOU 1988:28 p 7): “The challenge for Norwegian knowledge policy is that the country does not get enough competency from the talent of the population.” The committee report gained considerable influence, as the chairman was appointed minister of education a short time after he had delivered the report; with regard to teacher education, the one page on this topic proved more influential than a special report on teacher education (NOU 188:32) completed more or less at the same time. One recommendation was that the idea that teachers educated at the colleges are competent to teach all subjects at all levels (the class teacher idea), should be abolished. As pointed out, this policy was not implemented over night: The 1992 curriculum plan made it possible for a student to cover all subjects in elementary (a figure on p 41 in the plan depicts a program with 12 subjects if ‘nature, society, environment’ counts as two, science and social science). The later development has implied more focus on competency in fewer subjects, now limited to five as the maximum.

The term ‘*the integrated teacher*’ alludes to rhetoric in the most recent curriculum framework, on teacher education described as ‘integrated, focused on the profession of teaching, and research based’. There is a reason why the term integrated is mentioned first, cf a sentence in the last regulation: “The institutions shall plan for integrated programs with wholeness and cohesion between theory and practice, between subjects and subject specific didactics, and between subjects.” The sentence quoted does not only express integration, it also gives direction the idea teacher education as a preparation for the profession of teaching. That teacher education shall be research based may be a handicap – there is a danger that actors from the theoretical subjects use this idea to overrun actors from practice, in particular supervisors / mentors (in Norwegian, way-leaders).

In the following, we shall focus on two aspects in the new plan: theory / practice, and governance through innumerable objectives. As will be seen, there is a danger that the integrated teacher will be offered a fragmented program.

Theory / Practice: ‘Qualificationally relevant Competency’ and ‘Professionally relevant Competency’

Above, it is suggested that teacher education is a parenthesis in the process of socialization that teachers go through. One of the main arguments is that students by the time they start teacher education, have considerable knowledge of teachers and teachers, and of the school subjects. Another argument is that teacher education is seen somewhat unrelated to the reality teachers meet when they start teaching. There is considerable difference between the knowledge students are offered within the programs, and what they need as practicing teachers. Nygren (2004) refers to this as the difference between 'qualificationally relevant competency' and 'professionally relevant competency' (cf also Hjordemaal 2009); that is qualifications needed to pass the program, and qualifications needed to perform in the profession.

The distinction between these is an issue in all professions. In teacher education, it has been an issue in all the reforms that have been outlined above, in particular in the sometimes hefty debates on the relationship between theory and practice. Improving teacher education is to a considerable degree seen as promoting integration of and reflection on these two components. This is also the case with regard to the new reform. In the following, the recommendations on this topic will be outlined, and discussed critically. But first a few specifics on the background of the reform, that will ease an understanding of why theory / practice has become an issue.

The suggestions and recommendations in the new reform must be seen with the NOKUT report (2006, of above) as a background. The main goal was to "describe all relevant aspects that are important for the quality of the program" (NOKUT 2006 p 7). A central conclusion is that teacher education suffers from lack of integration of practice, school subjects, subject specific didactics, and educational theory. Once again the theory/practice dimension is focused as a major challenge for quality of teacher preparation, but this time with more research based evidence than before. The conclusions and recommendations are to a considerable degree followed in the government's white paper on teacher education, published in the spring of 2009.

Later in 2009, the ministry established a committee with representatives from a wide specter of Norwegian society and education. Its mandate was to suggest national guidelines (cf the introduction, above) for teacher education, which was to be implemented the following fall (2010). The regulation (*forskrift*) on these guidelines was issued by the ministry in March 2010. As stated above, the main goal is to ensure that the institutions of teacher education offer integrated, profession oriented and research based programs of high quality. The ministry here follows up on the main recommendations from the NOKUT report.

How shall integration and coherence be secured? This is outlined both in the regulation and the specific guidelines for levels 1-7 and 5-10.

First, it is stressed that practice must be an integrated part of all subjects. The subject 'Education and pupil knowledge' shall, however, have an overreaching responsibility for integration of practice and theory. Thus, this subject is given the same kind of function or status it had under the 1972 plan, to promote integration among subjects and identity formation among students (the subject was then called 'Educational theory and practice').

Secondly, practice is strengthened. It is stressed that practice shall be "mentored, assessed, and varied" (*Rundskriv* 2010 p 9). Mentoring and assessment shall be a joint responsibility for all who are involved in the program, both in the schools, and at the colleges / universities.

The intention is to promote optimal learning and development for the individual student. Earlier, students have been placed in a more or less casual fashion, now they shall gain experience at all grade levels they will be certified for, and practice shall include all central aspects of teaching, like planning, interactions with parents, etc. The volume of practice is, however, not increased; it is kept at 20 weeks, spread over the four years.

Third, cooperation between schools / school owners and colleges / universities shall be strengthened. This cooperation has been plagued by lack of clarity with regard to who is responsible for what, and lack of coordination with regard to which themes are covered in college courses and what is included in teaching practice. Specific regulations and demands are outlined.

Forth, the organization of practice is specified in several points. The main goal is that the students shall have the experience of experiencing a coherent, integrated and relevant education. Several of the points are concrete demands regarding what the parties (schools and college) shall contribute and how cooperation shall take place. The students shall take part in these processes. It is stipulated that the resources for and the content of practice shall be evaluated on a regular basis, as a quality measure, both during the schoolyear, and at the end of the each year. To secure thematic integration, the plans for 'education with pupil knowledge' and practice shall be coordinated.

Fifth, there are also requirements regarding the contacts between colleges and schools – regarding responsibilities, arenas for cooperation, goals, resources etc. This point can be seen as a follow up of White Paper no 11, where it is stated that “strong partnerships between teacher education and schools as a foundation for basic teacher qualification and later professional development” must be established. Partnership models in this area have lately been established in many countries; they vary with regard to financial arrangements, the number of institutions involved, how widely they are spread, and who decides what (cf Hjordemaal 2010). There are also examples of partnerships in Norway (e g Haugaløkken & Ramberg 2005); these can be seen as sources of inspiration for this aspect of the the last reform.

The theory/practice problem has deep roots in the history of education. The earlier points of view are relevant also today. Two important stands are represented by F Schleiermacher and J F Herbart.

According to Schleiermacher, pedagogical practice must be understood hermeneutically. This implies that the professional teacher must always interpret and analyze her actions in relation to context, as something that has its basis in the cultural, societal, and personal factors that the actions will be related to. The unreflective practitioner is characterized by the lack of ability to see these relations. In the well-known expression 'Primat der Praxis', Schleiermacher postulates that practice is there already [as the basis?], and that theory is added retrospectively, as a helper, to make practice more reflective and conscious. This line of thought has later played a central role among other educators and philosophers dealing with the theory/practice theme, e g E Weniger (1929).

Herbart is critical of Schleiermacher's hermeneutical basis the thesis of 'Primat der Praxis'. He accepts that learning to become a professional teacher takes place in practice, but only after the teacher has acquired theoretical prerequisites for registering, systematizing, and evaluating experiences. However, theory has no prescriptive position for Herbart, in contrast

to English educationalists like O'Connor and Hirst (cf Hjordemaal 2010). Understanding of and insight in (educational) theory is, according to Herbart, nevertheless a necessary prerequisite if students shall be able to utilize the experiences they gain in practice. Without this ballast, they will have problems differentiating between educationally relevant experiences, and more random experiences. Herbart's position is that the basis for educational acts is neither in the practice nor in the theory, but somewhere in between, and in a third aspect that he names 'pedagogical tact'. This can be seen as a form of educational judgment that mediates between theoretical knowledge and practical acts.

The two positions outlined are of interest because they can provide a basis for how teacher education should be organized, in particular with regard to the question of how much educational and subject specific didactical knowledge the students should have acquired before teaching practice. It is also important that the students are aware of this debate as part of a larger process of reflection with regard to the purpose of theory and practice, and how the interplay between the two can be optimized.

As outlined, the teacher education reform includes a lot of measures to strengthen the cooperation between actors, to promote coherence and integration. We will point to some practical and organizational aspects that are important if the integration of practice and theory shall improve. Several of these are touched upon in the documents referred to above, but here, we want to focus on a limited number of issues:

First, research cooperation between colleges and schools should be strengthened and better organized. This implies more practical theory and more theoretically oriented practice (Hjordemaal 2009). What is needed is a will to change and re-orientation, both among researchers and leaders at the colleges, and teachers and administrators in the schools. The ministry should encourage this kind of research, in particular through economic incentives, and researchers should follow up on initiatives along these lines. If this kind of research gains prominence, teachers and school leaders can more easily utilize research based knowledge in planning and teaching, and see the importance of research for school development. Some actors should probably assess critically their more or less well founded skepticism toward the value of theoretical knowledge and cooperation with colleges, thereby opening up for a more research based field of practice. These kinds of attitudes also worry representatives from the field of practice (see e.g. Rundberg 2010).

Second, it is important that students meet well qualified mentors during their 20 weeks of teaching practice. The mentors should have broad basis of experience, and coursework in mentoring (Norwegian wayleading) and curriculum theory, both general and subject specific. An important goal is that students recognize that the same concepts are used in discourses both in at college and in schools. Deep understanding of concepts in professional programs is developed where use and theoretical reflection stimulate each other. To establish a better coordination, it is also of importance that college professors are more engaged in teaching practice.

Thirdly, we want to stress the importance of further development of mentoring of new teachers (cf perspective 3, above). It is well documented that many students experience their debut as teachers as challenging. Even though better coordination of theory and practice during teacher education undoubtedly would be a step towards producing more competent teachers, it is nevertheless difficult to prepare them for all the challenges they will meet when

they start the daily work of teaching. This is the background for an agreement between the ministry and the National Association of Municipalities (who employ the teachers) that states that all new teachers shall be offered mentoring. In 2009, only 35 % of the municipalities followed up on the agreement; only 20 % of the new teachers got a mentor (Utdanning no 10/2010). A major question is whether or not mentoring should be compulsory. In any case it is important that new teachers meet qualified mentors who know and respect the programs the teachers have just completed, and are capable of supporting them in the difficult act of balancing between openness to what experienced colleagues can offer, and understanding that they as recently educated can bring impulses to colleagues and schools. Strengthening of the mentor qualifications, through mentoring training programs at the colleges, is therefore an important part of quality assurance of the measures provided for new teachers.

Governing by Objectives, in Absurdum, ad Nauseam

The Humboldt ideal for higher education is Lehr- und Lernfreiheit – freedom for the professors to teach what they want, and for the students to choose their courses. This ideal has probably never been reality in Norway. As late as the 1950s, reading lists for university courses were sent to the ministry for approval. It is very unlikely that the reading was divided among the ministry staff who then read it all, but the arrangements give an indication of how the state governed its training of its higher level civil servants: ministers for the state church, judges, doctors, and teachers for secondary school.

Teacher education has always been tightly governed. We cannot here give an historical account. With reference to the present regulations, it is noteworthy that a student for grades 1-7 who, in addition to compulsory components including practice, chooses one full year of Norwegian and English, science, and social science, has her four year program governed by 261 objectives plus 31 more general objectives in the *forskrift* (a student in the program for grades 5-10 who chooses Norwegian, English and social science must relate to 266 objectives). This is more than in the 2003 teacher education program, where a student choosing English, science, social science and music in addition to the compulsory subjects would be governed by only 157 objectives. The present number of about 300 objectives is, however, similar to what was the case in the 1999 program, where a student with about the same subjects as included above, would have to relate to 279 objectives. In the 1992 program it was possible to include 10 subjects, but each subject only had about 8 objectives, bringing the total to less than 100.

In addition to differences in the number of objectives, there are differences with regard to how they are organized. The 1999 curriculum plan for educational theory had some general objectives, and then objectives under four headings: 'children and youth', 'the school as an arena', 'society, culture and education', and 'fundamental issues in education'. A discipline-oriented organization seems to be implied: psychology, didactics, sociology, and philosophy / history of educational thought. The 1999 curriculum plan for Norwegian had sections related to skill development in reading and writing, literature and language, and didactics; the science plan had sections in didactics, biology, chemistry, physics, and geo-subjects.

In the 2003 educational theory curriculum, references to disciplines are still present to some extent: 'The teacher, the student, and the teaching' seems to be didactics; 'the teacher and the pupil in society' is related to philosophy and history, 'the teacher and the student in the organization' has less distinct disciplinary basis. All objectives in all school subjects fall under

three headings: 'knowledge of subject and subject specific didactics', 'to be a teacher', and 'cooperation and reflection'. This seems like a rather disorganized organization: to be a teacher in a given subject must be related to issues in subject specific didactics, which also must include reflection.

In the 2010 curriculum, called 'National guidelines for subjects', all subjects, including practice, are complying with the 'National qualification framework for higher education', which distinguishes between 'knowledge', 'skills', and 'general competency' (in singular, not plural). This leads to a fairly high level of confusion. For one, it is barely debatable that knowledge and skills are important components in competency. Secondly, the understanding of skills is very wide. Thirdly, the placement of a given theme under a headline seems random, possibly as function of the fact that the third category in reality includes the two former.

As skills are listed verbs like plan, lead, vary, explain. 'Contribute to' something is also a skill – probably a very basic one. To assess and analyze are also skills, but the term cognitive skill is not mentioned; those familiar with Bloom's taxonomy will know that assess and analyze can be seen as higher levels of knowledge.

One might think that assessing a pupil would be a skill, but no, that is a general competency, at least when combined with 'advising and caring'. Similarly, one might assume that "can understand connections between relevant research and possibilities in educational practice" is a form of knowledge. But no, that is a general competency, as well. All knowledge is prefaced by 'have knowledge about ...', cf certain liturgical formulas ending with 'amen'.

These examples are from the guidelines for 'educational theory with pupil knowledge'. The *forskrift* has similar peculiarities. It may be that reflection is a skill, but it seems odd that critical reflection is also a skill – this might have been promoted to a general competency. Even stranger are the skills "understands the societal perspectives related to the developments in technology and media" and "has good understanding of global issues and sustainable development". The first may be too narrow for a general competency, and since it is not prefaced with the liturgical 'have knowledge about ...', it cannot be a knowledge. But understanding of global issues etc is not a very narrow topic.

Within other fields, this kind of inconsistencies would not matter much; nevertheless, the University of Oslo, in a directive on the implementation of the national framework, has taken steps to counteract the curious aspects by "... making some adjustments with regard to terminology and logical consistency". But in a program where the students shall be prepared to perform analyses of curricula, it seems unfortunate that the way the objectives are organized is fuzzy. Osdal & Madsen (2010 p 176) are concerned that the use of the qualification framework will turn into an exercise in the use of verbs, a verb-game.

In a wider perspective, the qualification framework is a way of thinking of education closely related to the European Union ideology of free markets, also with regard to labor (freedom of mobility). According to Cort (2010), this work originated in vocational education, but has spread, to higher education. Cort discusses the framework to several perspectives, including transparency and comparability. Regarding the former, she refers to authors who claim that striving for transparency may seem counter productive – it may lead to an endless spiral of specifications where the law of diminishing returns soon applies. With reference to comparisons of teacher education programs, we will claim it is of course of some interest that foreign teacher education programs are described in some detail, if one shall import

teachers. But even then there are limits to how many objectives it is possible to check for. Not all countries or colleges can be expected to formulate 300 objectives, and if they have, two lists of 300 objectives will be of limited use. One could of course go through the lists and find that a teacher from abroad lacks (say) 126 qualifications and that say (93) that they presumably have acquired, but that are not included in the Norwegian lists, cannot compensate for the lacking 126. But so what? It is very unlikely that Norwegian authorities would offer courses to fill the 126 gaps.

It may be debatable how relevant these critical points are, since the number of teachers imported to Norway will be limited. That, however, raises the question, how useful the qualification framework is for domestic use? In this regard, it is relevant that also ten years ago, teacher education had about 300 objectives. But then they were at least organized with reference to the substantive structure of the subjects (cf above on e.g. disciplines in Norwegian and education). The lack of logical consistency with regard to the three main categories, and the somewhat random distribution objectives in the main categories, were avoided.

Summing up

On the surface, the latest teacher education programs may seem more transparent – teachers educated in the college system can no longer combine units in many various ways, there are two LEGO towers, one for the lower and one for the higher grades of the compulsory school. But under the surface, it is less transparent. Haug (2010 pp 346-7) discusses the programs with reference to (among other perspectives) fragmentation. He is concerned with broader issues, including an issue we have dealt with, namely theory / practice. But about 300 objectives within an illogical structure is in itself a form of fragmentation. And it may be seen as a return to what Zeichner (cf above) labels behavioristic or performance based teacher education – notably, critical reflection is downgraded to being a skill.

Seen from high above (Norway is a mountainous country, providing wide vistas), it is a question if these issues are of importance, except for curriculum theorists and other connoisseurs. The subject matter components in teacher education is merely an addition to 13 years of part time study of school subjects. The components in education and subject specific didactics, plus practice, are a parenthesis between 13 years of observation of other teachers, and the teacher's own practice. In a few years, the question of the content of teacher education will be relatively unimportant, since a larger proportion (30 %?) will only have the 13 basic years plus maybe some higher education components, but not have covered any of the 300 objectives of teacher education.

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Guidelines as a Means for Professional Development of Teachers

How to Teach Values for ESD, Education for Sustainable Development

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Abstract

ESD, education for sustainable development, is said to be value-based and for our sustainable future, we have to change our values. Internationally, we are faced that we must train teachers to teach any subjects any activities with the common values in her/himself. Values such as respecting the rights of others and future generations; respecting diversity and differences; respecting environment and our limited Earth. Teacher trainers all know that teaching has to come from these values, but how can we teach values? How can we teach values in a non-authoritative way in a higher education?

In Japan, we have experienced big risks, from earthquakes and tsunami and on top, from nuclear accidents. All the communications taken place between the Government and civil society, via mass media and newly developed media, had shown that there had been a little act on professionals based on their values, very sorry to say. We, as an NGO, provide trainings to educators and leaders on ESD, environmental education, human rights education and other global issues since 1989 and are convinced that changing the values of teachers are most important of all than new methods, new activities and new technologies.

There are many guidelines for teaching materials and teach education. Guidelines reflect values, values which the global community share as a good practice for education. But if the guidelines are given like another piece of knowledge, they lose their power. How can we avoid the same pitfall of —banking education?!

Here is a workshop program for teaching risk communication we have developed. And I would like to discuss with the participants about the methods for teaching values.

1. Calculation exercise of radiation risks
2. Mangaichi exercise/ understanding probability
3. Risk communication factors
4. Create a scene: —Should she/he evacuate?!
5. Discuss the guidelines and review the activities

Keywords: global issues, ESD, value education guidelines, reflective, reflexive, transformative, transformation; constitutions, declarations; professional development

On March 11th, 2011, earthquakes and tsunamis hit us hard in Japan. These affected nuclear power plants on the coast line in Fukushima, as well. It had been propagated that Japanese nuclear power plants are safe and there would be no accidents, so called “Safety Myth”. It bitterly failed. People can trust the Government for safety regulation regarding radioactivity any longer. We feel as if we have to rebuild our trust for the society from the ruins after the disaster.

After the 3.11, “Kizuna”, meaning undividable human relationship, was often mentioned to rebuilding our community. This refers to supporting and caring for each other, between the

areas which had been hit hard by the disaster and which were unhurt areas. Kizuna surely helps to build trust in our society, but that is not enough.

Another very important way to rebuild trust is to share the same visions for the future. If we share the same vision, we can cooperate towards that end, thus be able to trust each other. And sustainability is a very much needed value to share, when things take place pressingly, not allowing time for deliberation. Actions taken hurriedly need to be reflected upon with certain guidelines to fulfill the values and visions.

This report is an attempt in teacher/facilitator trainings to develop common values among them through guidelines for our sustainable future. Guidelines are used as tools for sharing values in common.

Guidelines in the international society are a kind of international soft laws, contrary to hard laws such as conventions, treaties and agreements, bilateral and multilateral. Guidelines are much less binding than hard laws as far as implementation and enforcements are concerned, and it is the same for other types of soft laws, such as resolutions, declarations and recommendations,

In this report, I will use the guidelines in much more broader terms, including both hard laws and soft laws. First, I will give the examples of use of guidelines in training and will summarize the use, afterward. In the third section, I will discuss why guidelines are important for educators of ESD.

EXAMPLES OF GUIDELINES AND HOW THEY ARE USED IN TEACHER/FACILITATOR TRAININGS

Here are examples of guidelines and how we use them in ERIC's teacher/facilitator trainings for ESD. ERIC is a non-profit organization which provides seminars, trainings and workshops for educators.

Checklists as guidelines

The first translated textbook published by ERIC is "World Studies" by David Hicks and Simon Fisher. This textbook is an example of activity-based and learner-centered approach. There is a checklist of 20 viewpoints to check "Am I teaching through asking questions?" This checklist is meant to be self-evaluation for your practice, but in the facilitator's training, it can be used as the bases for discussion.

Tbilisi Declaration as guidelines

Tbilisi Declaration acclimated at the International Conference on Environmental Education, 1977, is a basic text for environmental education, even after 35 years. The text for "guiding principles for environmental education" includes 12 view points , simple but comprehensive.

The paper itself is 101 pages and to read the full body during the teacher/facilitator training is not pragmatic. Instead, using these 12 articles for ranking activities will lead to interpretative reading through group work.

List of Values of Education on Sustainable Development

ESD is education of values, the Decade of ESD says. In order to change actions, we need to change our values. The common values to be shared are still “a matter of discussion” , UNESCO says. These values can be used in the training programs through such activities as:

- a. Divide into two groups of “Values which you agree” or “Values which you think you live up to” against those not.
- b. Ranking the most important values in a group work
- c. Pick up the ones which you think are important but not implemented
- d. What are the barriers for actions?
- e. Think of means to help implementation

Rather than lecturing, but using them in activities, help digesting the deeper meanings through discussion with others. Values have to be immanent to affect actions. To check on your actions by these values as guidelines is what I call “reflexitive experiential learning”, which helps you to develop towards the visions.

Developing guidelines or reviewing guidelines

Developing your own guidelines in training is another way of using guidelines for teacher/facilitator training. In 2011, ERIC tried to develop risk communication textbook. Three tools are used for development. One is to translate already published textbook on risk communication. Another is to examine activities for risk communication. Third is interviews with experts and practitioners. In these interviews, we asked the interviewees to review the guidelines for excellence . Projected development of textbook could not be completed in a year and is still under process, but through the process, we found that when guidelines are given, people are not interested. Simply reading through paragraphs are not enough. You have to do something with them in order to make best effect of guidelines being guidelines. It is not for memorizing

The Geneva Conventions as guidelines for human rights

“Exodus from Kaura POW Camp” activity is a simulation game which you can experience the mentality and values which were widely shared among Japanese prisoners of war (POW) at the time of World War Second. And the point is whether we, after 60 more years from World War Second, can refute the arguments and logics of Japanese POW with the values on which the Geneva Treaty of War is based. Have we changed or not?

Health checks

Unsustainable our way of life is a disease. Just like the metabolic syndrome is a lifestyle related disease, our society must educate ourselves for the way out. This activity to develop health checklist for what you think is important will let you know why you check your health and how you can improve using checklist.

Ideals and concepts

It was Betty Reardon who said that “Ideals as tools for teaching”, and that teachers should not be afraid to talk about peace as ideal which we should pursue. Concepts could be

educational tools, as well. World Studies listed 10 basic concepts to see the world. PLT restructured concepts into 5 themes in 1993, after 17 years from the first version. And ESD also teaches values, such as justice and fairness, stewardship for the Earth, sustainability and precautionary approach, and they are still under discussion.

Peace education, human rights education, environmental education and development education, seem to talk about the same thing. John Fien summarized that in narrow definition these education have their own unique content area, but in the wider definition, they share the same visions, values and skills.

Development of World Studies gives a good example of concept-based approaches for learning. The developers first discussed what values and concepts they would like to share with students and they went on to develop activities which will convey such message.

There are guidelines for organizational development also, but I limited the example only for the personal development as teachers/facilitators.

Guidelines will lead to development through reflexitive use in check and improve.

Teachers need to be reflective practitioners to catch the teachable moment. I would like to point out that to be critical, you need some guidelines or visions and values, and any reflection should be reflexitively used to make improvement on your teaching.

TEACHING METHODS USING GUIDELINES

Guidelines should be read, but reading alone could be passive learning. The example above shows ways to actively learn and inquire into the guidelines. The merits of using guidelines as tools for teaching are as follows.

Guidelines can be used as self-check lists

Guidelines, although they were developed by some experts and practitioners, can be used in group works, promoting learning in a team, community and organization. Through these participatory approaches, guidelines become unauthritative and even something you can challenge.

Guidelines could provide visions to be shared

Let me refer to "The Fifth Discipline" for learning organization. Peter Senge deducted five characteristics through his research into the best surviving organizations in the world. He found that all these organizations were learning organization and have the same characteristic. That is "self-mastery", "team learning", "shared visions", "change self image" and "the system thinking". He stresses the fifth discipline, which is system thinking is the most important of these five, thus naming his book as "The Fifth Discipline".

"Self-mastery" corresponds with the self-check using guidelines. For shared visions, guidelines could provide visions which are internationally shared, as well. Guidelines are indispensable component for learning organizations.

The contents of what guidelines are about are important, by all means, but teachers/facilitators should try to make the learning active. Here are the methodologies used.

Mindful readings

In Japan, there is a saying “If you read a book one hundreds times, you will naturally know the meaning.” In Edo Era, 17th and 18th centuries, educators made students to read the Analects of Confucius aloud. At the wake of 20th century, selection of Great Books and associated university courses started at Harvard University.

Japanese Constitution have a network of reading study groups in order to promote its peace article.

Most of the time, how these texts are taught is there are lecturers who would read and give backgrounds information.

Participatory approaches to teaching texts can be summarized as follows:

- a. reading aloud sentence by sentence taking turns in a group of four or five members
- b. allocate sections to the group member and report back to share
- c. rewriting the phrases or verse in your own dialects, style, etc.
- d. sing and dance, or make a short play
- e. summarize and make a visualized presentation as group task

There are many ways which can be adapted to the time, space and number of participants.

Use of thinking skills

When reading guidelines, if you use thinking skills, you are achieving two educational aims at a time, the contents and the skills.

ERIC, published “12 ways to look at things in participatory approaches”, in 1997.

- 1) Holistic approach: brainstorm; image-map; association etc.
- 2) Contrasting: what you know vs want to know; merits vs demerits; good vs dangerous; proud of vs sorry for, etc.
- 3) Two Dimensions Axis: XY; matrix; social-ecological vs local-global axis, etc.
- 4) Categorizing:
- 5) Cause and Effect: story-telling; why-why-why, etc
- 6) Ranking: prioritizing; triangle, diamond ranking; weighing; dilemma card; project competition, etc.
- 7) Qualitative Analysis: data line-up; pie chart; distribution map; simulation; graphs, etc.
- 8) Time: timeline; transect; now and then; seasonal calendar; my day, etc.
- 9) Space: mapping; transect; relational map; power distribution, etc.
- 10) Index: measurements; human development index; GNH, gross national happiness, etc.
- 11) Simulation and modeling: role-play; simulation games, etc.
- 12) Planning: action plans; declaration; card games; force-field analysis, etc.

These are developed from 10 tools of PRA, Participatory Rural Appraisal developed by Robert Chambers, Sussex University. Principles we learned from the experience and applied into these 12 approaches are three: to be used in group works by the participants; to present qualitative information quantitatively; visualize using graphs, pictures and so. So, all

these approaches are participatory, visual and information processed and serve at the same time to train thinking skills.

Whether there are best matches for some types of guidelines and participatory approaches or not is still under trials.

GUIDELINES FOR TRANSFORMATIVE EDUCATION THROUGH REFLEXITIVE EXPERIENTIAL LEARNING

From reflective practitioner to reflexitive improver

Reflection is a key to learning. John Dewey's theory of experiential learning was developed and reorganized by David A. Kolb in 1990's. In this model, through reflection one would induce abstract conceptualization. Concepts could be adapted to the next real situation. And thus the process of learning continues.

Teachers themselves are experiential learners, as a model of learner for students and as a practitioner of constant improvement. Teachers/facilitators are reflective practitioners, because they have to adapt the programs to the learners and they are always for improvement. They have to review quickly and adapt flexibly. Akita stresses the importance of teacher being "reflective practitioner". There are names and categories of reflection referred in this textbook, such as "recollective reflection", "anticipatory reflection", "technical reflection" and so.

Right after the second world war, experiential learning and learner-centered approaches were high-lighted in Japan, as an anti-theme for militaristic approaches of teaching during the war. But these practices were soon criticized as "on the ground experientialism" which lead children to no better point than what they already know.

Experiential learning approach which World Studies and PLT employ, as example, has abstract concepts to be found through activities, still enabling variations of interpretation and understanding among the learners providing them something within themselves to refer to in the next practice. Thus changing their attitudes and actions towards the shared visions.

This is the process I call "reflexitive". It is not only "reflecting", but it is acquiring shared visions and reflexitively apply that vision to check on your own action so that your action will be improved to match the visions.

Such process for the society is called "back-casting". Improving towards the shared visions and modify the plan. Guidelines used in experiential learning are the key to our shared learning for sustainability. And so are the teacher/facilitators' trainings.

Let me summarize why guidelines should be used in participatory approach.

Guidelines are internationally agreed way to go for sustainability. They should be implemented on the grounds. Why these are important and how they should be implemented should make inherent for the practitioners. The implementation practice should come from within, although guidelines themselves are given and from outside. When the guidelines become inherent, they change the values of the practitioners.

With the chances of discussing and debating with each other, guidelines become less authoritative, thus inviting the practitioners become "monitor" for the guidelines as well,

opening the doors for even improving the guidelines themselves, inviting motivations to be involved with international process of discussing and establishing guidelines. Participatory approaches are one of the best practices for making guidelines inherent, thus contributing to transform the values of the practitioners.

Another point for teacher/facilitator training is to use various guidelines which correspond with the contents and themes of the workshop. As a trainer it is very important to have a rich reservoir of guidelines so that you can use guidelines for “check” for your action in any fields of actions. The frequent use of guidelines for experiential learning of “from awareness to action” raises consciousness of implementing guidelines in daily action. And of course, the trainers must be the model for such “continuous improvement” of practice.

At the age of rational change

We are at the age of “must change”. Looking back the history, time has always been changing, without most of the people being not aware of. There were leaders, there were genius, though how much were they aware of the change they were leading is dubious. But we are at the time that we know that things cannot go on the same as before, and we need to change the society at large. We also know that history is the result of each living organism’s choice in their life; therefore if we want to change the world, we have to start from each individual.

That is why education is the key, we say, today, for our survival.

Educators in general are still on the conservative side, since education used to be about translating what has been accumulated through human history of science to the next generation. There are starters of medicine, mathematics, natural science, philosophy and biology and there are structures and methodologies to each science, therefore the curriculum, systematic and accumulative.

Educators, who are so used to “teaching the past”, have difficulties to adjust their way of teaching “talk and chalk”, cramming and bank-style.

The cramming style is supported by the entrance examination system to the higher education, which is still largely knowledge-based. Successful teachers for this end are seen as “good” teachers, in Japan.

Saying that you need to change the education and keeping a different carrot for race put schools in a mere chaos.

Teach how to think and the common values for our survival

20th century has seen an explosive expansion of information and knowledge. And the average length of education in developed countries has been prolonged. However, like in Japan, period of the compulsory education is only 9 years, while the moratorium last until 25 years old. What should be taught and how should be taught must be questioned for curriculum development for these basic education.

Probably, “World Studies” developed by Simon Fisher and David Hicks, together with development education centers in UK, 1985, is one of the first attempts to focus on concepts and skills. The basic concepts, therefore, they focused on was a mixture of values and skills:

causes and effects; communication; conflicts; cooperation; power shared; fairness; interrelationship; similarities and differences; social changes; values and beliefs.

PLT, Project Learning Tree, an environmental education material and facilitator training developed in US, also focused on “how to think”, rather than what to think, in 1970’s and evolved its textbook around the concepts of “diversity”, “interrelationship”, “system”, “structure and scale” and “patterns of changes”, in 1993.

In the field of environmental education, focus in the curriculum on “critical thinking and problem-solving” was endorsed and agreed internationally by Tbilisi Declaration, 1977.

UNICEF, in 1990s, developed a guide for development education, introducing 5 global concepts of “interrelationship”, “image and acknowledgement”, “social justice”, “conflict and conflict-resolution”, and “changes and future”.

Also, the tradition of value education could be exemplified in “Living Values: An Educational Program” in 2000, which lists 12 values: peace; respects; love; tolerance; happiness; responsibility; cooperation; modesty; honesty; simple; free; solidarity.

Discussion on education for sustainable development has concluded, therefore, that ESD is education for values is not surprising, looking back to these history of discussion on education.

International Implementation Plan for ESD lists “respect for others, today and in the future”, “respects for differences and diversity”, “respect for environment” and “respect for our planet’s resources”.

It is the responsibility of basic education today to learn to respect others and differences and act as global citizens for our better survival. As ESD, education for sustainability, says, our actions for change should be orchestrated through the same values we share.

The age of “proactive change” needs active citizens’ involvements. We are setting goals of our society proactively and we drive our society towards them with consorted efforts through education.

To transform the development of today needs the transformation of education, Ted Trainer says in his book, “Developed to Death” , 1989.

“The problem is an educational one. We cannot hope to achieve a transition to a sustainable world order unless and until most people come to understand why fundamental change is essential, and come to see that the alternative ways not only make survival sense, but represent an attractive way to live.”

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Teaching via Collaborative Research Approach

(Ausbildungs-Integrierte-Forschung, AIF)

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Abstract

Since the 1960s, many innovations in teacher training and education were introduced as additions to the mainstays of lectures and course-work. "Teaching Laboratories" like "Microteaching" were among those most influential and most widely used in teacher education (e.g., Allen & Ryan, 1969; Zifreund, 1966; Klinzing, 1976). In order to provide an opportunity for successful experimentation with teaching tactics and strategies in controlled environments (Zifreund, 1966; Klinzing, 1982; Klinzing & Floden, 1990), the usually immense complexity is simplified, as the large number of students in typical classrooms, the length of time devoted to classroom sessions, and the complex nature of variables inherent in any classroom situation are reduced in these Teaching/Interaction Laboratories. Moreover, these settings provide a favourable climate for precise evaluation and research because they are well suited as a tool for experimental investigations of hypotheses since they inherently suggest "almost limitless combinations of variables for experimentation in quick succession of experimental trials" (Allen, & Ryan, 1969, 110). The feasibility of conducting such studies makes it possible for laboratory techniques to claim a strong interrelationship between research and the development of programs.

What can students learn from such research activities? According to one of the major principles of the German University, faculty members and students Research Observatory should work together in research. The Ausbildungs-Integrierte-Forschung (AIF, Teaching via Collaborative Research Approach, Klinzing, 1982) fosters direct involvement of students in research activities. Participation in evaluation activities and/or the examination of experimental hypotheses on how the subject and the methods taught were scientifically developed serve as a learning device and make them a valuable learning experience for the participating students.

Thus, it is not only in experimental training seminars but also in rather traditional lectures or coursework that a concurrent integration of the teaching of an academic subject with student involvement in research on that subject is applicable. This can be done, e.g., by administering to the students measuring instruments related to or representing central concepts of the subject taught. That enables students to acquire a more concrete, enduring, deeper and critical understanding of the constructs to be learned and provide rich material for stimulating extensive discussions and reflection. When the testing is combined with investigations of aspects of the pedagogical knowledge conveyed in lectures and coursework, students can learn "hands-on", how the research methods (e.g., correlational studies to find indications for the importance of variables) are related to findings, how, for example, their reliability, validity and generalizability are established or limited.

The challenge to combine evaluation and research with teaching, however, demands that designs in order to control sources of invalidity or the test administrations etc. ought not compete with academic freedom, student interests, and student learning.

Since the responsibility for student learning is of paramount importance, scholarly vigour of control cannot always be meticulously implemented. Thus, unavoidable flaws in research methodology creep into the studies. Replication can reduce doubts on the validity of findings.

The concept of Teaching via Collaborative Research was already successfully applied at two Universities in more than 40 replicated experimental and 25 correlational studies.

Thus, combining research and teaching is successfully spiced up in a way that teaching itself becomes more and more a rich primary source by being simultaneously the subject, process, and product of empirical-analytical research (Rütter, 2010, 35).

Keywords: Quantitative Research; Students and Faculty Members working together in Research

Since the 1960s dissatisfaction with teacher education has always led to innumerable suggestions and discussions for innovations. Most of them were developed as additions to or as replacements of some of the components of the mainstays of university teaching, namely lectures and course-work, and the traditional introduction into practice like student teaching, practicum, or on-the-job-training. Derived from different sources, they have taken different forms. For example, many programs have their roots in group dynamics, as developed at the National Training Laboratories (USA) in the late 1940s (e.g., Bradford, Gibb and Benne 1964), or in behaviour modification. Many projects and recommendations were presented and discussed in more than 1000 publications. For the most part, however, they were seldom based on theoretical considerations or research findings but rather on what was pre-scientifically speculated, and emotionally, intuitively seen as valuable, effective training contents and techniques/methods (see also Copeland 1982). Moreover, the resulting programs were rarely formally tested for their effectiveness or evaluated. Many attempts to examine the effects of these programs consist of anecdotal descriptions or student ratings. Even when these are included, the amount of studies which tried to examine effects is – as compared to the number of publications recommending new methods - relatively small.

More research based and tested are educational techniques including behaviour modification techniques, model demonstrations, protocol materials, discrimination training, cases, critical incidents, simulation, and reflective teaching laboratories (for a review see Copeland 1982; Cruickshank and Metcalf 1990; Klinzing and Floden 1990; Klinzing and Tisher 1986). These methods often have been termed “*Teaching/Interaction Laboratories*” providing a set of off-campus experiences “to bridge the gap between principles and practices” (Copeland 1982, 1008). Originally they were designed to improve technical skill of teaching or social or communicative competences for personnel after their academic studies and before they took full responsibility for teaching and other tasks (e.g., Allen and Ryan 1969). Later they were also widely used in connection with academic university courses (e.g., general methods courses or courses in educational psychology) to enlighten theory (e.g., Davis and Smoot 1969), and also for inservice programs (Klinzing 1982; 1998; 2002; Borg, Kelley, Langer and Gall, 1970).

Among these, the most influential and most widely used in teacher education and the education for other professions are the developments at Stanford University (e.g., Allen and Ryan 1969), at the Far West Laboratory for Educational Research and Development (Borg et al. 1970), and for Europe, in the Netherlands, UK and in Germany at the University of

Tuebingen (e.g., Zifreund 1966; Klinzing 1976; Klinzing and Floden 1991). They became well known as “microteaching” (Allen and Ryan, 1969), “minicourses” (Borg et al. 1970), “teaching laboratories” (Davies and Smoot 1969; Berliner 1982) or Training des Lehrverhaltens in Kleingruppen-Seminaren (Training of technical skills in small group settings, Zifreund 1966).

Since these innovations were unusual, they needed a higher expenditure in techniques and trained personnel as compared with the methods usually used at that time. That made it necessary to justify these efforts with a strong relationship interrelationship of research, development, testing their and again research. This cycle can be observed especially in the their further forms (e.g., the Minicourses of the Far West Laboratory for Educational Development (Borg et al. 1972, Gall 2010). And this interrelationship with research was possible because the particular experimental structure provided a favourite research climate.

Usually in these Laboratory Training Methods, the immense complexity is simplified, as the large number of students in typical classrooms, the length of time devoted to classroom sessions, and the complex nature of variables inherent in any group communication such as classroom situations are reduced. That makes it possible to provide controllable opportunities for “trying out” and analyzing behaviours and their effects in quick succession of trials based on the actual pedagogical knowledge. In short, they provide the opportunity for *experimentation* of teaching tactics and strategies in experimental settings, in controlled and safe environments (Coladarci 1959; Zifreund 1966; Strasser 1967; Bishop 1970; Shavelson 1976; Semmel and Englert 1978; Klinzing 1982; Klinzing and Floden 1990). Techniques using these laboratories in the form of simulated or simplified, or controlled real settings developed for improving or enriching teaching repertoire present not only a learning environment which transmits more than the traditional book learning or coursework (Berliner 1985) but also provide a well suited tool for experimental investigations since they inherently suggest “*almost limitless combinations of variables for experimentation in quick succession of experimental trials*” (Allen and Ryan 1969, 110). Teaching Laboratories were often “... used as a way of creating a more effective experimental paradigm which for the first time made it possible to use sophisticated experimental designs in learning studies.” (McDonald 1973, 71).

“Microteaching was born of an experiment. From its very beginning, it has been used as a means of research. Many aspects of microteaching that render it valuable as a training technique also render it valuable as a research tool. Research in education is perhaps more difficult than research in any other field because of the many variables involved in the teaching-learning process. However, these many variables can, with the aid of microteaching, be sorted out. Many of the complexities of classroom teaching can be reduced, thus allowing the researcher to analyze specifics more closely. The researcher has great control over practice in microteaching. Variables such as time, content, students, and teaching techniques can easily be manipulated.” (Allen and Ryan 1969, 8).

Most of the research attempts on microteaching and related methods were devoted to the testing of the effectiveness, efficiency and evaluation of the programs developed. About 300-400 effectiveness and evaluation-studies are known and are reported in numerous research reports and meta-analyses. These impressively attest not only to the effectiveness of laboratory experiences such as microteaching on improvements of instructional and/or communicative behaviour, but also to desirable affects and pedagogical knowledge (Butcher

1981; Yeany and Padilla 1986; Bennett 1987; Klinzing and Klinzing-Eurich 1988; Metcalf 1995; Klinzing 2002).

Moreover, these settings were also used to investigate experimental hypotheses that contribute to the scientific base from which these laboratory training programs were developed. Teaching personnel was not only interested *that* a program is successful and valuable but also *why*. And program developers couldn't just sit around waiting for research findings which they needed as a base for the program developments (Baker 1973). The feasibility to integrate experimental research into the anyhow experimental format of the laboratory led to many investigations for the selection and form of training components, their most effective combinations as well as for the contents of the programs. For example, "*research clinical sessions*" (Allen and Ryan 1969, 44) were integrated into microteaching clinics at the Stanford University on optimal training procedures like the effectiveness of particular program components and their combinations (McDonald 1973; Allen and Ryan 1969; Klinzing 2002). The experimental training environment was also used to investigate training *contents* and *objectives* (e.g., Acheson 1964; McDonald and Allen 1967; Claus 1969).

In all these attempts to use the experimental training format for effectiveness-testing, evaluation and for the examination of experimental hypotheses beyond effectiveness testing, the participating subjects/students' involvement was very limited, often they only helped to collect data, often without seeing the results (Henson 1996). They did profit only indirectly to improve the base for developments and to develop more effective and valuable programs for other students. The feasibility to make the research activities also *directly* a valuable learning experience for the participating subjects was inspired by the favourable research atmosphere in teaching laboratories which led to the development of "*Ausbildungs Integrierte Forschung*" (AIF, Integration of Research and Teaching) or "*Teaching via Colloberative Research*" (Klinzing 1976; 1982) .

This approach was inspired by ideas for the development of the German University in the 18th century, then especially by one of the principles which - in the sense of idealistic philosophy (e.g., Fichte, Schleiermacher, Schelling) - W. von Humboldt (1810) proposed for the development of new Universities: the ***unity of research and teaching***. These ideas were further developed in the 19th and 20th century (e.g., Paletschek 2002) and internationally spread out (for example to the elite-universities in the USA (Mueller 1986, cited by Anonymous 1986). From here the concurrent integration of the teaching of an academic subject with student involvement into research on that subject was recommended, always in cooperation with university lecturers.. Science was seen primarily as a source of development of the Personality (Bildung, higher education). This is more than only claims in competence models for higher education (e.g., Schweizer 1997). It also incorporates the claim that teaching at universities should not be directed solely at increasing subject matters and/or pedagogical knowledge and that subject knowledge transmission should be combined with social and ethical competences, and especially with the teaching of research methodology. Aspects of movements such as action research/teacher as researcher (Gall, Gall and Borg 2007; Henson 1996) were also taken into consideration but were combined with formal research and the expertise of researchers to avoid limitations of these approaches. In short, these ideas and research on laboratory experiences provided the background for "*Teaching via Collaborative Research*" and the development of an

experimental laboratory training approach “Communication/teaching as Experimenting” (Klinzing 1976; 1982) to foster the concurrent integration of the training of communicative behaviours or teaching of an academic subject with student involvement into research on that subject in collaboration with faculty members.

The question was how active participation of students in research activities in experimental studies can be provided as a productive learning experience for the use of research methodology. Some examples may illustrate our attempts.

Many approaches of laboratory methods aimed primarily at the development and enrichment of appropriate and effective teaching behaviour. To test the effectiveness of laboratory experiences the participants in the studies were often asked to conduct **Laboratory Performance Tests** for self analysis, for example, to determine which of the offered skills in a particular program needed to be improved or if more training was desirable in order to apply the behaviors to be acquired after training. These performance tests were more or less controlled. For example they were of three- to 20 minutes duration and were carried out in a group of three to six students, in a peer group or in specifically structured entire classrooms.

In the approach “Training Communicative Behaviours/Skills” (Klinzing 1976; 1982) the performance tests of five to assigned ten minutes in randomly chosen groups of four to six peers were placed at the beginning of the training serving as self analysis (self diagnosis to set objectives for the following trainees), when offered as posttests they served as self evaluation to find out objectives for further training. The performance tests were controlled so as to provide a comparison with other trainees. For example, trainees were asked to prepare an introductory lecture and a six-to-eight-minute moderation of a discussion on topics trainees could select from their subject matter areas. The participants were given a prescribed time in which they had to prepare the lectures, discussions etc. (for example 45 minutes). The performances tests often were videotaped and used by the trainees as a source of feedback and analysis and also of further analysis to test the individual effectiveness of the training. Moreover, as mentioned above, they were utilized for evaluation by independent observers for the testing hypotheses.

The self study of own behaviour was supported by using observation instruments (low and high inference observations derived from research) in which the trainees were trained to use these observation instruments reliably. Often other data related to the observation instruments were collected for deeper understanding of the psychological or educational constructs, for example, the importance of the skills to be trained (such as Nonverbal Expressiveness - Extraversion or Self-Efficacy). After testing and the evaluating the tests, the constructs measured were explained by relating examples of test items or subscales measuring facets of a particular construct. Thus, learning and understanding are achieved at a more personally meaningful level through insight into aspects of one’s own personality and abilities, through test feedback and through self-evaluation. These materials provide stimulating reflection and extensive discussions of the training contents, and, when called for, personalized help from the lecturer, other students or the training group to improve one’s psycho-social competences and personality dimensions.

The combination of assessing the effectiveness of a program and testing hypotheses beyond effectiveness testing experimentally requires control arrangements to assure validity of results. The responsibility for the support and success of student learning, however, is of

paramount importance. Thus these controls should be designed in a way that does not compete with academic freedom, student interests, student learning and data protection. The arrangements to control sources of invalidity must then of course be reasonable for the addressees, should not interfere with but promote their engagement in the subject and objectives. Participants ought not to be harmed or degraded, for instance, through deceit (which requires far more than merely following the demands of the Codes of Ethics for educational research and testing, see e.g., AERA 2010). In short, the arrangements for the control of potential alternative hypotheses of effects and the promotion of valuable, satisfying and effective learning experiences must be productively combined. For example, seven whole days intensive-courses in a laboratory format were conducted at the University of Tuebingen and other universities to improve communicative behaviours and thereby insights, knowledge and attitudes. The training was combined with the testing of the effectiveness of the training programs, to evaluate the course, and to test hypotheses beyond training effectiveness. Cases in point were the investigation of whether laboratory practice contributes to the improvement of nonverbal competences and whether a successful training of particular skill, e.g., nonverbal expressiveness, may serve as a foundation from which positive changes can flow on consequentially to influence global personality dimensions (Klinzing and Jackson 1987). The effectiveness-testing of a program and the investigation of other hypotheses were usually investigated by means of post-test only comparison-group or post-test-only-designs. For both designs the total group of participants were randomly assigned to the experimental conditions. The experimental group received the full program, a three-and-a-half day training (32 hours) ending with performance tests and other tests. Participants of the control groups, so far without training, started the course three-and a half days later with the same performance (and other) tests which then served as control group "post-tests". In the case of experimental investigations with the comparison group participants went to another building to receive the comparison treatment and then did the performance tests and other tests. Because the comparison treatment was one, in which some treatment-elements were eliminated (for example the practice laboratory sessions) the comparison group got these treatment elements after their post-tests.

The assignment to the different experimental and control/comparison groups occurred quite naturally because the training courses were usually so overcrowded that rooms, technical equipment (video), or personnel were not available to conduct the course with all participants at the same time or the same rooms. As a result students perceived it fair to be assigned randomly to groups, safe in the knowledge that they would receive similar training (albeit in a different sequence). Consequently, all tests and the post-test-only-control/comparison-group design with random assignment to the treatment conditions (Campbell and Stanley 1963) were *unobtrusively* integrated into the training. Since participants were informed that they would all get a similar training, some of the threats to internal validity that randomisation does not rule out (e.g., resentful demoralisation of respondents receiving less desirable treatment (Borg 1984; Campbell 1969) could also be avoided.

Data was collected, as mentioned above, from videotaped laboratory performance tests, group observation for feedback purposes, and personality inventories to achieve deeper insights on the training objectives. The data collection like the experimental design was an integral component of the training serving as an opportunity for the participants to diagnose their behaviour before the training (diagnostic lessons, see Klinzing 1982), to assess their progress due to their training (self-evaluation lessons), and to get a deeper understanding of

the constructs from which behaviour was derived. These arrangements helped to improve behaviour, knowledge, insights and attitudes and could produce valuable scientific knowledge at the same time.

Teaching via Collaborative Research can also be applied in rather traditional lectures or coursework. That can be done by administering tests to the students related to or representing central concepts of the subject taught. This enables students to acquire a more concrete, enduring, deeper and critical understanding of the constructs and their relationships (e.g., Nonverbal Sensitivity – Empathy). Like in experimental laboratories the students get their test results and the constructs are explained by relating examples of test items or subscales measuring facets of a particular construct. Thus, also in these traditional teaching environments learning and understanding are achieved at a more personally meaningful level.

Like in experimental laboratory experiences, using tests in traditional university teaching then also becomes a learning device on how the knowledge taught is scientifically developed. When the teaching is combined with investigations of aspects of the pedagogical knowledge conveyed in lectures and coursework, students can learn “hands-on” *how* the research methods are related to research findings, for example, how they establish or limit their reliability, validity and generalizability. Students then can be guided to reflect on their own findings in light of already existing research which might be limited, confirmed, differentiated or extended. That might result in the framing of new research questions. In this way, students can acquire not only a deeper understanding of the central psychological or pedagogical constructs in question, but also active experience in research methodology problems, including for example, the problems related to control of alternative hypotheses. Applied in this way, integrating tests into teaching becomes a teaching device in support of critical knowledge and research methodology acquisition. The concept of *Teaching via Collaborative Research* was already successfully applied at the University of Tuebingen, the University of Stuttgart and other institutions in more than 90 courses of lectures and seminars.

Consequently, the contribution to research in the actual lectures/seminars and experimental training courses and thereby the improvements of the learning experiences often resulted in term papers, MA-or doctoral theses, conference papers and publications.

Teaching via Collaborative Research increases the feasibility of research opportunities. Especially, studies can easily be repeated more than once to get “...a stronger basis for observed relationships than the support that is available within each study by itself” (Schafer 2001, 1). The need for replication research – especially in the fields of social sciences and education (see Gall, Borg and Gall 2007) - is to support (or disconfirm) findings of single studies, to examine their generalizability and thereby validity: “Indeed, the replication of research findings, rather than reliance on a single study and null-hypothesis testing of its statistical results, is fundamental to research in any scientific or professional discipline, including education.” (Gall et al. 2007, 148)

Specifically, in the *Teaching via Collaborative Research* approach, replication studies are not only more *feasible* but they are even more *critical*. Since the responsibility for the support and success of student learning is of paramount importance, scholarly rigor of control cannot always be as meticulously implemented. Unavoidable flaws in research methodology or in

the execution of control arrangements, such as in the sampling or data collection procedures, creep into the studies. Since the fulfilment of the teaching task is crucial and has to take place without pressures related to control provisions, the academic teaching-learning arrangements sketched above are often compromised by such methodological flaws. The studies reported in this paper (see below) were conducted in a field context, in regular courses of seminars and lectures which were selected by the students on a voluntary basis out of a number of courses offered by the Departments of Education of two large Universities in Germany - the University of Tuebingen and the University of Stuttgart. In contexts outside the University they were selected in a number of courses offered for in-service. Thus, as in many educational studies, the subjects were volunteers. In the field studies, random sampling was unavailable. In experimental studies, however, participants were often randomly assigned to the experimental conditions when this was possible. The reasons given by participants, in informal interviews, as to why they chose to attend the seminars or lectures ranged from interest in the various subjects to factors of time, organisation, localisation, friendship with other participants, etc. but there was not a general, systematic reason. As Borg et al. (1970, 83) noted, it is difficult to make any general observation about biases introduced by using volunteers as subjects, "...since the variables that influence the decisions to volunteer are probably different for each one."

When conducting studies in regular academic teaching arrangements at university, the respect towards the students restricts control of their presence or absence. Because of this and because tests were administered anonymously, and therefore not controlled, mortality sometimes crept into the studies. In any case, strong effects or the failure to appear cannot be expected from voluntary participation (e.g., Campbell 1969). The replication of findings from a series of studies makes it possible to cautiously generalize them.

Besides reducing doubts on the validity of the findings introduced by methodological flaws, replications have provided other advantages. Among these is the examination of the generalizability of findings across different populations. Moreover, while some of the seminars and lectures were conducted on topics strongly related to the studies, it was possible to replicate the studies in seminars or lectures with unrelated topics to check if the interest in the topic would influence the findings. Since projects may run over a number of years, eventual changes over time can be examined. Replications may also help in the identification of chance findings when multiple comparisons are performed (Gall et al. 1996, 419). In experimental evaluation studies, replications can also determine how the intervention (the training program) can further be improved.

Of course, the validity of findings is relative and dependent on how rigorously possible alternative hypotheses are controlled. However, even in a study with the best controls, a warranty for the validity of findings can not be given (e.g., Kerlinger 1979, 166). On the other hand, when in single studies some sources of invalidity remain uncontrolled, the power of persuasion is increased when in replicated studies similar effects continue to be observed (Campbell and Stanley 1963). Many replications help to increase the interpretability of the results even when not all possible but only plausible sources of invalidity are controlled. Whether or not really strongly controlled and less strongly controlled studies lead to different findings is an empirical question (Glass 1977).

“It is an empirical question whether relatively poorly designed studies give results significantly at variance with those of the best designed studies; In my experience over the past two years with a body of literature (...) leads me to wonder whether well-designed and poorly designed experiments give very different findings. At any rate, I believe the difference to be so small that to integrate research results by eliminating the “poorly done” studies is to discard a vast amount of important data.” (Glass 1976, 4).

The question how active participation in research activities by the students in experimental and correlational studies can provide not only an effective learning experience but also generate valuable research findings may be illustrated by the 52 experimental and 16 small scale experimental studies and 27 correlational investigations from our work.

1. Experimental Studies integrated into training programs with Laboratory Experiences

1.1 Testing the effectiveness of Laboratory Training on verbal behaviours

- **Program: “Acquisition of Observation Skills”** (Flanders Interaction Analysis System, FIAC, Flanders 1970). **12 small scale studies** (student teachers, trainee teachers, teachers and teacher trainers) with individual and group work. **Main results:** Reliability after 4 – 7 hours discrimination training (modified Scott-coefficient: 0.52-0.75). No significant differences between individual and group work. Trainees with practice experience scored significantly higher (Klinzing 1982).
- In **two additional** studies with student teachers and trainee teachers the effects of discrimination training on behaviour (nondirectiveness) changes were tested. No significant differences could be obtained (Klinzing 1982).
- **Program: “Training to Improve Nondirective Communication and Teaching”**. **Six studies** with University students and students in their second phase of teacher education (Refendariat) in peerteaching format. Training consisted of theory information, discrimination training, practice with feedback). **Main results:** More use of teacher non-directive behaviours, more student talk, more student initiated talk (Klinzing, 1982; Klinzing and Klinzing-Eurich 1984).
- **Program: “Relating to Using Students’ Ideas”**. **Two studies**. **Main Results:** More use of teacher non-directive behaviours, more student talk and initiative student talk. Significantly higher effectiveness of the program with two practical Laboratory Experiences (vs. theory presentation + discrimination training only); Higher effectiveness of conducting the course as an intensive course vs. in traditional week-to-week format (Klinzing, 1982).
- **Project: “Adaptation and Testing the Effectiveness of Minicourse 4: Interaction Analysis”**. **Two studies** (One with teachers and their classes, one with university students, peerteaching). **Main results:** More use of teacher non-directive behaviours, more student talk, more student initiative talk (Klinzing, 1982).
- **Project: “Adaptation and Testing the Effectiveness of Minicourse 9: Higher**

Order Questioning". Two studies (One with teachers and their elementary school students, one with secondary school trainee teachers). **Main results:** Use of a higher percentage of probing and higher order questions directly after training in both studies and three months later, higher in Study 1. Furthermore, higher clarity of teacher questions; higher congruency of questions, more student answers; higher frequency and length of student answers. Video vs. written models: No significant differences (Klinzing-Eurich and Klinzing, 1981; Klinzing, Klinzing- Eurich and Tisher 1985; Klinzing.and Klinzing-Eurich 1982).

- **Program: "Basic Questioning Skills".** (Adaptation and further development of Minicourse 1). **Five studies.** **Main results:** Success in the improvement of many questioning behaviours of Minicourse 1 except for skills which are unusual and seldomly used. Effectiveness of Laboratory Practice (vs. Discrimination Training). (Klinzing-Eurich and Klinzing 1988).
- **Program: "Lecture Improvement". Five studies.** **Main Results:** Improvement of Clarity, Interestingness and Social Climate etc. Significant higher success of the program with practice experiences (Klinzing, 1998; 2000; Klinzing, Klinzing-Eurich and Floden).
- **Project: "Discussion Moderator Skills". Four studies.** **Main results:** Improvement of many discussion skills such as significantly less giving of information, more calling on participants; more time spent in structuring the discussion; more summaries of discussion sections, more transparency in the discussion process, more reasoned arguments, more probing, higher expressiveness, higher participant orientation; practice in laboratory format (theory presentation + discrimination training) improved discussion moderator behaviour considerably (Rupp 1999; Rupp and Klinzing 1997; Klinzing and Rupp 2010).
- **Program: "Cooperative Learning": Three experimental studies.** **Main results of study 1:** Trainees in Cooperative Learning Techniques (jigsaw) outperformed significantly subjects trained in individual work and a control group (without training) on a knowledge test. (Klinzing 2002). The results of two additional studies reveal that there were considerable and statistically significant improvements in the accuracy of both intuitive and analytic judgments in decoding affects from facial expressions as a result of systematic instruction based on a theoretical presentation, discrimination training, and familiarization with techniques (jigsaw) for analyzing facial expressions of emotion. (Klinzing 2003).

1.2 Testing the effectiveness of Laboratory experiences on nonverbal behaviours

- **Small scale experimental studies to explore the "test effects" of the PONS-test**
(Rosenthal, Hall, DiMatteo, Rogers and Archer, 1979). **Four studies.** **Main results:** in all four studies considerable and significant test-effects occurred (Klinzing, Kunkel, Schiefer and Steiger 1984a; Klinzing 2000).
- **Project I: "Improvement of Nonverbal Sensitivity and Nonverbal Expressiveness". Cognitive Domain. 12 studies.** **Main results:** Improvements on

nonverbal competences and global ratings such as Nonverbal Sensitivity, Nonverbal Expressiveness, ratings of interestingness, attention, clarity, interest, assertiveness and persuasiveness etc. **Gender effects:** only very slight differences in favour of females. **Effectiveness of laboratory practice (vs. theory presentation and discrimination training):** Program with practical experience in microteaching format turned out to be more effective. **Comparisons of “Direct” (courses in microteaching format) vs. “Indirect” Training Methods** (game-like exercises; assertiveness training vs. laboratory experiences in microteaching format. Rosenthal et al., 1979; Klinzing and Jackson 1987): Direct training methods turned out to be more effective (Klinzing, Fitzner, and Klinzing-Eurich, 1983; Klinzing et al. 1984b; Schiefer, Kunkel, Revenstorf and Klinzing 1984; Steiger. Schiefer, Kunkel and Klinzing 1984).

- **Project II: “Training of Nonverbal Sensitivity and Nonverbal Expressiveness”. Affective and Cognitive Domain. Nine experimental studies. Main results:** Improvement of Nonverbal Sensitivity and Nonverbal Expressiveness. **In addition:** improvements of Extraversion, Internality, Self Efficacy. **Contribution of laboratory practice to training effectiveness** (vs. theory presentation and discrimination training): Highly significant differences in favour of training with laboratory practice. (Klinzing and Gerada Aloisio 2005; Klinzing and Gerada Aloisio 2007; Klinzing and Gerada Aloisio 2009; Klinzing and Gerada Aloisio 2010).

2. Replicated Correlational Field Studies to Examine Psychological Constructs/Competences for Teacher Education and Training

Project “Nonverbal Sensitivity/Nonverbal Expressiveness” (23 Studies to examine competences for Teacher education and training”. Main results: Weak and inconsistent relationships between *Nonverbal Sensitivity* and semester completed, majors, personality dimensions (assessed with a personality inventory), in addition to competence and control orientations, directiveness and extraversion, interpersonal relationships and nonverbal expressiveness. *Nonverbal Expressiveness* was again weakly related to semesters completed, majors, and age. However, Expressiveness was positively related to extraversion, “masculinity”, self-concept of own abilities, internality, self-efficacy, interpersonal relationships and negatively related to fatal and social externality. Very weak or weak relationships were found for decoding-encoding abilities, self-rated and tested nonverbal sensitivity. **Gender Differences:** Very weak gender differences (different to studies conducted in the USA) occurred for nonverbal sensitivity and nonverbal expressiveness. Comparing gender effects with effects of personality revealed that gender is only one personality characteristic which is related to nonverbal competences (Gerada Aloisio 2012; Klinzing 2009; Klinzing, Dede and Gerada Aloisio 2012; Klinzing and Gerada Aloisio 2009).

Project “Empathy”: Pooled results of five studies (Study 1 with student teachers) and two additional studies, Study 2 with secondary school teachers and Study 3 with adolescents in vocational education). **Main results:** Age, Semesters-Completed (*Study 1*) or years of Teaching-Experience (*Study 2*) were found to be very weakly, weakly or weakly *negatively* related (*Study 1*) to empathy. Student teachers were, at

least weakly, less empathic than students majoring in education on two scales of “advanced empathy”, namely Perspective-Taking and Empathic-Concern (*Study 1*). Across the three studies the negatively-toned *Personal-Distress-Scale* consistently, partly significantly, displayed *positive* associations with negatively toned Personality Dimensions like *Depression* or *Emotional-Instability*. Accordingly, associations ran counter to personality measures which possess a positive tone, like *Calmness* or *Self-Efficacy*. Subjects scoring higher on the Perspective-Taking, Fantasy- or Empathic-Concern-Scales were at least weakly *less* aggressive and dominant and had significant less rigid and imposing attitudes (*Study 1*). For psycho-social dimensions (*Study 1* only) at least “Quality-of-Same-Sex-Relationship” and “Speed-of-Making-Friends” were weakly related to Perspective-Taking and Empathic-Concern. Only very weak relationships between advanced empathy and interpersonal communicative abilities and behaviours like Nonverbal-Expressiveness and Nonverbal-Sensitivity were obtained (Klinzing, Steidler and Luttringer 2011).

Project “Emotional Competences” (One Study: see Klinzing, in this volume)

Ausbildungs-Integrierte Forschung or *Teaching via Collaborative Research* approach can be considered effective in improving the teaching of scientific knowledge in itself and also in integrating students into the scientific process and the understanding of the research methodology. Furthermore, because *Teaching via Collaborative Research* increases the feasibility of research opportunities, it was possible to produce valid scientific knowledge in more than 95 studies. Thus, combining research and teaching is gingered up in a way that teaching itself becomes more and more a rich primary source by being subject, process, and product of empirical-analytical research at the same time (Rütter, 2010, 35).

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Culture, Quality of Life and Citizenship

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Abstract

Culture has an important impact on the quality of our everyday life. We live in the era of information society and, consequently, in a multicultural synergy, so it is right that we teachers are aware of it and educate students in this direction. The art of communication in the sense of a social interaction should be learned and imparted, here both home and school. Cooperation, openness and an authentic teacher – student relationship play an important role when treating topics of this kind.

Nowadays the quality of life is changing due to a number of material assets and a way of life. In this way culture offers every individual an added value to the quality of life which in their daily routine reflects as perception of art, science and interpersonal communication in the real and digital world.

Keywords: culture, quality of life, citizenship, culture as social interaction, multiculturalism, communication

Culture as Social Interaction

Various definitions of the term culture reflect different theoretical bases or measures needed to understand or evaluate human activities. Culture begins where mankind exceeds whatever is given to it as its natural heritage. In a broader sense the word “culture” denotes all products of an individual, group or community of intelligent beings. Here belong technics, art, science as well as the moral systems and typical behaviours and habits of chosen intelligent entities. In a narrow sense the word has a more precise meaning in various fields of human activities and behaviour. Different human communities have different cultures, as personal culture of an individual may differ from the culture of another individual. The discoveries of anthropologist Bronislaw Malinowski (1995) already defined contemporary culture: according to different types of activities culture can be parsed into education, social surveillance, economy systems of sciences, religion and moral, but also into forms of creative and artistic expression. Already in the 60s of the past century Robert K. Merton (1910-2003) differentiated between the public display and latent functions of culture, where latent activities of social institutions means the participants of a society are not aware of the institution. Such activities are present in the background of each premeditated intention that a participant of a society can carry out as a personal activity. Cultures are not bounded or separable. You share experiences with people who listen to the same music or watch the same television shows you do, other experiences with people who do the same work you do, and still others with people who have had formal schooling like yours, even if you live on opposite sides of the world. This makes each person a junction point for an infinite number of partially overlapping cultures. The etymology of the term culture shows closest link between education and work (Strauss and Quinn 1997).

Youth Culture in The Educational Process

A young person finds himself torn between the offer of mostly pop culture of lower quality presented to him by the media and the knowledge of high culture which he perceives in school but which he also experiences in minimum quantities. This creates an inevitable problem when teaching young people to have a critical approach towards high and low culture. That means it reveals the disproportion between a formal cultural education that a young person acquires at school and the informal cultural education which is provided to him by the media. In relation between popular cultures, that is media culture, and high culture a gap appears which can be narrowed mostly by a school teacher if he is prepared to apply contemporary methods of teaching, where learning is considered as a self-regulative process which is reflected in the ability to organise, programme and evaluate student's work. A teacher must know how to approach different ways of adopting the media cultures of the young and establish critical relations to it in the process of formal education. The culture of the young people is specific in the adolescence period and it differs from the culture of older generations. It includes religion, behaviour, life style and interests of young people. It is typical for the culture of young people that it comprises many interpersonal differences within groups of young people and results in constant changes that can be seen as the consequence of interaction of different groups in individual subcultures. The standards, values, behaviour and styles vary considerably within the general culture of the young and can be a strong power in contributing to the changes in a society. Maybe we teachers are not aware enough of how important cultural education is in its narrow sense, neither of the fact that it also has influence on culture in its broader sense: living, alimentation, clothing, our attitude to the environment and with all this it affects the quality of our life.

We live in a complex social and political world, in the world of cultural, ethnic and language differences. Educational process is a process of social confirmation of knowledge and skills and the process of improving them. Raymond Williams emphasized that »a general educational process is a part of key forms of cultural reproduction which we relate with the reproduction of the existing social relationships that provide property and other economic relationships, national institutions and other political powers and religious and family forms« (Williams, 1997, 188). In these related processes we come across different stages of autonomy, because it is known that educational systems are changed within themselves and also in relation to other educational systems. The relationships between the chosen variant of education and the existing dominant social relationships are shown in regulating the curriculum.

Learning in class also has a motivational function which enables a continuous dissemination of the range, quality and type of knowledge, experiences, habits, skills and in this way enriches the learner's psychological life with different emotions, develops his/her positive character and temperament traits and other individual characteristics. The motivation of learner's knowledge can be developed following subjective views and concepts and is carried out by educational influences, or they are formed as a consequence of a learner's view into the problem situation. The motivation to learn shows a direction into developing and changing lower, direct, mostly individual motives into higher, indirect, mostly social motives that encourage a learner to participate in activities where he/she solves contradictions between the personal and the social. When learning a student enters the interactive

communication between learners and a teacher, who performs as an agent between educational goods and generational experiences on one side and the source of education on the other side. Thus the interpersonal communication aspect of learning is not a simple transmission of messages and responding external stimuli, but it is also a human process of reciprocal interaction and a progressive change of a learner's personality.

The importance of cooperation, openness and authentic relationship between a teacher and his/her students play an important part when we discuss such topics. Many times a student with one-sided cultural education and an inexperienced teacher stand on two opposite sides, between them there is »my« culture and »your« culture. The problem of a mutual dialogue occurs which is interrupted at this point. Why? Some teachers, especially primary school teachers, want to become one with the culture of the young, which according to sociological criteria is usually considered as low culture and as such it is consumed by students mostly from the media. Other teachers strictly follow the curriculum, which comprises only high culture. In principle students have too little personal experience in consuming high culture as they want to live the culture of their counterparts, which is normal. So teenagers are left alone with their culture, because the knowledge of imposed high culture, which they do not understand as it is not considered as their culture, is not given to them with formal education. It happens that also teachers disregard/overlook the significance of education that needs to be present in high school and in further education. A situation occurs when on one side we talk about the crisis of values, or we teach a subject where, to our knowledge and experience, such problems do not appear. When a critical cultural dialogue happens, a gap in the dialogue occurs that neither a teacher nor a student are able to overcome.

With mutual confidence and adequate skills of teaching and learning a teacher and a student will find synergy to recognize the riches of culture and how to use them in all dimensions. In my opinion the content of a learning process that is connected with culture needs to be intertwined with all subjects. In some countries a curriculum includes a subject like civic education. We citizens do not live in a sterile cultural environment, that is why in a learning process it is important to create a critical attitude towards cultural life in our living environment and towards the global multi-culture. Teenagers need to experience culture, but they also need to apprehend it verbally, they need to be formally educated about culture. Here primary home environment, learner's parents, stand as their support.

Culture as added value of educational service in school requires much more qualitative work of a teacher in terms of overall quality of service. (E. Salis 1996), which means modern strategies in teaching should be used to understand learning as a self-regulative process and apply modern teaching technology. A teacher's role in a contemporary learning process is to contemplate his autonomy, speculate on his professional skills and other competencies of his professional identity. Thus we may say a teacher is a manager as he plans, organises, directs and supervises the learning process. A teacher achieves to establish a cultural partnership with a variety of teaching methods when he manages a learning process. When he enters a contemporary cultural environment and uses knowledge that is acquired in his lifelong learning a teacher also interferes in the non-formal and informal learning of a student. A teacher's engagement in the process of educational service is neither easy nor simple. His contribution in the diffusion of a cultural partnership in an educational process is not negligible neither enviable.

An Illustration From Slovenia

The proportion of high music culture that students in Slovenian high schools perceive formally with education is very low as it can be seen in the graph. This is the result of educational policy – music in Slovenian high schools is taught only in the first year - two hours a week at most.

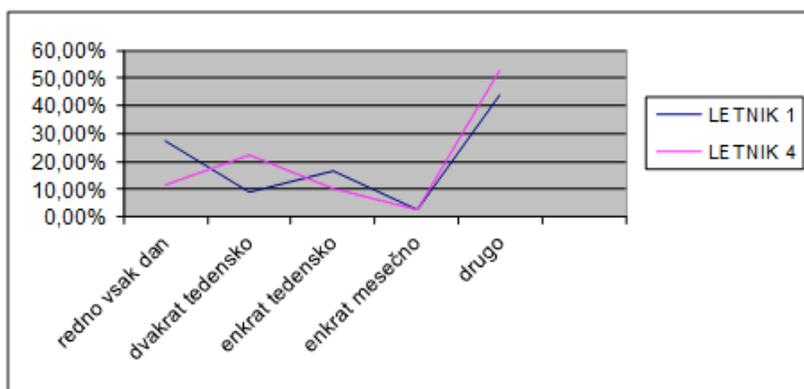


Table 1: Frequency of cultural music activities among high-school students in Slovenia outside school. (Vida Kopač, 2005)

Young people acquire high culture mostly with formal education and low culture mostly informally, partly non formally. Why is this so? Teenagers attain non-formal and informal cultural education through media and in the communication with their counterparts. School curricula somehow avoid focusing on low culture, although it would be useful to explain its phenomenon and critical usage. In any case we can not impose any kind of cultural values or type of culture. Culture is accessible to a man by his free choice.

Cultural policy of one country regulates different cultural areas of its citizens, for example, in the fields of preserving cultural heritage, within the cooperation of cultural institutions, in the distribution and usage of cultural goods; all this contributes to the cultural identity of its citizens. The modern division into public and private is reflected in organising schemes of cultural activities. As Ksenija H Vidmar determined in her first EU report (2012) »the vision of the European culture borrows from the creation of bourgeois cultural spheres and moves them, by dividing them into high and low culture, into the protected zones of controlled cultural activities.« Cultural policy which understands culture in its dynamic, uncertain hybrid meaning is a good base to develop a democratic society (Monica Mokre, 2006). The process of globalisation increases accessibility towards diversity of world cultures - we speak of a multicultural society.

Final Remarks

Contemporary culture has become more and more part of economic strategy, that is why cultural activities need to be considered as a meaningful part of national economies (Strehovec, 1988) A number of national statistics can identify a continuous growth of employment in cultural areas, for example in Great Britain, United States, etc., so culture is becoming an area of meaningful and promising employment as hyperculturation continuously demands new cultural professions in the areas of production and distribution of works of art,

in new technologies, in installations of art events and, last but not least, in giving meaning to culture in a pedagogical process. A contemporary country with a strong European tradition in culture is subject to development and promotion of education, science, research activities, art and other areas of cultural life.

¹ Anthropologist Bronislaw Malinowski (1884 – 1942) defines culture as a whole that is comprised by partly autonomous and partly coordinated institutions. »The consistency and self-sufficiency of each culture is the consequence of the fact that it satisfies a number of basic, instrumental and integrative needs.

¹ The differentiation between high and low culture was artificially created in the second part of the 19th century with postmodernism. High culture is performed in places that have been created for it: theatres, concert halls, museums, galleries. Many times it is connected not only with education but also with the economic strength of its clients/users. Values of low culture are adapted to less demanding users, masses of people and are economically oriented. Low culture can take place in the open space or in places that primarily were not intended to be used for cultural activities.

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Teacher Education for Problem-Based Learning: Evaluation of an In-service Short Course Targeted to Science and Geography School Teachers

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Abstract

Putting Problem-Based Learning (PBL) into practice requires teachers to abandon the role of 'science teller' and to take the role of 'learning guide'. Teachers should not be expected to undergo such a major role change on their own. Then, teachers need both to understand the philosophy underlying the PBL approach and to get some guidance on how to put it into practice into their own classrooms. This paper aims at analysing 37 Science and Geography teachers' reactions towards an in-service PBL course aiming at preparing them to put PBL into practice into their 7th to 9th grade classrooms. Data collected by means of a questionnaire show that participants were happy with the course but they would like to have been allowed to spend more time on some of the activities. In addition, some of them stated that they would like to take a follow up course and to get support when putting PBL into practice.

Keywords: Problem-Based Learning, In-service Teacher Education, Science Teachers, Geography Teachers

Introduction

Problem-Based Learning (PBL) is a student-centered teaching approach that assumes that students can learn by solving problems (Lambros 2004). Due to the success it has achieved in medical doctors' education (Liu et al. 2006), since the sixties (XX century), PBL spread out and was adapted to the education of other professionals, as diverse as engineers and lawyers (Boud, and Feletti 1997). By the turn of the century it entered schools subjects (Gandra 2001; Lambros 2004) and teacher education (Levin 2001) in several countries, including Portugal (Esteves, and Leite 2005). However, as PBL is a recent issue in teacher education programs, most present day in-service teachers have never heard about PBL. As putting PBL into practice requires teachers to abandon their frequent role of a 'science teller' and to adopt the new role of a 'learning guide' (Leite, and Esteves 2012), one should not expect teachers to be able to undergo such major role change on their own. On the other hand, teachers need both to understand the philosophy underlying this approach and to get some guidance on how to put it into practice in their own classrooms before students can feel it as valuable educational approach.

Objective

Due to the novelty of the PBL issue for Science and Geography teachers in Portugal and to the shortage of evaluation reports on teacher education courses for PBL, the objective of this paper is to analyse Science and Geography teachers' reactions towards an in-service PBL

course aiming at preparing them to put PBL into practice into their 3rd cycle (7th to 9th grade classes) classrooms.

Theoretical background

Despite the fact that PBL can have different meanings, ranging from teacher centred meanings to the students centred ones (Savin-Baden, and Major 2004), PBL is often conceptualized as an active learning and student-centred teaching approach. On one hand, in a PBL learning environment, students are at the centre of the teaching and learning process and they play an active role in the learning process as they learn (deeply) by solving problems (Boud, and Feletti 1997; Lambros 2004; Savin-Baden, and Major 2004). On the other hand, in a PBL learning environment, teachers do not teach (in the usual sense). Their job is to stimulate students' curiosity, to provide them with learning opportunities and to guide students' work towards learning (Hmelo-Silver 2004; Leite, and Esteves 2012). In order to ascertain that learning is taking place, teachers need to monitor students' work not only in order to keep them on the task but also to make sure that they are learning what they are supposed to learn.

Teaching science through a PBL approach enables students to learn science content knowledge, as well as learn science procedural knowledge and to develop interpersonal skills (Leite, and Afonso 2001; Hmelo-Silver 2004). The science content knowledge to be learned depends on the requirements of the problems to be solved. Learning science procedural knowledge includes a diversity of contents, among which are those related to how to find and use information sources, how to select and integrate information and how to perform lab and field techniques and skills, etc. Developing interpersonal skills, includes learning how to work cooperatively, how to take into consideration others' opinions, how to share oral, written, graphical, etc. information and how to build up an argument, etc. Interpersonal skills are best developed if PBL is carried out in small groups (Woods 2000) and they are required to share information within the group and among all the groups in the class.

To put PBL into practice either students and/or teacher bring problems to the classroom or the teacher chooses/prepares a scenario from which problems can emerge (Hmelo-Silver 2004; Lambros 2004). In any case, after having the problem statements, students need to reinterpret the problems (Hmelo-Silver 2004; Lambros 2004) under the teacher supervision. Afterwards problems are distributed by the small groups of students, and each group will make plans on how to solve them. Then, they will carry out those plans, and evaluate their own progress on the task. Finally, the whole class discusses the problem solutions (if they exist) and evaluates the methodologies used to reach them. The teacher has an important role to play at this stage as he/she has to help students to overcome some mistaken ideas and to go deeper into other ideas.

Most science teachers may have discussed the problem-solving issue when they were preparing to become teachers or when they attended some in-service teacher education. It should be noticed that PBL includes problem solving but it is underpinned by a quite different philosophy. While problem-solving is often conceptualized as a way of leading students to go deeper into previously acquired knowledge (Pozo, Postigo and Gómez Crespo 1995), PBL sees problems as an approach to learning new knowledge. Thus, for those that are familiar

with problem-solving and use problems in the final part of the teaching sequence, it is quite hard to acknowledge the idea of starting it with problems. For them, problems are seen as knowledge application tasks rather than as learning tasks. In addition, some teachers refuse to accept the idea that students can learn science “on their own” and they therefore tend to reject PBL as a learning approach.

In Portugal, some beginning teachers may have heard about PBL during their under graduation courses (Esteves, and Leite 2005) but most of them are not in the profession due to an existing excess of Science teachers in the country. Therefore, action needs to be taken in order to make practicing teachers familiar with PBL before they can take this approach into their classrooms. It is our belief that having a group of PBL educated teachers in the same school increases probability of PBL being successfully used as a teaching approach. This belief is based on the challenge caused by the change of teacher’s roles required by PBL, as well as, the changes in classroom organization and even on the school subjects’ interrelationships that this approach imposes.

Methodology

Synthesis of the In-service course

A 25 hours in-service course, targeted to Science (Biology & Geology and Physics & Chemistry) and Geography teachers was run by two teacher educators, which are among the authors of the paper. Due to the large number of participants and to the fact that they come from the north and the centre of the country, two editions of the course were organized, one in a school near Oporto and another one a school near Coimbra. The course was expected to lead participants: to be able to develop teaching materials for PBL (of Science and Geography); and to approach Science and Geography themes through PBL, in a disciplinary as well as in an interdisciplinary basis. The syllabus of the in-service course includes issues like: problem versus exercise; problem-solving as a research activity; PBL theory and practice; teaching materials for PBL and assessment in PBL environments. The course acknowledged active methodologies so that participants were asked to analyse teaching resources and materials and to develop teaching materials consistent with the aims of the course. Thus, scenarios were a type of material developed in small groups and discussed with all the participants in the edition of the course. Besides, assessment tools were also analysed and discussed with the participants. After completing the course, participants were invited to put PBL into practice, in their schools, either in a disciplinary or in an interdisciplinary basis, with the cooperation of the authors.

Research methodology

The sample was made of 37 in-service teachers, including 13 Biology and Geology teachers, five Geography teachers and 19 Physics and Chemistry teachers. All those teachers were teaching in nine schools at the north or centre of the country and volunteered to attend the course. Most of them (25) had been teaching for more than 15 years old and also most of them (30) were female. This percentage is in accordance with what happens in the Portuguese teaching population where there are more women teachers than men teachers.

Data were collected by means of a questionnaire developed for the purpose of this study and that concentrates on the following dimensions: teachers’ expectations towards the course; teachers’ expectations fulfilment; teachers’ evaluation of the course; and teachers’

willingness to engage into a follow up course. Teachers answered to the questionnaire individually. As far as data analysis is concerned: open questions were submitted to content analysis in order to identify the frequency of major themes on teachers' answers and for multiple choice questions absolute and relative frequencies per alternative answers were calculated.

Results

As shown in table 1, teachers' reasons for them to volunteer to attend the course have to do with the theme of the course (29), the hosting institution and the teacher educators (19), and teachers' professional requirements (12). Some teachers gave two or more reasons, focusing on the same issue, to enrol into the course.

Table 1: Reasons to register for the course (N=37)

Focus	Reasons	f
Hosting Institution/ Educators (n=19)	Knowledge of the hosting institution	15
	Previous knowledge of the educators	9
	Willingness to cooperate with the project	1
Theme of the course (n=29)	Need of education on the theme	29
	Interest on the theme	2
	Curiosity about the theme	1
Professional requirements (n=12)	Need of credits	9
	Need of professional development	3

Most of the teachers enrolled into the course because they were willing to learn about PBL (29) and nearly half of them (15) did it because they trust the University that was offering the course. Only about 25% (nine out of 37) stated that they enrolled in the course because they need to gain credits to fulfil professional requirements. It is true that teachers are required to gain credits every year but it would not be very interesting to have teachers attending the course motivated by administrative reasons.

As far as teachers' expectations towards the course are concerned (table 2), most teachers focused on the PBL approach (24), a few concentrate on the problem solving (3) and nearly one third on professional development (10). Teachers that focused on PBL stated that they would like to learn the basics of PBL, to develop previous knowledge on PBL or to learn how to put PBL into practice. Only one teacher seemed to spontaneously value PBL as an interdisciplinary approach. This may be due to the fact that teachers are used to working alone in their own school subject, building some bridges to other subjects but without doing joint teaching with colleagues even though the curriculum enables them to do. The group of teachers that concentrated on professional development stated that they would like to update their knowledge base on teaching methodologies and to share teaching experiences. It is interesting to notice that some of them made this expectation explicit because teachers tend to think that they are experts in teaching methodologies and that therefore they do not need further education on that issue.

Table 2: Expectations towards the course (N=37)

Focus	Expectations	f
PBL approach (n=24)	To learn the basics of PBL	11
	To develop previous knowledge on PBL	9
	To learn how to put PBL into practice	9
	To deal with an interdisciplinary approach	1
Problem-Solving (n=3)	To work on problem situations	2
	To deepen knowledge on problem-solving	1
Professional Development (n=10)	To update knowledge on teaching methodologies	9
	To share teaching experiences	3

All teachers stated that their initial expectations towards the course were totally (78,4%) or partly (21,6%) fulfilled (table 3).

Table 3: Expectations fulfilment (N=37)

Fulfilment	f	%
No	0	0,0
Partly	8	21,6
Yes	29	78,4

As shown in table 4, reasons given for partial or total fulfilment of teachers' initial expectations have to do with what they learned about PBL (24), the appropriateness of the methodology used in the course (4), and the chance to look at problem-solving in a new way (2). It is worth pointing out that only eight teachers stated that they learned enough to be able to put PBL into practice. This may mean that the course was not enough to make the majority of the teachers to feel confident enough to teach their school subjects through PBL. Besides, four teachers mentioned that they became aware of PBL powers and limitations. This is important because PBL is not the remedy for all illnesses in education and its efficacy may even depend on students' learning styles (Powell 2009; Leite, Dourado, and Esteves 2011). It is also interesting that two teachers recognized that they learned how to look at problem-solving in a different way. Hopefully, they can now distinguish the traditional problem solving-concept and the way problem-solving is integrated into PBL.

Table 4: Reasons for teachers' expectations total or partial fulfilment (N= 37)

Focus	Reasons	f
PBL approach (n=24)	Learnt enough to put it into practice	8
	Learnt the basic PBL concepts	7
	Deepened knowledge on it	4

	Became aware of its limitations	4
	Felt it interesting and motivating	3
Appropriate course methodology (n=4)		4
New way of looking at Problem-Solving (n=4)		2
Do not answer (n=8)		8

As far as the course formative methodology is concerned, all teachers classified it at least as appropriate but their opinions were divided between the two higher degrees of the scale: appropriate and very appropriate (table 5).

Table 5: Appropriateness of the course methodology (N=37)

Appropriateness	f	%
Not appropriate	0	0,0
Appropriate	18	48,7
Very appropriate	19	51,3

The reasons for the appropriateness of the course methodology focus on diverse aspects (Table 6) but they are all, in some way, related to teaching practice. In fact, they emphasize the relationship between theory and practice (17) and the preparation for practicing PBL in schools (8). A few of them (9) focused on the course methodology itself which was considered well organized, appropriate, interesting, etc. However, one of these teachers mentioned that the course formative methodology was tiring. In fact, teachers were asked to work hard during the course sessions namely to develop, discuss and revise the scenario. Thus, they could perceive that even though it is student centred approach; PBL requires a good amount of effort from teachers.

Table 6: Reasons for the appropriateness of the course methodology (N=37)

Focus	Reasons	f
Theory/practice relationship (n=17)	The activities performed led to a fully understanding of PBL theoretical aspects	11
	There was a good balance between theory and practice	6
Course methodology (n=9)	The practical component was interesting and motivating	2
	An understanding of the difficulties and threats to PBL implementation was provided	1
	Well organized active and interactive approach	4
	Encouragement to develop approaches that fit real contexts	1
	The course methodology was interesting even though a bit tiring	1
Exemplification of PBL (n=8)	Chance to develop tools/teaching materials to use in schools	5
	Chance to experience some PBL stages	3

Do not answer	3
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As shown in table 7, participants found that the course contents were appropriate (59,5%) or even very appropriate (40,5%). However, only 21 (of the 37) teachers mentioned reasons related to knowledge dealt with during the course (table 8).

Table 7: Appropriateness of the course contents (N=37)

Appropriateness	f	%
Inappropriate	0	0,0
Moderately appropriate	0	0,0
Appropriate	22	59,5
Very appropriate	15	40,5

Ten teachers did not explicitly state their reasons for satisfaction with the course contents and six concentrated on the teacher education methodology used in the course rather than on the course contents.

Table 8: Reasons for the appropriateness of the course contents (N=37)

Focus	Reasons	f
Knowledge use (n=21)	Accuracy and deepen knowledge understanding were promoted	13
	Enough knowledge for PBL use was given	4
	Knowledge approached was appropriate for time available	3
	Integration of knowledge from different subjects was promoted	1
Methodology used (n=6)	Synthesis of ideas was promoted	2
	Research on the area was mentioned	1
	There should be more theory at the beginning of the course	1
	There were interesting exchanges of ideas between groups	1
	There should be more time available for discussing group presentations	1
Do not answer (n=10)		10

As far as the duration of the course is concerned, the majority of the teachers found that it was at least appropriate (table 9). However, two teachers stated that it was moderately appropriate. This has to do with the fact that they would like to be allowed to spend more time doing some activities. It should be noticed that even teachers found that the methodology was appropriate or very appropriate, they stated that they would like to have more time to do things like reading and materials (e.g., scenarios) development (table 10).

Table 9: Appropriateness of the duration of the course (N=37)

Appropriateness	f	%
Inappropriate	0	0,0
Moderately appropriate	2	5,4
Appropriate	24	64,9
Very appropriate	11	29,7

Table 10: Reasons for the total or partial appropriateness of the duration of the course (N=35)

Focus	Reasons	f
Learning (n=8)	Learned the basic ideas of PBL	6
	Learned and used the basic ideas of PBL	2
Activities (n=2)	All activities were carried out	1
	There was time for reflection on the activities	1
Time (n=14)	There should be more time to do readings, to develop materials, etc.	12
	Time was well managed	2
Do not answer (n=11)		11

About one third of the teachers did not explain their opinions on the appropriateness of the duration of the course. This may mean either that they did not feel free to tell what they felt or that teachers feel that only what is ill-defined or ill-organized needs to be made explicit in order to be overcome.

About three quarters (28 out of 37) of the teachers stated that they would like to engage into a follow up course (table 11). The remaining quarter (eight out of 37) stated that they were not willing to do so because they must engage into other projects/themes or because they feel that they had already learned enough about PBL. In fact, there were many things going on in the schools (including school based projects and ministry organized courses) and teachers were asked to be engaged in them. Hence, not being willing to engage into a follow up course cannot necessarily be understood as not valuing the PBL issue or feeling that there was nothing else to learn about it.

Table 11: Willingness to engage into a follow up course (N=37)

Follow up	Reasons	f
Yes (n=28)	To get feedback after putting PBL into practice	9
	To learn more on PBL	8
	To get support to put PBL into practice	8
	No justification	5
No	Learned enough about PBL	2

(n=8)	Will be busy with other things	3
	Have learning needs on other themes	2
	No justification	1
Do not answer (n=1)		1

Conclusions and implications

Participants in the course were happy with it as they felt that it was well organized and interesting and led them to understand the PBL approach. However, some participants felt that the course was very intensive and would like to have more time for doing some activities. Most of the participants would like to take a follow up course on the same issue and others would like to get support/feedback when teaching through PBL.

Thus, although teachers feel that they learned the basic ideas of PBL and had the possibility of experiencing phases of this learning approach, some of them nevertheless seem to need support from specialists and school leaders if they are to teach Science and Geography through a PBL approach. The best way to help them to overcome such kind of difficulties is to involve them in cooperative research (Fazio, and Melville 2008; Postholm 2011) so that they can get support to face their fears regarding this new teaching approach and to make an informed and contextualized judgement of its powers and limitations. They should also be encouraged to do it in small (interdisciplinary) groups so that they can support each other and feel how they can not only save time, by avoiding repetitions between school subjects, but also promote knowledge integration in students' minds by vanishing (or at least blurring) the borders between concepts that are traditionally associated to different subjects. Hence, having the opportunity to plan teaching and to develop their own teaching materials would lead teachers to better understand the powers and limitations of PBL but doing it in cooperation with researchers would increase the possibility of success. In fact, this type of cooperative work was done with a part of the participants in the course. Results will be available soon.

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Pre-service and In-service Teachers' Experiences of Engagement in Inclusive Practices

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Abstract

It is currently debatable whether inclusive education enhances and increases the quality of teaching to all students. Accordingly, studies indicate that teachers are increasingly exposed to heavier workloads. This article presents a narrative inquiry of teachers' work engagement regarding various aspects of teaching in increasingly heterogeneous classes in the context of recently reformed inclusive schooling in Finland. The data were collected from 97 pre-service and 72 in-service teachers' narrative essays. The data were content analyzed by using an abductive strategy. The results reveal three approaches to teacher engagement in inclusive settings: homogeneous, didactic-pedagogical, and transformational approaches to teaching. The results of the study contribute to discourse about teacher well-being in terms of improving teaching to better meet the needs of a diverse student population.

Keywords: Teacher engagement, inclusive practices, professional development

Introduction

Since the Salamanca Statement (UNESCO 1994, 2004) there has been an agreement about the basis of inclusive education at the global level. Nevertheless, enhancing inclusive practices is a complex task that can inevitably lead to failure unless the crucial role of teaching has been acknowledged. Thus, inclusive education is increasingly considered to be a precondition for a high quality of teaching for all students. Accordingly, the quality of teachers has been shown to be the most important factor in determining the quality of education that all students receive (cf. Darling-Hammond 2003; Darling-Hammond, Amrein-Bearsley, Haertel & Rothstein 2012; Rothstein 2010).

Therefore, teachers' work engagement (teacher engagement) and inclusive reforms are inter-connected phenomena. The efforts to prepare teachers for inclusion have led to crucial questions regarding the nature of teachers' work, their working conditions, and their *well-being at work* as a whole. This article presents a narrative inquiry into teacher engagement in inclusive settings. The study examined how teachers recount their experiences with teaching: their positions, challenges, and ways of being involved in teaching in recently-reformed, inclusive settings. In addition to a descriptive purpose, I was motivated to explore the notions of equipping teachers for inclusive education through a focus on work engagement.

Theoretical Framework

Despite the ideological consensus about the inclusive education it is currently a debatable notion that varies according to country and has different meanings to politicians, educators, and parents (e.g., Ainscow, Booth & Dyson 2006; Ainscow & Sandill 2010; Forlin 2010; Gao

& Mager 2011; Mäkinen & Mäkinen 2011; Opertti & Brady 2011). The main tensions surrounding inclusion lie precisely in how it is approached and what concepts are perceived to be acceptable in its associated discourse. In some countries, educational policy has promoted inclusive education as the idea of teaching students with disabilities within mainstream education (cf. Starczewska, Hodkinson & Adams 2012). Thus, inclusion is related deeply to locational ideology, according to which the idea of all students being educated together is more important than attitudes towards diversity and the *intrinsic value of learning and growth* as an end in *itself* (Hodkinson 2009).

According to a more broadened understanding of inclusive education, it is currently perceived as a holistic paradigm shift in the relationships between teaching and learning, as well as between teacher and student. As such, the idea of inclusion starts from the understanding that education is a basic human right and the foundation for societal equality (Ainscow et al. 2006; Forlin 2010; Mäkinen & Mäkinen 2011). Inclusion is thus understood as an educational reform that supports and *welcomes diversity* among all students. Therefore, the inclusive shift in education systems also broadly involves the changing character of the teaching profession under the auspices of the local and global forces that shape its direction. The discourses regarding the links between the local and the global are evidently aimed at relocating and repositioning teacher education by reshaping its body and nature (cf. Loomis, Rodriguez & Tillman 2008).

On the basis of the above, teaching has become one of the most complicated and demanding professions insofar as teachers should treat all students equally, regardless of their [dis]abilities, socio-economic status, ethnicity, religion, gender, or location. Consequently, a number of studies (e.g., Fernet, Guay, Sénécal & Austin 2012; Høigaard, Giske & Sundsli 2011; Klassen & Chiu 2010; Santavirta, Solovieva & Theorell 2007; Viel-Ruma, Houchins, Jolivet & Benson 2010) indicate that teachers are increasingly exposed to higher workloads. Many teachers agree that the upbringing of students has recently become an increasingly large part of their work; the classes are more heterogeneous, and they still need to have a broad knowledge of subject matter, learning materials, and classroom management.

Therefore, there is a great interest in obtaining a deeper understanding of the processes that underlie well-being in teachers' work. Since the beginning of the *twenty-first century*, increased attention has been paid to a proactive and positive approach to teachers' daily orientation towards work, which would contribute to welfare instead of stress and strain. In general, the concept of work engagement is currently understood as a positive, work-related state of mind that is characterized by vigour, dedication and absorption (Schaufeli, Salanova, González-Romá & Bakker 2002). Vigour is characterized by high levels of energy and mental persistence while working. Dedication refers to being strongly involved in one's work and experiencing a sense of significance, enthusiasm, and challenge. Absorption is characterized by being fully concentrated and happily engrossed in one's work (Bakker & Demerouti 2009; Schaufeli & Bakker 2004). In short, engaged employees have high levels of energy and are enthusiastic about their work.

In this study, my approach to work engagement is aligned with those views that could be characterized as transactional models. They are focused on the dynamic relationships between working environments and employees' personal ways of experiencing their work. Two examples of transactional models are the Effort-Reward Imbalance (ERI) model

(Siegrist 1996) and the Job Demands-Resources (JD-R) model (Demerouti, Bakker, Nachreiner & Schaufeli 2001). The ERI model focuses on the reciprocity between effort at work and appropriate rewards, and the mismatch between these will lead to stressful experiences (Peter & Siegrist 1999). The JD-R model is currently the most utilized approach in empirical research (Demerouti & Cropanzano 2010; Hakanen, Bakker & Schaufeli 2006; Fernet et al. 2012). According to the JD-R model (Demerouti et al. 2001), job demands refer to the physical, social, or organizational work factors that require sustained psychological effort at work, while job resources represent the factors that may be functional in achieving work-related aims.

The studies on teacher engagement have frequently shown consistent support to Demerouti et al.'s (2001) model by evidencing the primary roles of job demands and resources in burnout. For instance, the interpersonal nature of teaching (Pyhältö, Pietarinen & Salmela-Aro 2011; Fernet et al., 2012) and classroom overload in time pressure put teachers at high risk for being drained of emotional energy which could lead to burnout (e.g., Høigaard et al. 2011; Kaya 2008; Klassen & Chiu 2010; Viel-Ruma et al. 2010). Accordingly, studies suggest that school violence and students' disruptive behaviour could also have a strong negative impact on teacher well-being (Galand, Lecocq & Phillipot 2007; McCormick & Barnett 2011).

Nonetheless, teacher engagement has not received much attention in the context of qualitative research in the field of education. Therefore, it is worthwhile to explore how teachers' work engagement is constructed and connected to the ways in which they experience teaching in terms of inclusive practices.

Research Questions

The present study seeks to explore pre-service and in-service teachers' ways of narrating their teaching experiences in relation to their positions within the classroom and the inclusive school community. These narratives were interpreted in the light of transactional theories of work engagement (Bakker & Demerouti 2009; Fernet et al. 2012; Hakanen et al. 2006; Schaufeli et al. 2002). The research questions addressed in the study are:

- How do teachers narrate their teaching experiences?
- What do these experiences express about their engagement in inclusive settings?

The Study Context

I consider Finland to be an appropriate context for a study of teacher engagement in inclusive teaching practices for at least three reasons. First, the successful outcomes of the Program for International Student Assessment (PISA) surveys (OECD 2001, 2004, 2010) reflect the fact that equity and individual support are the foundations of the Finnish education system. It could be suggested that this cohesion has been achieved through highly-qualified teaching professionals and research-based teacher education programs, which have their foundation in the fact that teaching is rated as being one of the most admired and respected professions in Finland (cf. Skerrett & Hargreaves 2008; Sahlberg 2012; Westbury et al. 2005).

Second, the global pursuit of enhanced inclusive education, as stated in the Salamanca Statement (UNESCO 1994) has been taken seriously in Finland. One *initiative* of the enhancing inclusion is that the current education policy has been updated according to the global declarations. The amended legislation (Basic Education A 2010) is increasingly concerned with student-centered mainstream teaching and further reinforces the learning *support* mechanisms for all *students*. Third, research conducted in Finland has found that teachers have a high risk of burnout. Workload, for instance, both in terms of the mismatch between the demands made upon teachers and their ability to cope with these demands, has been reported as being a leading stress factor (Hakanen et al. 2006; Santavirta et al. 2007). Pyhältö et al. (2011) add that the multiple interpersonal relationships that Finnish teachers have with students and with the school environment, including those with parents and the community, contribute to teacher burnout.

Method

According to Clandinin and Connelly (2000), narrative inquiry is a relevant means of coming to understand one's own experiences. Further, they (Connelly & Clandinin 2006) emphasise narrative inquiry as a methodological response to the positivist paradigms as a way of coping with experiences. Following them, in this study, narrative reflections were understood as teachers' reflective writings of their experiences on their teaching practices in an inclusive schooling environment. According to Moon and Fowler (2008), narrative writing is likely to involve a conscious and stated purpose of reflection with an outcome specified in terms of learning, action and clarification. Following Clandinin and Connelly (2000), the narrative reflections regard both personal and social conditions. Personal conditions refer to the desires, hopes, and feelings of an individual, while social conditions refer to the environment and surrounding factors. Finally, place puts an emphasis on the context in which events and inquiries take place. Narratives were thus considered to be an appropriate strategy because they translate teachers' experiences, in all their complexity and richness, into analyzable data.

Participants

The participants of the study were 97 pre-service teachers and 72 in-service teachers. The pre-service teachers were completing their subject teacher qualifications for secondary and upper secondary schools in multi-disciplinary research universities in the southern part of Finland. The study was carried out in connection with a course entitled "Didactic Practicum II" (DP II). During DP II, the participants presented 25 lessons each and were guided by training school mentors and university lecturers. The in-service teachers were contacted via emailing the teachers' local union mailing lists of the 13 secondary and upper secondary schools near the university. Their schools represented a range of socioeconomic and geographic areas, as well as school types (nine lower secondary schools, with students aged 13–16; and four upper secondary schools, and with students aged 16–19). The in-service teachers had worked in the teaching profession for a minimum of 10 years.

Data

The data presented in this study were collected via the participants' written narratives, which allowed them to examine their experiences, privileges, biases, and assumptions in relation to teaching in the particular context in which they were experienced. Both groups were asked to write a narrative essay on the issue of 'Myself, Learning, and Teaching'. The task

assignment was designed to spontaneously evoke participants' thoughts, refresh their minds and memories, and enable them to write about topics that were of special importance to them. They were also encouraged to think and express their views about what had caught their attention, what had happened in their teaching practices, as well as events, feelings, and thoughts. The pre-service teachers wrote their narratives during the DP II seminars, and the in-service teachers wrote them at home and sent them via e-mail.

Analysis

The data were content analyzed by using an abductive research strategy. Abduction here refers to the processes of moving from the everyday descriptions and meanings given by participants to concepts and categories that create the basis for an understanding of the phenomenon described (Chamberlain 2006). Moreover, this strategy was compatible with the idea of the hermeneutic circle (Coffey & Attkinson 1996), which involves constant interaction with the data and developing an enhanced understanding of the phenomenon studied.

In the analysis, the narratives were considered autonomous texts. No stress was placed on the text structures and the words that the narrators used to build their expressions. However, the narratives revealed the sequences of actions, events, feelings, and thoughts in authentic practice experiences. The findings reported in this article proceed in three analysis stages in order to confirm the high precision by imposing concepts and given meanings (cf. Blaikie 2000). The stages consisted of close reading, categorizing, and summarizing the findings.

During the close reading, I examined the narratives through an iterative reading process in order to gain an overall familiarity with the data. The basic unit (narrative episode) into which the data were organized was determined to be either a complete description of an experience or a shorter perception, such as a notional statement. In the categorising stage, the corpus was first grouped into larger categories, according to which referred primarily the content of experience that teachers had focused their attention. The purpose of this was to draw an initial chart of the categories in a declaratory manner. Thus, these narrative episodes may focus on narrow or wide-ranging experiences of teachers' teaching practices.

The further categorization process involved events and feelings. The narrative episodes at this stage described how the participants reconsidered certain educational issues. These were experiences that clearly bothered them or led them to uncomfortable situations. They were confused by dilemmas, or they had attempted to search out alternative solutions. In the summarizing stage, sub-categories emerged that were situated in three partly overlapping approaches, which appeared to summarize the characteristics of teacher engagement. Teachers' approaches seemed to manifest in terms of three approaches to teaching in inclusive settings: 1) homogenous, 2) *didactic-pedagogical*, and 3) transformational. The consistency of categories was assessed via rechecking the narrative episodes and the quotes in their original contexts in the data¹⁴.

¹⁴ The narrative quotes substantiating the research findings are numbered and coded, disclosing the writer's role as a pre-service teacher (PRE) or an in-service teacher (IN).

Findings and Discussion

The results indicate that there is no one way to understand inclusion or to be an engaged teacher in an inclusive setting. According to the participants of this study, inclusion was not measurable or definable, as Coles and Hancock (2002), Hodkinson (2009), and Ainscow and Sandill (2010) have already stated. Teachers' working and learning environments embody precariousness and plurality in the same space. Instead of seeking an explicit definition of inclusion, the imperative issues were teacher's stances, reflections, and understandings of how they value learning, teaching, and the well-being of every person in their learning communities.

Engaging in Homogenous Teaching

In this category, teachers' narrative episodes primarily concerned content areas, such as teaching performance, subject knowledge, and pedagogical authority. Subject knowledge appeared to be a highly inspiring force for teaching. The episodes also reflected an *area* of worry: how to manage both the classroom and subject matter concurrently. However, in this process, the subject matter was viewed as an isolated property that ought to be delivered to students. The next two narrative episodes describe these considerations:

Maintaining teacher competence primarily requires *keeping up-to-date* with the developments in my *subject area*. (PRE-17)

The problem is that when I prepare a new subject matter topic, along with questions, and I try to give my instructions by asking questions to the students, there are no definite answers to them. I find it irritating. I do think that a teacher's main job is to teach. (IN-15)

The views above seem to show a lack of motivation and ability to support students in the construction of their own knowledge. By contrast, the episodes raised critical questions regarding inclusive settings and teachers' increasingly untenable working conditions. As one in-service teacher put it:

Currently, our inclusive education system appears to be flexible only in one direction. The pupils, who have problems with school work, in my opinion, are taken too much into consideration. (IN-3)

Teachers who expressed these views criticized the renewed national legislation and other stakeholders by arguing that there is a problem that is systemic, not personal, in its nature. This view reflected an understanding of inclusion as a locational policy (Starczewska et al. 2012), along with the idea that each teacher is required to teach all students together by himself or herself. Consequently, these points of view reflect a typical intellectual inclusion ideology (Hodkinson 2009), with a focus on the rehabilitation of those educationally "exceptional" groups.

In terms of work engagement, the analysis indicates that when teachers experienced homogeneous teaching as an unsuccessful effort, they tended to respond by using a denial defense mechanism as a way of reducing subjective misfit and trying to cope with the mismatch between their pedagogical authority and subject knowledge. As Siegrist (1996) has stated, the rewards employees experience are significant in terms of work engagement. Similarly, according to Viel-Rume et al. (2010), teacher efficacy has a direct effect on job satisfaction. Possibly, these teachers' beliefs in their own teacher efficacy were decreased due to their constant disappointments in classroom management and lack of teaching

mastery. Consequently, a few participants concluded that the teaching profession was not what they had expected and had been prepared for in their teacher education programs.

This creates several risks in terms of engagement in teaching. These teachers may not demonstrate *commitment* to *teaching* at all and may show a low level of tolerance and *cynicism* regarding their jobs. For pre-service teachers, this may entail a reality shock when they enter into a teaching career (cf. McCormack & Thomas 2003; Høigaard et al. 2011). Newly qualified teachers may find that are not adequately prepared. This may increase attrition rates among teachers, as various studies (Hanssen, Raaen & Østrem 2010; Shakrani 2008; Ingersoll & Smith 2003) have shown.

Engaging in Didactic-pedagogical Teaching

In this category, teachers' narrative reflections focused on two areas, which were capturing students' interest in the subject matter and student diversity. The episodes reflected the fact that most pre-service and in-service teachers positioned themselves as facilitators of student learning. The teachers seemed to view student differentness as an ordinary part of their teaching practices, which they truly valued, and attempted to see class material and activities from their students' perspectives. In terms of depicting bothersome experiences in detail, the episodes revealed the participants' worries and states of minds to regarding diverse students and their needs and how to effectively cope with instructional alternatives. Finally, the episodes focused on the pedagogical nature of different types of subject matter, as well as on their experiences regarding how to cope with diverse students:

It is hard to explain concepts to weak students very simply. It was a horrible feeling when the student couldn't understand the subject matter and I couldn't come up with any new way to explain it. (PRE-40)

Overall, the teachers adopted certain aspects of *didactic-pedagogical* teaching, paying attention firstly to content and subject knowledge and secondly to teaching methods and strategies. The narrative episodes reflected a didactic foundation that was intertwined with more complex pedagogical thoughts, which emphasized teachers' professional knowledge, where a range of dimensions interact within social contexts for learning and practice, as the following quote illustrates:

I have to be able to read the students, and it is good to consider students' skill levels. Little by little, my experience in this has brought about progress. Teaching is focusing on learning, instead of teaching. This is perhaps the most revolutionary thing that I understood during this teacher program. (PRE-10)

Accordingly, teachers positioned themselves as multi-agents in their learning environment. They realized that the ideas of inclusive education are captured through the ways in which the day-to-day learning practices are organized in their classrooms. These episodes emphasize their attempts to take into consideration the subject matter to be *taught*, learning instructions, and individual and collective student needs simultaneously. These multi-agency activities seemed to be a common problem among teachers, that is to say, the impossibility of meeting all students' needs simultaneously.

Because of their intention to *care* and effectively *teach* students and a deep sense of duty, they tended to internalize instructional and disciplinary challenges as personal failures. Thus, all instructional disappointments that emerged were usually perceived as being due to

limitations in their own professional abilities, and therefore, they were continuously seeking alternative practices. The risk here is that teachers will reflect upon their actions using lenses of judgment (cf. Bailey, Curtis and Nunan 2001). Despite attempts to form strong student-teacher relationships and commitment to teaching, they felt that they could not cope with students' behavioral challenges.

In terms of work engagement, the episodes in this category showed *vigor and absorption*, as well as *feelings of inadequacy and inefficacy in coping with the challenges they experienced in their careers, despite positive attitudes towards teaching. The findings were consistent with those of Santavirta et al. (2007)*, who have found that teachers who perceived their jobs as being high-strain jobs with high demands and low decision authority were significantly more emotionally exhausted and had significantly lower scores in vitality and emotional well-being. The results supported the theory of the "dark side" of work engagement, which suggests that being highly engaged can also have detrimental consequences for the individual (Bakker, Albrecht & Leiter 2011).

Engaging in Transformational Teaching

In this category, narrative episodes mainly focused on two topics, which were considerations of learning as a human activity and teachers' role in fostering good dispositions. In these episodes, teachers positioned themselves as chance-makers in their learning communities for the sake of their students. Change also seemed to energize and refresh them, and they were willing to take risks. In terms describing bothersome experiences, the narratives reflected the participants' concerns and endeavors to make an impact on students' attitudes and beliefs and to employ collaborative practices among students and their colleagues as well.

This kind of empowering teaching meant a constant attempt to enhance the social dynamics of learning and an ability to deal with the ambiguous tensions between despair and confidence. The narratives in this category shared some particular characteristics, which came fourth in the next quote:

I teach mathematics at a secondary school. It is a great feeling to see students' secret potential. I remember one class in which many students' attitude toward school had gone sour. It was due to many reasons, not due to the school or to me. Then, I decided to express my confidence in them at all costs. Little by little, they began to have faith in themselves too. We all felt tangible joy when they *achieved success in their exams*. Bit by bit, I became a part of this small community. I felt so joyful when I discovered that I had gained a sense of belonging and participation with these young people. (IN-35)

These teachers articulated a deep intrinsic motivation to enthusiastically throw *themselves* into their work with students and their learning processes. They also demonstrated how sensitivity in teaching is not a sentimental emotion but rather a combination of trust, confidence, and faith in students and a deep admiration for their strengths, learning, and change. They seemed to be less critical of and frustrated with students' mistakes and misunderstandings. Rather, they were celebrating every small step of learning.

While these teachers were strongly committed to their job and felt satisfied, it did not mean that they do not have any problems to solve. They recognized that while it has been shown that teachers' caring promoted an essential sense of belonging for students (cf. Elias & Schwab 2006), the caring of colleagues was significant for them as well. While they felt unconfident, for instance, in creating effective classroom environments or in managing the

physical and mental stresses experienced in the classroom, they tended to shift their challenges in a positive way.

Through these challenging processes, they seem to be able to observe and reflect upon their work with curiosity instead of judgment (Bailey, Curtis and Nunan 2001). The crucial issue here was how they expressed their engagement with teaching: Despite the various challenges and demands, they perceived teaching as a process of discovery and had a strong sense of optimism and wholeheartedness. These episodes reflected positive attitudes also towards inclusive practices:

Working in an inclusive setting has been a strong learning experience. I have experienced a number of challenging situations, great people, failures, insights, and a sense of competence. (IN-28)

These kinds of perceptions reflect the practice of inclusion, according to which the basis of education lies in the collaborative practices of a school community concerning teachers, principals, students, parents, and other stakeholders. This reveals the fundamental paradigm shift towards a vital inclusive culture (cf. Ainscow & Sandill 2010), in which the diversity of students' learning styles, backgrounds, and behavioral characteristics is viewed as normal and vigorous.

Many of the narratives illustrated teachers' ways of being involved in the movements for social justice. They positioned themselves as forerunners in the fights for civil rights, fair play, equality, and desegregation, among other issues. They seemed to agree with Osguthorpe's (2008) notions of perceiving teachers' having good dispositions and moral characters (i.e., honesty, responsibility, fairness, kindness, compassion, etc.) as being a key to good teaching. They adopted a kind of social contract at work that required them to be what they conveyed.

In terms of engagement, these narrative episodes revealed that these teachers' work engagement could be defined as a positive, fulfilling, work-related state of mind that was characterized by vigor, dedication, and absorption (cf. Schaufeli et al. 2002; Høigaard et al. 2011). The findings were consistent with those studies that have shown that work engagement is positively related to both teachers' classroom performance and their organizational commitment (Hakanen et al. 2006). Additionally, the narratives gave rise to the interpretation that teachers may learn about themselves from students, as Sockett (2009) argued by saying that the interpersonal character of teaching requires teachers to pay attention regarding how to read students and to how to be read by students. Learning was mutually and intrinsically motivating.

Conclusion

The results did not reveal a substantial difference between the pre-service and in-service teachers' engagement. This is quite surprising because I expected maturity and years of experience to construct the fundamental bridge to teaching expertise. Rather, the results reflected the strong impact of teaching stance (Cochran-Smith & Lytle 2004) on determining the characteristics of work engagement in terms of inclusive practices. Teaching stance reflects a combination of attitudes, outlook and character that teachers were wearing introduced by Cochran-Smith and Lytle (2004). It thus described specific positions teachers took towards knowledge, teaching and learning, and their relationships.

In all, it seemed that the more intellectually and emotionally engaged the teachers were, the more deeply they positioned themselves as forerunners of civil rights, equality, and desegregation. Therefore, the teachers who were engaged in transformational teaching were also engaged in more in-depth reflection, specifically when the working conditions became complex and controversial. Reflective actions address, according to these teachers, the implementation of solutions once a given problem had been thought through.

They had concluded that they could not simply be recipients of inclusive reform packages, but must be active partners in the process of changing schools. Before I turn to discuss the contributions that this study may make, I would like to raise one *limitation* that needs to be acknowledged and addressed regarding this *study*.

It is a fact that the data were collected during the same year that the amended legislation (Basic Education Act 2010) was passed. Although inclusive reform had been a topical issue in common parlance for years, the implementation process had just been started by the Finnish Ministry of Education and Culture. Municipalities all over Finland had recently joined in with the work by developing new practices at schools and in-service teacher training (cf. Koivula et al. 2011). Moreover, the topic of inclusive education has been under a curriculum redesign (Mäkinen, Nikander, Pantzar & Saari 2009). This might be why none of the episodes made any reference to new *support* mechanisms. Thus, it is obvious that the implementation of inclusive practices is a long-term effort. *Therefore, it would be beneficial to repeat this study and compare the new findings with the original dataset after a few years. However, the current study offers a framework for reflection on the learning communities of practice in order to scrutinize and negotiate the meanings and intentions of enhancing inclusive culture.*

Furthermore, the results offered at least one additional perspective on teachers' work engagement: Teacher engagement seems to have a deeply interpersonal and social nature. The results indicated, in line with those of Bakker and his colleagues (Bakker & Bal 2010; Bakker et al. 2012), the significance of a school community that respects teachers' initiatives, voices, and demands for themselves and actively takes them into account. Therefore, the findings showed the connection between teacher engagement and decision authority. The results indicate that teachers with high levels of vigor, dedication, and absorption seem to have a sense of autonomy, which could be defined as a satisfying and work-related state of mind with attention being paid to collective efficacy, as introduced by Bandura (1997). This means that focusing on collective efficacy is significant in drawing attention to the ways in which teachers interact with one another while working towards an inclusive teaching culture.

The results also support the earlier findings that reflection and reflective practice is an essential attribute of teaching (e.g., Conway 2001; Kaasila & Lauriala 2012; Zeihner & Liston 1996). In addition, reflective practices are crucial for teacher engagement. Fostering reflective practices within teacher education helps teachers to broaden and deepen their belief systems and states of mind in relation to teaching and prepare them to face complex and increasingly demanding educational contexts. Reflective practices also prepare teachers be more capable of learning from their own and others' experiences.

Moreover, teachers need to be helped to reflect with curiosity and a proactive attitude, instead of using lenses of judgment. Engagement in activities that call for questioning and challenging the prevailing assumptions, beliefs, and attitudes may help teachers to begin to

examine things from a variety of angles. Additional research is needed to elaborate these findings by further examining the relationships between reflection, decision authority, and teacher engagement. Moreover, in order to prepare and empower pre-service teachers in their professional careers, it is imperative to understand more about their first experiences and the factors that may influence their decision to quit teaching.

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Reflective Practice for Professional Development in Teacher Education: Capturing Evidence Informed Practice

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Abstract

Reflective practice for professional development in teacher education is in the foreground of key drivers advanced by governments and education departments worldwide to raise educational standards and maximise the learning potential of all pupils; with an increasing emphasis being placed upon professionals for measures of accountability in terms of evidence based outcomes against prescribed performance criteria (AGQTP, 2008; Barber and Mourshed, 2007; ETUCE, 2008; OECD, 2005; TDA, 2007a; U.S. Department of Education, 2009). The broad consensus arising from recent national and international large-scale surveys is that *teacher quality* is the 'single most important school variable influencing student achievement' (OECD, 2005: 2) and characteristics, which mark teachers at different stages in their careers should be built 'on a concept of teaching as praxis in which theory, practice and the ability to reflect critically on one's own and others' practice illuminate each other' (ETUCE, 2008: 26).

In past decades, terms associated with reflective practice such as the *reflective practitioner* (Schon, 1987), *reflective teaching* (Valli, 1992; van Manen, 1977; Zeichner and Liston, 1996) and the *teacher as researcher* (Ruddock and Hopkins, 1985; Stenhouse, 1975) have been introduced into teacher education and classroom contexts based on the assumption that acquiring skills associated with reflective practice should guide individuals toward becoming more effective practitioners (e.g. Bartlett and Leask, 2009; Day, 2004; Ghaye and Ghaye, 1998; Hatton and Smith, 1995; Moon, 2005; Pollard 2002). Yet, as Furlong and Maynard (1995) persuasively argue, an exploration of concepts and theories, which underpin these terms reveal a number of variations. A further dilemma concerns their widespread usage and common currency as topics of considerable importance in educational discourse, textbooks and research publications wherein little or no reference is made of how these terms are being used: an assumption of shared meanings seems prevalent.

Complex phenomena reside at the heart of reflective practice for professional development in teacher education, which, if the goal to raise teacher quality is to be realised must be unpacked so that constituent components can be fully recognised and understood. This paper presents an innovative framework to capture evidence informed practice based around nine dimensions that have been identified through a synthesis of the literature on *reflective practice* advanced by eminent scholars, researchers and practitioners within the field and thus is highly topical.

Keywords: extended professionals, professional development, reflective practice, teacher as researcher

Introduction

Since the turn of the 21st century there has been much rhetoric, debate and educational reform across the national and international professional landscape concerning what teachers are expected to know, understand and be able to do in addition to what performance standards constitute effective teaching as they respond to demands placed upon them by an increasingly complex society. In the United States *The Secretary's Sixth Annual Report on Teacher Quality* (U. S. Department of Education, 2009: ix) for example states: 'while multiple factors contribute to student success in primary and secondary school, student access to qualified, competent and motivated teachers is critical. Preparing a highly qualified teaching workforce is a major national challenge...The 2001 amendments...provided the blueprint for progress by establishing national requirements for highly qualified teachers, and by setting clear goals for improved student achievement'.

As a response to Degenhardt's discourse about the 21st century Knowledge Era, published in the *Australian Government Quality Teacher Programme* (AGQTP, 2008: 7) Whitby proposed this required teachers who 'were precise about determining the relevance of new knowledge; were flexible, creative and adaptive to change, and who were innately curious people and capable of asking intelligent questions about the world in which they live and work'. In setting out its vision of *Teacher Education in Europe* for today's society, which involved 46 participating countries, the *European Trade Union Committee for Education's* (ETUCE, 2008: 20) policy paper states: 'The demands placed on teachers today in terms of in-depth subject knowledge, advanced pedagogical skills, reflective practice and ability to adapt teaching to the needs of each individual child/pupil/student as well as to the needs of the groups of learners as a whole, require that teachers be educated at a highly advanced level and equipped with the ability to integrate knowledge and handle the degree of complexity which characterises studies at Master's level'.

This policy paper advocates that the professional development of teachers should be evidence based as does the *Teachers Matter* report by the *Organisation for Economic Cooperation and Development* (OECD, 2005: 10-11), which aimed to provide an international comparative analysis of 25 countries to identify characteristics of effective professional development and in conclusion states: 'teachers need to be very active agents in analysing their own practice in the light of professional standards, and their own students' progress in the light of standards for student learning'. Signs of change were identified in some countries, as teachers developed a research role alongside their teaching role through more active engagement with new knowledge and professional development, which focused on the evidence base for improved practice. A cautionary note however was, although a number of standards might serve to identify the knowledge, skills and understanding teachers' must acquire and develop to demonstrate their effectiveness, these cannot be applied in a purely prescriptive manner to guide practice. Characteristics that are difficult to measure yet which can be vital to student learning include 'the ability to convey ideas in clear and convincing ways; create effective learning environments for different types of students; foster productive teacher-student relationships; be enthusiastic and creative; and, work effectively with colleagues and parents' (*ibid*: 2).

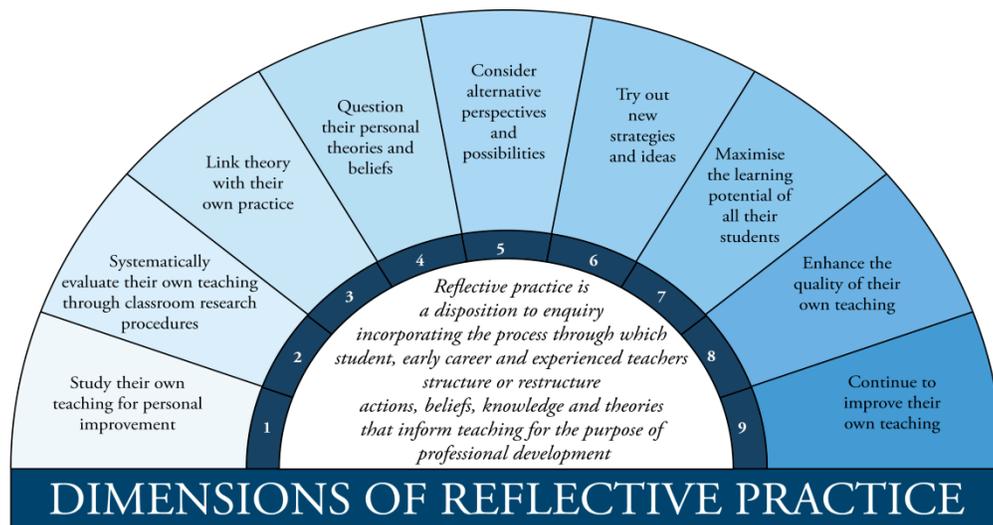
Research undertaken for the *Variations in Teachers' Work, Lives and Effectiveness* project (Day *et al*, 2006: xx) investigated factors contributing to variations in primary and secondary teachers (n=300) effectiveness at different career phases, working in a range of schools (n=100) in different contexts across 7 local authorities in England, and found 'resilience – the ability of an individual to withstand or recover quickly from difficult conditions – may be said to be a necessary quality for all, and especially those who experience changing or challenging circumstances...and...teachers' commitment, underpinned by their sense of vocation, plays an essential role in their endeavours to sustain effectiveness throughout their professional lives in both favourable and unfavourable circumstances'.

As these excerpts illuminate there are numerous variables and complexities inherent within 21st century school contexts, which teachers must navigate and respond to effectively. One recurrent theme, which permeates through these large-scale national and international surveys is the emphasis placed on reflective practice as practitioners assume the role of teacher as researcher to improve the quality of their teaching. The framework presented in this paper, aims to demystify this complexity and provide a vehicle to guide and structure the reflective practice of student, early career and experienced teachers as they strive toward becoming 'extended professionals' (Hoyle, 1974) in the culture of schooling 'envisioned for an increasingly pluralistic society' (ETUCE, 2008: 58).

Reflective practice: captured, framed and defined

Figure 1 illustrates the *Framework of Reflective Practice* based around nine dimensions identified through a synthesis of the literature on reflective practice advanced by eminent scholars, researchers and practitioners within the field. With its associated dimensions of reflective practice this framework provides a specific focal point to guide and structure evidence informed practice.

Figure 1: Framework of reflective practice (Zwozdiak-Myers, 2012: 5)



Situated at the core of this framework, reflective practice is defined as a **disposition to enquiry** incorporating the **process** through which student, early career and experienced teachers structure or restructure actions, beliefs, knowledge and theories that inform

teaching for the purpose of professional development. Two very broad, interrelated strands are embedded within this definition of reflective practice and ways that key proponents describe the salient features within each are identified in the following sub-sections.

(i) Reflective practice as a ***disposition to enquiry*** has at its roots, the early work of Dewey (1933) specifically in relation to the reflective attitudes of *open-mindedness*, *responsibility* and *wholeheartedness*, which he considers to be both prerequisite and integral to reflective action. *Open-mindedness* refers to the willingness to consider more than one side of an argument and fully embrace and attend to alternative possibilities, which requires an active desire to listen to more than one side and recognise that formerly held views and beliefs could be misconceived. *Responsibility* refers to the disposition to carefully consider the consequences of actions and willingness to accept those consequences. Dewey (1933: 32) argues that misconceptions and confusion can arise when individuals 'profess certain beliefs (*yet*) are unwilling to commit themselves to the consequences that flow from them'. *Wholeheartedness* refers to the way in which open-mindedness and responsibility come together through an interest and enthusiasm of some situation or event. As Dewey (1933: 30) writes, 'a genuine enthusiasm is an attitude that operates as an intellectual force. When a person is absorbed, the subject carries him on. Questions occur to him spontaneously; a flood of suggestions...further inquiries and readings are indicated and followed...the material holds and buoys his mind up and gives an onward impetus to thinking'.

Distinctions drawn by Gore (1993) between *recalcitrant*, *acquiescent* and *committed* student teachers in terms of their disposition to think, talk and write about their experiences as learners and as teachers illustrate the significance of Dewey's reflective attitudes. Similarly, based upon evidence of student teachers proclivity to explore pedagogical thinking, LaBoskey (1993: 30) categorises *alert novices* as those who appear to be driven by the desire to continuously look out for something better, who possess the will to know, for which she introduces the metaphor *passionate creed*.

The work of several theorists into the nature of the teacher as a professional, extend Dewey's discourse of reflective attitudes. For example, in distinguishing between *restricted* and *extended* professionals Hoyle (1974) characterises the latter as those who:

- demonstrate a high level of classroom competence;
- exhibit a pupil-centred approach;
- have a high level of skill in handling pupils and understanding them;
- derive great satisfaction from working with pupils;
- evaluate their own performance in relation to perceptions of change in pupils' behaviour and achievement.

Building on Hoyle's work, focusing particularly on the *teacher as researcher*, Stenhouse (1975) argues that the outstanding hallmark of extended professionals is their capacity and commitment to engage in autonomous self-development through systematic self-study. Key attributes he identifies (*ibid*: 143-144) to describe extended professionals as they research their own practice incorporate the need to:

- reflect critically and systematically on their practice;
- have a commitment to question their practice as the basis for teacher development;
- have the commitment and skills to study their own teaching and in so doing develop the art of self-study;

- appreciate the benefit of having their teaching observed by others and discussing their teaching with others in an open and honest manner;
- have a concern to question and to test theory in practice.

Two decades later, the characteristics and attributes identified by Hoyle and Stenhouse respectively, resonate with Eraut's (1994: 232) interpretation of *accountability*, as exemplified when professionals demonstrate a:

- *moral commitment* to serve the interests of students by reflecting on their well-being and their progress and deciding how best it can be fostered or promoted
- *professional obligation* to review periodically the nature and effectiveness of one's practice in order to improve the quality of one's management, pedagogy and decision-making
- *professional obligation* to continue to develop one's practical knowledge both by personal reflection and through interaction with others.

This also finds synergy with Hoyle and John's (1995) exposition of *Professional Knowledge and Professional Practice*, in which they identify *knowledge*, *autonomy* and *responsibility* as central concepts in defining the teacher as a professional. The interrelationship between these concepts has been summarised by Furlong *et al*, (2000: 5): 'It is because professionals face complex and unpredictable situations that they need a specialised form of knowledge; if they are to apply that knowledge, it is argued that they need the autonomy to make their own judgments. Given that they have that autonomy, it is essential that they act with responsibility – collectively they need to develop appropriate professional values'.

The reflective attitudes of *open-mindedness*, *responsibility* and *wholeheartedness* (Dewey, 1933); characteristics and key attributes of *extended professionals* (Hoyle, 1974; Stenhouse, 1975); and qualities of the *teacher as a professional* (Eraut, 1994; Hoyle and John, 1995) signpost how reflective practice as a ***disposition to enquiry*** has been interpreted within this framework. Although articulated some years ago, these same concepts and theories remain highly significant for teachers working within the context of 21st century schools and permeate through the professional standards teachers must evidence to demonstrate personal effectiveness across the national and international educational landscape (AGQTP, 2008; Barber and Mourshed, 2007; ETUCE, 2008; OECD, 2005; TDA, 2007a; U.S. Department of Education, 2009).

(ii) The ***process*** of reflective practice embraces numerous concepts advanced by theorists particularly in relation to the nature of reflective activity and its translation into professional practice. These have been captured within nine discrete, yet interrelated dimensions of reflective practice as shown in Figure 1. Each dimension provides a specific focal point to guide and structure evidence informed practice. Although presented in a linear sequential manner, it is important to note that any dimension can provide the initial catalyst for reflective practice and that each is inextricably linked and related to others in multifarious ways.

Dimension 1: Study their own teaching for personal improvement

An understanding of ***reflection***, how it might be structured and used to guide practice, lies at the heart of self-study and professional development planning for personal improvement.

Dewey (1933) associates reflection with the *kind of thinking* that involves turning a subject over in the mind to give it serious consideration and thought, which incorporates five phases – *problem*, *suggestions*, *reasoning*, *hypothesis* and *testing*. Practitioners must place each

phase within the context of past and future actions and experiences, some might be expanded or overlap dependent upon the nature of the problem. When pieced together the phases form a process of *reflective thinking* which involves 'a state of doubt, hesitation, perplexity, mental difficulty, in which thinking originates, and an act of searching, hunting, inquiring, to find material that will resolve the doubt, settle and dispose of the perplexity' (Dewey, 1933: 12).

Moon (1999: 23) describes reflection as 'a form of mental processing with a purpose and/or anticipated outcome that is applied to relatively complex or unstructured ideas for which there is not an obvious solution'. The capacity to effectively engage in this process requires the development of specific skills e.g. keen observation, logical reasoning, 'analysis, synthesis and evaluation' (Bloom, 1956) as LaBoskey (1993: 30) notes, practitioners must be able to:

describe and analyse the structural features of an educational situation, issue, or problem – *problem definition*; gather and evaluate information as to the possible sources of the dilemma under consideration and to generate multiple alternative solutions and their potential implications – *means/ends analysis*; and, integrate all of the information into a tempered conclusion about or solution for the problem identified – *generalisation*.

Reflection is explicitly linked to Kolb's (1984) theory of experiential learning, which sets out a 4-stage cycle that can be summarised as: immediate or *concrete experiences* (1) provide the basis for observations and reflections; *observations and reflections* (2) are distilled and assimilated into *abstract concepts* (3), which produce new possibilities for action that can be *actively tested* (4) through experimentation which in turn create new experiences. Kolb describes this process as 'self-perpetuating' in that the learner shifts from actor to observer, from direct involvement to analytical detachment, which creates a new form of experience to reflect on and conceptualise. His theory is built on the notion that experiential learning involves re-creating personal lives and social systems rather than the application of a series of techniques to current practice.

Feelings and emotions are woven into Boud *et al's* (1985: 19) approach to reflection as teachers are encouraged to 'recapture their experience, think about it, mull it over and evaluate it' through:

- *association* - relating new data to that which is already known, making links between feelings and ideas we have about teaching;
- *integration* - seeking relationships among the data, making sense of associations in some way;
- *validation* - determining the authenticity of the ideas and feelings which have resulted, trying out new ways of viewing and understanding teaching;
- *appropriation* - making knowledge one's own, taking ownership of new insights and learning to inform future teaching.

These approaches to reflection exemplify how reflection can become a powerful agent of understanding 'self' as practitioners recount not only what they observed in a given context but also their emotions, feelings, ideas and thoughts as to 'future possibilities' (Pollard, 2002), central to which should be a review of teaching in relation to outcomes that were sought (Moon, 1999: Shulman, 1987).

Dimension 2: Systematically evaluate their own teaching through classroom research procedures

Although there is some debate concerning how teachers should conduct their enquiries to resolve teaching concerns, the work advanced by Carr and Kemmis (1986), Cohen, Manion and Morrison (2007) and McKernan (1996) is appropriate here, and Hopkin's (2002: 5) notion that central to the concept of *teacher as researcher* is the 'systematic reflection on one's classroom experience, to understand it and to create meaning out of that understanding' provides a useful springboard.

This interpretation is firmly located within the realm of the practitioner and exemplified through the process of *reflection on action* (Schon, 1987), which teachers use to interrogate their own practice and answer questions about the quality of teaching and learning taking place. This form of critical self-reflection can be viewed as 'the systematic and deliberate thinking back over one's actions' (Russell and Munby, 1992: 3) and described as a 'self-reflective spiral of cycles of planning, acting, observing, reflecting then re-planning, further action, further observation and further reflection' (Carr and Kemmis, 1986: 162), which builds on Kolb's (1984) theory of experiential learning and Boud *et al's* (1985) approach to reflection. Systematically reflecting on the data gathered, lesson-by-lesson, to consider why particular outcomes were realised in the light of a particular strategy is arguably the hallmark of action research and underpins this dimension.

Teachers can be introduced to the time-process model devised by McKernan (1996: 29), which illustrates an important feature of action research, notably, the cyclical nature of an ongoing process to improve the quality and effectiveness of practice. The first stage is to clarify and define the problem and the next is to conduct a literature search to establish current theories and research related to the area. An action plan is then devised which outlines the teaching and learning approaches teachers anticipate they will use, data they will collect and instruments they will use to gather this data. In light of the specific class they will be teaching they plan the first lesson, drawing from the cluster of approaches already identified. They teach this lesson and gather data, which captures pupil response to the teaching; interrogate the data in much the same way as analysing a lesson evaluation and reflect upon and decide how they will teach the following lesson. They then plan and teach the second lesson, collect and reflect on data and so the cycle continues.

Cohen *et al* (2007: 192) suggest 'ideally, the step-by-step process is constantly monitored over varying periods of time and by a variety of mechanisms (e.g. questionnaires, diaries, interviews and case studies) so that the ensuing feedback may be translated into modifications, adjustments, directional changes, redefinitions, as necessary'. In other words, through ongoing formative evaluation, successful elements can be retained and built upon whereas less successful elements can be modified or discarded in light of the teachers' reflections. To that end, research instruments designed to gather specific data related to the focus of their enquiry must be fit for purpose; analysed appropriately by drawing on criteria pertinent to qualitative and/or quantitative research methodologies; and, administered in light of ethical principles which underpin research involving human participants (BERA, 2004).

Dimension 3: Link theory with their own practice

Theories associated with learning to teach emerge from at least two perspectives - *espoused theories* (propositional or explicit knowledge), those seen by a profession to guide action and

encompass the formal philosophy of the profession; and, *theories-in-use* (procedural knowledge and tacit knowing), those patterns of behaviour learned and developed in the day-to-day work of the professional (Argyris and Schon, 1974). This distinction arose from concern that there was a gap between the propositional (espoused) knowledge and theory that purports to underpin professional activity and the reality of how a professional behaves in practice. Schon (1987) argues it is the latter type that more aptly characterises the real behaviour of professionals to which McIntyre (2005: 358) adds 'the kind of knowledge that research can offer is of a very different kind from the knowledge that classroom teachers need to use'. Cultural knowledge provides a third perspective on theories associated with learning to teach. This type of knowledge is also context specific and embedded within the 'shared assumptions and beliefs that are used to perceive and explain classroom reality and to assign value and significance to new information and ideas' (Wilson, 2009: 4).

Although Schon acknowledges professionals must acquire a body of specialised knowledge, he asserts that such knowledge cannot simply be applied in a rule-governed way to guide practice, and presents the view that professionals generate their own *theories-in-use* or personal *epistemology of practice*. At the heart of his discourse is the emphasis placed on *professional artistry* e.g. the repertoire of teaching approaches and strategies practitioners gain from experience provide *exemplars*, *images* and *metaphors* they can draw upon to frame each new teaching situation. *Framing a situation* involves interpreting it one way as opposed to other possible ways and this process must be viewed as experimental since imposing meaning onto the situation by taking action leads to particular consequences, which should then be evaluated. What emerges from his discourse is that *intelligent action* can be shown in the capacity of practitioners to respond effectively in particular situations.

Schon (1987: 25) describes intelligent action as *knowing in action*, which he claims can be intuitive as 'we reveal it by our spontaneous, skilful execution of the performance; and we are characteristically unable to make it verbally explicit'. Although this knowledge is inherent, intangible, intuitive, spontaneous and tacit, it 'works' in practice. He aligns this form of *knowing in action* to *reflection in action* (*ibid*: 28), which occurs when practitioners encounter an unknown situation or a surprise occurrence in the learning environment triggers it off. The process of interpreting and providing solutions to complex and situational problems happens during an action as events unfold.

Day (1999) notes reflection in action can often be very rapid, as split second decisions need to be made and Tickle (2000: 127) cautions that it is not always possible 'to judge the effects of action and to assess the nature of newly created situations, because of the rapid pace of decision making and volatile nature of circumstances in densely populated classrooms and schools...the selection of information may be rapid and impressionistic; the likelihood of information being missed is considerable, and the potential for misjudgement enormous'. This highlights the need for reflection on action through systematic evaluation procedures.

Schon recognises many practitioners find it difficult to reflect on action as whatever language they use descriptions of professional practice will always be *constructions*. Although verbal (re) constructions might seem inadequate this is an important process in learning to teach as it moves practitioners from *knowing in action* toward *reflection on action* (Schon, 1987). The journey serves to make much that was implicit explicit and raise awareness of how they frame unique teaching situations, which enables practitioners to 'ground' (McKernan, 1996)

and 'validate' (Elliot, 1991) curriculum theory through their own practice as they provide reasons for the professional judgments made from an informed evidence base.

The pursuit of linking theory with practice also implies that teachers need to be able 'to analyse critically the research evidence they read as part of their professional role, and to judge its findings and conclusions from a well-informed point of view' (Campbell *et al*, 2003: 2). This builds on Stenhouse's (1983) view that the purpose of educational research is to develop thoughtful reflection so as to strengthen the professional judgment of teachers, which can be realised when teachers subject their own practice to critical scrutiny and rational reflection, informed by literature and research (Humes, 2001).

Dimension 4: Question personal theories and beliefs

Pajares (1992: 309) states that defining beliefs is 'at best a game of player's choice. They travel in disguise and often under alias – attitudes, values, judgments, axioms, opinions, ideology, perceptions, conceptions...implicit theories, personal theories...rules of practice, practical principles, perspectives, repertoires of understanding...to name but a few...' This explains, in part, why conceptions of epistemological beliefs, or beliefs about the nature of knowledge and learning, take on different shades of meaning in the epistemic literature. In traditional philosophical enquiries, conceptions tend to assume universal knowledge claims and absolute truths. By contrast, in cognitively oriented research, conceptions tend to focus on the acquisition of knowledge, organisation of information and justification of knowledge claims in relation to what individuals believe about the degree to which information is true (Schommer, 1994). The latter perspective, which primarily focuses on the nature of intellectual growth and relationship between personal epistemology and learning, is particularly relevant here.

All teachers have personal theories and beliefs about themselves as teachers, their teaching, the nature of knowledge, how learning takes place and their roles and responsibilities within the classroom. Teacher theories and beliefs can be defined as 'a way to describe a relationship between a task, an action, an event, or another person and an attitude of a person toward it' (Eisenhart *et al*, 1988: 138). Research has shown that many of these theories and beliefs are shaped by former experiences e.g. the acquisition of 'folk pedagogy' which reflects certain 'wired-in tendencies and some deeply ingrained beliefs' (Bruner, 1996: 46); 'lay cultural norms [beliefs] ...so strongly ingrained...that most teacher education, as it is currently structured, is a weak intervention to alter particular views regarding the teaching and management of diverse learners' (Tatto, 1996: 155); and, thousands of hours teachers spend as pupils in the classroom that can act as a 'filter or lens' through which they interpret and view the content of initial teacher education and become a major force once they enter their own classroom (Kennedy, 1997; Knowles and Holt-Reynolds, 1991; Zeichner and Tabachnick, 1981).

To understand their own practices it is important that teachers examine personal theories and beliefs as these have been found to influence their perceptions and judgments (Clark, 1988; Ennis, 1994), which, in turn, has an effect on their classroom practices. As teachers' theories and beliefs directly influence pupil learning and development, it is imperative the foundations upon which they are predicated are scrutinised to ensure they are not based on outdated or erroneous information. Failure to periodically re-examine personal theories and

beliefs for their validity in light of new information can lead to mindless teaching or habitual behaviour (Mezirow, 1990).

Zeichner and Liston (1996: 35) suggest personal theories and beliefs become more articulate when teachers engage in the process of reflection. Biases, prejudices, pre-judgments and problem areas can be detected and lead to the modification, reorganisation and shift of established and existing theories and beliefs, which can guide practitioners teaching 'to increase its future educational worth' (Ghaye and Ghaye, 1998: 22). Palmer (1998: 2) highlights the significance of this dimension - 'When I do not know myself, I cannot know who my students are. I will see them through a glass darkly, in the shadows of my unexamined life – and when I cannot see them clearly, I cannot teach them well'.

Dimension 5: Consider alternative perspectives and possibilities

Although questions of significance to teaching and learning can involve private, inner *conversations with self*, Freire (1972) argues the need for practitioners to adopt a *reflective posture*, one that enters the public arena and examines personal experience through *conversations with others*. According to Bruner (1996) we construct ourselves through narrative (language) and by telling stories of our lives can make sense of our lives. The knower is inextricably linked to the known and knowledge making is recognised as an active, creative, interpretive process, in which the telling and retelling of stories provide a framework for the construction of professional knowledge in teaching (Beattie, 2000: Connelly and Clandinin, 1990). At the core of such learning is the teacher's propensity to recognise the importance of working with experience as the context, which shapes the experience also shapes the kind of learning from experience that is possible (Boud and Miller, 1996).

Pendlebury (1995) uses the metaphor *dialogical other* to describe how a conversation between a student teacher and significant other can be structured in a supportive way. Within her three-stage approach, the dialogical other first guides the student teacher to reflect on the aims and means to devise a course of action for a particular situation and teaching group. Second, challenges and critiques this course of action to invite the student teacher to formulate sound justifications for decisions and judgments made and respond to any perceived developmental needs. Third, facilitates the construction of an improved course of action as considered necessary. In this way, the dialogical other simultaneously affirms and encourages the interrogation of the student teacher's own voice (Ruddock and Sigsworth, 1985) and assumes the role of a *critical friend* (Gore, 1993). An important aspect of this process concerns the endeavour to add meaning to what the student teacher claims to know. For some this might be perceived as a threatening experience, particularly when core values and beliefs (Korthagen and Vasalos, 2005) are questioned and improvements to practice advocated. This process incorporates the second component of Freire's *reflective posture* in that conversations not only explore previous experience but also focus on the possibilities of future practice.

Schon's (1987) models of *coaching reflective practice* (e.g. Hall of Mirrors, Joint Experimentation and Follow Me) are designed to show student and early career teachers how a particular setting appears through the eyes of experienced practitioners and how they might frame problems of practice. These models juxtapose two perspectives on learning - learning about learning and learning about teaching, which promotes 'double-loop' as opposed to 'single-loop' learning (Argyris and Schon, 1974). Implicit within such discourse is

recognition that several possible meanings can be associated with any course of action in relation to a particular teaching group within a particular context. From a social constructivist perspective interpretation is a meaning-making process, which requires practitioners to recognise that:

problems do not exist 'out there', ready made, well defined and waiting to be solved...a problem is seen as a human construct which arises out of a particular perception or interpretation formed about a unique educational context with its values and ends; the values, interests and actions of its inhabitants; and crucially, the particular relation of these features to a theoretical perspective which describes and explains them and their interrelations (Parker, 1997: 40).

At the core of this dimension is open-mindedness which Chetcuti (2002: 154-155) describes as the desire to 'listen to more sides than one, to give full attention to alternate possibilities...about the content, methods and procedures used in your classroom. You constantly re-evaluate your worth in relation to the students currently enrolled and to the circumstances. You not only ask why things are the way they are, but also how they can be made better'. Valli's (1992) characterisation of *deliberative reflection*, which involves consolidating several sources of information from a range of perceived experts as the teacher must weigh up competing claims 'to give good reason for the decisions they make' is relevant here, as well as Brookfield's (1996) notion of 'hunting assumptions' through a range of perspectives and lenses e.g. pupils (see Ruddock and McIntyre, 2007), colleagues and theoretical literature.

Dimension 6: Try out new strategies and ideas

Teaching is a demanding profession that requires a complex matrix of knowledge, skills and understanding to judge which strategies are most appropriate in accommodating the needs of different groups of learners and each individual learner. The complex nature of teaching requires that teachers build a range of knowledge bases they can draw upon and relate to their own practice. Building integrated knowledge bases requires an active approach to learning that leads to understanding and linking new to existing knowledge. Moon (1999) presents the view that learners approach their studies with a cognitive structure, a flexible network of ideas and knowledge, shaped by prior learning. This cognitive structure provides the framework within which teachers locate new ideas, and will, if deep learning is to occur, be challenged and modified (transformed) in the process. Moon associates the development of new understandings, insights and increased awareness with *deep* as opposed to *surface* learning. The euphemism *transformative learning* describes situations where teachers are prepared to abandon preconceptions and re-examine their fundamental assumptions about themselves, subject matter and the nature of knowledge.

When teachers ask searching questions of educational practice that arise from their own circumstances and interests they exemplify an active approach to professional learning by seeking new strategies and ideas, evaluating and reflecting on their impact and trying out new practices and ways of working to improve their effectiveness in the teaching environment. As teachers actively critique and challenge what they claim to know the insights gained are expressed in terms of new possibilities for teaching and they reconstruct and reframe personal theories and assumptions about their own practice. Through integrating new strategies and ideas into their own practice teachers take ownership of their teaching as they appropriate (Boud *et al*, 1985) new knowledge, which gives them the degree of autonomy needed to make professional judgments in response to each unique situation.

Moreover, as teachers gain experience and generate their own theories-in-use they can challenge aspects of propositional knowledge that are incongruent with their authentic experience in the real world of teaching (Whitehead, 1993).

In recent years, a number of major trends have taken a central role in the classroom and transformed aspects of the curriculum e.g. awareness of global issues, living in multi-cultural societies, issues of gender and sexuality, as well as the numerous learning opportunities opened up by rapid advances in Information and Communications Technology. To enable capacity building within the personal, interpersonal and organisational structures of 21st century schools the *Australian Government Quality Teacher Programme* (2008: 7) reports that teachers 'should be empowered to pursue and apply new knowledge in an environment that supports professional risk taking'. In turn, this has potential to generate knowledge, be transformative and build the capacity of teachers 'to assess progress and effectiveness' (Phillips, 2007: 395).

Dimension 7: Maximise the learning potential of all their students

The principles of entitlement and inclusion underpin this dimension, which require teachers to ensure that all pupils can access the curriculum by 'setting suitable learning challenges; responding to pupils' diverse learning needs; overcoming potential barriers to learning; and devising assessment appropriate for individual pupils and groups of pupils' (QCA, 2008). The *European Trade Union Committee for Education* (2008: 58) states that education for a multicultural society should strive for 'equality of opportunity to learn, largely through the convergence of three practices: diversity in group, interactive instruction that appeals to a wide variety of learning styles, and an inclusive curriculum'. This can be particularly challenging within 21st century schools as teachers are called upon to deal with 'an increasingly diverse cohort of students (pupils) with different needs, different learning styles and different aspirations' (AGQTP, 2007: 4).

To maximise the learning potential of a diverse range of pupils, whether it be for 'Special Education, gifted and talented or Indigenous students (pupils), post-compulsory students (pupils) pursuing non-mainstream alternatives or simply students (pupils) requiring differentiated instruction in mixed ability classes' (*ibid*) teachers can differentiate their lessons in numerous ways e.g.

- use a range of organisational strategies e.g. setting, individual or group work;
- vary subject content and presentation to match learning needs;
- plan work that builds on pupil interests and cultural experiences;
- use materials that reflect social and cultural diversity and provide positive images of race, gender and disability;
- plan appropriately challenging work for those whose understanding and ability are in advance of their language skills;
- select teaching approaches appropriate to different learning styles;
- plan and monitor the pace of work to ensure all pupils have the opportunity to learn effectively and achieve success (adapted from QCA, 2008).

The recent emphasis in Europe on 'developing transversal competencies amongst pupils...across traditional curriculum subjects and themes' (ETUCE, 2008: 20) and in England on 'personalised learning' (DfES, 2007) illustrate the requirement placed upon 21st

century teachers to tailor learning to accommodate individual aptitudes, needs and interests. This is to ensure all pupils realise their full potential, irrespective of background and personal circumstances. Strategies which aim to target individual achievement might include accelerated learning, assessment for learning, booster classes, goal setting, the use of data. Those that aim to target achievement for all pupils might incorporate active learning, collaborative learning, emotional intelligence and motivation, interventions through questioning, learning to learn, literacy across the curriculum. Considerable emphasis in England is currently placed on the development of Personal, Learning and Thinking Skills (PLTS) (QCA, 2008) and on processes involved in the enactment of learning itself, as Muijs and Reynolds (2005) exemplify:

formal thinking approach: develop logical reasoning so as to apply it in new context;

heuristic approach: deconstruct problems so as to find their solutions;

metacognitive approach: reflect on, and evaluate their own learning.

These approaches aim to give pupils greater autonomy over their own learning in readiness for their role as adults in a rapidly changing world and prepare them 'for a society and an economy in which they will be expected to be self-directed learners, able and motivated to keep learning over a lifetime' (OECD, 2005: 2).

Planning for progression in pupil learning requires teachers to take into account a number of factors e.g. their knowledge of the pupils; theoretical perspectives on how learning happens (e.g. cognitive development, concept development, constructivism, information processing theories, social constructivism) within the teaching process; what constitutes progression in their particular subject area; and what demands are placed upon pupils in relation to specific tasks. The key message here is that teachers should structure and design a range of learning experiences, which enable all pupils to achieve the aims, objectives and intended learning outcomes and these should be formulated in light of the principles and procedures which underpin entitlement and inclusion.

Dimension 8: *Enhance the quality of their own teaching*

Teachers must acquire a range of knowledge bases and models for teaching (e.g. TLRP/ESRC, 2010: Joyce, Calhoun and Hopkins, 2002; McIntyre, 2005; Shulman, 1987; Turner-Bisset, 1999; Wilson, 2009) and consider how they might transform this knowledge into meaningful learning experiences for all their pupils both within specific subject areas and across the wider curriculum in relation to short, medium and long term objectives. This dimension is therefore inextricably linked to the previous one and supports Shulman's (1987) claim that 'what teachers teach' (content knowledge) is as important as 'how they teach it' (pedagogical knowledge). The metaphor *pedagogic expertise* (TLRP/ESRC, 2010: 5) has been used to capture the:

- art of teaching – responsive, creative and intuitive capacities;
- craft of teaching – mastery of a full repertoire of skills and practices;
- science of teaching – research informed decision making;

and combines the complementary needs for personal capacities, professional skills and collectively created knowledge, firmly underpinned by ethical principles and moral commitment. This construct reflects current national and international initiatives, which aim to build a professional knowledge base about what constitutes effective teaching and learning

through combining teacher expertise and research (e.g. Hattie, 2009; James and Pollard, 2006). Systematically reflecting on the outcomes of each lesson and searching for reasons as to why the learning or lack of learning occurred by examining the minutiae and constituent components of teaching, and modifying future planning and teaching on the basis of this reflection, helps teachers to build upon their professional knowledge bases and make professional judgments from an informed evidence base, which should enhance the quality of their pedagogic expertise.

Assessment assumes great significance within this dimension and should provide information, which is aligned to the implementation of specific teaching strategies and approaches, about progression in pupil learning and signal whether misconceptions or gaps in their learning are prevalent. This enables teachers to plan and structure appropriate teaching and learning strategies for subsequent lessons, which as Haydn (2009: 342) suggests, can give rise to a natural feedback loop: 'Assessment ... deliberately and thoughtfully planned into the series of teaching and learning activities for the topic ... encompasses...learning objectives, how to achieve them, teaching, assessing and evaluating... from which a revised set of learning objectives emerge'.

The principles of assessment for learning are embedded within the pedagogical approaches to teaching advanced by the *Department for Education and Skills* (DfES, 2004) in England. As Black *et al*, (2003: 2) suggest, an assessment activity can promote learning 'if it provides information to be used as feedback by teachers, and by their students in assessing themselves and each other, to modify the teaching and learning activities in which they are engaged. Such activity becomes formative assessment when the evidence is used to adapt the teaching work to meet learning needs'.

Dimension 9: *Continue to improve their own teaching*

There is widespread agreement that initial teacher education cannot provide prospective teachers with all the knowledge, skills and understanding required to handle various tasks and meet the strong demands of educational reform and social change throughout their professional career (AGQTP, 2008; Barber and Mourshed, 2007; ETUCE, 2008). Becoming a teacher is increasingly acknowledged 'to be a gradual process, which means that teacher education must be seen as a career-long process placed within the context of lifelong learning' (OECD, 2005: 44).

Continuing professional development (CPD) has been described by Day (1999: 4) as 'the process by which, alone and with others, teachers *review*, *renew* and *extend* their commitment as change agents to the moral purposes of teaching; and by which they acquire and develop critically the knowledge, skills and emotional intelligence essential to good professional *thinking*, *planning* and *practice* with children, young people and colleagues throughout each phase of their professional lives' (Day, 1999: 4). This implies that CPD needs to be built into a teacher's career trajectory from the outset. In England, the Career entry and development profile (CEDP) provides an important bridge between initial teacher education and the newly qualified teacher (NQT) induction year and forms the basis for performance management and ongoing staff appraisal (TDA, 2007b).

The *European Trade Union Committee for Education* (ETUCE, 2008) stresses that the development of new skills, initiatives, teaching methods and ways of working require practice, feedback and training in situ as well as time available outside the classroom. Research has also shown that through working collaboratively with peers and experts in

'communities of practice' (Wenger *et al*, 2002) professionals can contribute to the co-construction of new knowledge and ideas (Bolam and Weindling, 2006; Leask and Younie, 2001; Pickering *et al*, 2007).

The VITAE project (Day *et al*, 2006: xiv) found 'collaborative learning with colleagues within and across schools was rated as a highly important form of CPD'; the OECD (2005: 47) reports a growing interest in ways 'to build cumulative knowledge across the profession by strengthening the connections between research and practice and encouraging schools to develop as learning organisations'; and, Professor Dinham (AGQTP, 2008: 7) reports that encouraging outcomes of the learning communities he witnessed in action were the extent to which 'dialogue and innovation around quality teaching and learning have emerged and reinvigorated mid to late career teachers' and the degree to which 'latent leadership potential has emerged and, in turn, facilitated further change and improvement in the groups, faculties and schools concerned'.

However, the VITAE project (Day *et al*, 2006: xiv-xv) also reports limited time provision for teachers to prepare to work and plan collaboratively and to reflect collectively with colleagues on their practice was the 'main dissatisfaction for over 75% of the teachers...and...70% of teachers across all professional life phases felt that heavy workload, a lack of time and financial constraints were important inhibitors in their pursuit of professional development' (*ibid*). Another source of dissatisfaction was that schools did not seem to offer the range of CPD experiences related to the developmental needs of individual teacher's professional life phases as the experiences were more concerned with in-service courses and events that focused on 'classroom knowledge and skill updating, the implementation of policy and other organisation related matters' (*ibid*).

Although teachers must stay abreast of new initiatives as 'professional obsolescence' could 'enfold all except those engaged in life-long learning' (Knight, 2002: 230) what becomes evident here is they must exercise a degree of professional autonomy (ETUCE, 2008) in response to tensions that can often arise between personal, professional and situational priorities in their quest to continue to improve their own teaching.

The concepts and theories drawn upon to underpin each of the nine dimensions of reflective practice featured in Figure 1, signpost how the **process** of reflective practice has been interpreted within this framework.

Qualitative distinctions in reflective practice

Over the years a number of scholars, researchers and practitioners have also presented concepts and theories, which sought to capture qualitative distinctions in reflective practice, as exemplified in Table 1.

Table 1: Concepts and theories related to qualitative distinctions in reflective practice

Proponent	Focus	Themes
Barnett (1997)	Critical reflection: political-social dimensions	Action, self-reflection and understanding
Baxter Magolda (1999)	Epistemological cognition	Dualist – relativist position
Ghaye and Ghaye (1998)	Reflective conversations	Descriptive, perceptive, receptive, interpretive, critical

Grimmett, MacKinnon, Erickson & Riechen (1990)	Levels of reflective teaching	Technical: instrumental mediation of actions Deliberative: deliberation among competing views Dialectical: reconstruction of experience
Hatton and Smith (1995)	Forms of reflection	Descriptive writing, descriptive reflection, dialogic reflection, critical reflection
Jay and Johnson (2002)	Dimensions of reflection	Descriptive, comparative, critical
King and Kitchener (1994)	Reflective judgment model	Pre-reflective reasoning (stages 1-3) Quasi-reflective reasoning (stages 4 & 5) Reflective reasoning (stages 6 & 7)
Lee (2005)	Depth of reflective thinking	Recall - Rationalisation – Reflectivity
Mezirow ((1990)	Adult learning theory	Habitual action; thoughtful action/understanding; reflection; critical reflection
Moon (1999, 2005)	Critical thinking – metacognition	Surface to deep to transformative learning Dualist – relativist position
Sparks-Langer (1992)	Approaches to reflective practice	Cognitive - narrative - critical
Valli (1992)	Forms of reflection	Behavioural [non reflective] Technical reflection Reflection in action and reflection on action Deliberative reflection Personalistic reflection Critical reflection
Van Manen (1977)	Levels of reflection	Technical rationality: methodology and theory development to achieve objectives Practical rationality: pragmatic placement of theory into practice Critical rationality: value commitment toward educational process

A common thread permeating through these concepts and theories is that the types of discourse or reflective conversations student, early career and experienced teachers engage in are indicative of their development from ‘surface to deep to transformative learning’ (Moon, 1999); progressive stages of ‘epistemological cognition’ (Baxter Magolda, 1999); and, ‘reflective judgment’ (King and Kitchener, 1994). Three broad types of discourse have been synthesised and superimposed onto the framework of reflective practice shown in Figure 1, giving rise to the qualitative distinctions between reflective conversations presented in Figure 2. The terms discourse and reflective conversation are used interchangeably to denote ways of thinking and speaking about teaching as well as of practising teaching (Fairclough, 1998).

Figure 2: Qualitative distinctions between reflective conversations (Zwozdiak-Myers, 2012: 16)



Within any reflective conversation more than one type of discourse may be evident as the conversation unfurls moving from descriptive through comparative toward critical. Thus, although separated out for clarification purposes, each type of discourse can be 'dynamic and fluid' (Ghaye and Ghaye, 1998: 25) and 'intimately intertwined to compose a composite concept' (Jay and Johnson, 2002: 80). Constraints imposed by this paper do not allow a full exploration of each cell within Figure 2 thus, the following sub-sections provide guidance principles, which can be built upon as readers explore its potential within their own context.

Descriptive reflective conversations

This type of discourse is based on concrete experience as teachers examine and frame aspects of their own classroom practice. It can be characterised as a retrospective personal account of teaching, which involves returning to experience (Boud *et al*, 1985) and providing a detailed description of that experience. As individuals experience the world through their own lens, sense of reality or 'form of consciousness' (Stevens, 1996), descriptive reflective conversations enable teachers to search for patterns and trends that can emerge as they try to make sense of their own teaching. Of significance to the ways in which teachers see and interpret any teaching situation are theories associated with different patterns of thinking and of how they construct knowledge (Baxter Magolda, 1999; King and Kitchener, 1994; Moon, 2005).

Teachers can examine the situational, context specific nature of their experience by responding to such questions as: What was taught? How was it taught? Did pupils achieve the intended learning outcomes? What teaching strategies were effective, or ineffective? How do I know? What does this mean? How does this make me feel? How might I do things differently next time?

Different types of question involve different patterns of thinking e.g. 'How was it taught?' requires a reflective process-analysis of the approach that has been followed. It is formative in nature and aims to develop abilities. 'How might I do things differently?' requires a reflective self-evaluation of a particular type of performance using criteria against which judgments can be made. This is summative in nature and aims to develop goals and

standards individuals set for themselves. Cowan (1998) uses the terms *analytical reflection* and *evaluative reflection* to distinguish between these two types of process. The question 'How does this make me feel?' appeals to the affective aspect of a teacher's practice and discourse arising from this question can reveal insights into their disposition to enquiry.

Descriptive reflective conversations have potential for making the implicit explicit (Schon, 1987) and enable teachers to construct a pedagogical vocabulary of shared meanings and understandings (Ghaye and Ghaye, 1998). Teachers must account for their actions and provide reasons as to why they responded to a particular teaching situation in a particular way with a particular group of pupils at a particular moment in time e.g. if the intended learning outcomes were achieved by some pupils, yet not by others, they must question why this was the case. Problems can be identified as teachers analyse what actions might have given rise to particular outcomes and importantly, what the implications are for their future teaching. This provides an important foundation for the generation of 'living educational theory' (Whitehead, 1993) and the development of their personal 'epistemology of practice' (Schon, 1987).

Comparative reflective conversations

This type of discourse requires teachers to reframe the focus of their reflection in light of multiple perspectives, alternative views and possibilities, research findings from literature and their own engagement with prior experiences. Comparative reflective discourse is evidenced when teachers relate personal assumptions, beliefs, theories, values and conceptions of teaching to that of others. It is a meaning-making process, which moves the teacher from one experience into the next 'with deeper understanding of its relationships with and connections to other experiences and ideas' (Rodgers, 2002: 845).

Comparative reflective conversations include such questions as: What alternative strategies might I use in my teaching? What are the advantages/disadvantages of using particular strategies for diverse learners? How might colleagues and/or pupils explain what is happening in my classroom? What research enables me to gain further insights into this matter? In what ways can I improve the ineffective aspects of my practice? Having established learning objectives, in what ways can these be accomplished? How do colleagues accomplish these same goals? For each alternative perspective, whose learning needs are addressed and whose are not?

This type of discourse is essentially 'a deliberation among choices of competing versions of good teaching' (Grimmett *et al*, 1990) and involves moral, ethical and value commitments as well as questions concerning aspects of teaching such as 'how pupils learn' and 'the nature of pedagogy' (Furlong and Maynard, 1995). Teachers come to recognise that meanings are not absolute rather they are embedded in, and negotiated through language (Fosnot, 1996) - a form of contemplative enquiry that involves clarifying the assumptions underpinning teaching. Teachers might for example, believe they divide time equally between each group of pupils within their class or resources they prepared are appropriate for all pupils. However, engaging in discourse with pupils to seek their opinions, views and perspectives might reveal that personal perceptions are markedly different to those of their pupils. This highlights the need for teachers to search beyond personal assumptions and theories as a range of

possibilities concerning one particular aspect of their teaching might emerge dependent upon whose perspectives are considered (Brookfield, 1995).

Teachers also come to recognise that knowledge, or more accurately knowledge claims contain elements of uncertainty, which those who hold these assumptions might attribute to missing information or methods of obtaining evidence. Teachers can expect to have an opinion, to think through issues and express themselves in a valid manner. They also consider colleagues might have useful contributions to make. However, the idea of judging some perspectives as better or worse than others tends to be overlooked. Although teachers might use evidence, they do not necessarily understand how evidence entails a conclusion particularly in light of the acknowledged uncertainty and thus tend to view judgments as highly idiosyncratic. Comparative reflective conversations have resonance with 'transitional knowing' (Baxter Magolda, 1999; Moon, 2005) and 'quasi-reflective reasoning' (King and Kitchener, 1994).

Critical reflective conversations

Critical thinking is at the core of this type of discourse, which Moon (2005: 12) defines as the capacity 'to work with complex ideas whereby a person can make effective provision of evidence to justify a reasonable judgment. The evidence, and therefore the judgment, will pay appropriate attention to the context of the judgment'. Further, the fully developed capacity to think critically 'relies on an understanding of knowledge as constructed and related to its context (relativistic) and is not possible if knowledge is viewed only in an absolute manner (knowledge as a series of facts)' (*ibid*).

This type of discourse is therefore characterised by the acceptance that knowledge claims cannot be made with certainty and teachers make judgments that are 'most reasonable' and about which they are 'relatively certain', based on the evaluation of available data. They believe they must actively construct their decisions, and that knowledge claims must be evaluated in relation to the context in which they were generated to determine their validity. Teachers also readily admit their willingness to re-evaluate the adequacy of their judgments as new data or new methodologies become available. This type of discourse has resonance with 'contextual knowing' (Baxter Magolda, 1999; Moon, 2005) and 'reflective reasoning' (King and Kitchener, 1994).

Critical reflective conversations can be evidenced when teachers ask searching questions about their teaching, which consider the implications behind alternative perspectives and demonstrate a willingness to suspend judgment until these avenues are fully explored e.g. What are the implications of using particular strategies in my teaching when viewed from alternative perspectives? On the basis of these perspectives and their implications what strategies would be the most effective in helping pupils to achieve the intended learning outcomes? Are these learning outcomes appropriate for the diverse range of learners within the class? Why select this particular strategy for this particular group of pupils rather than an alternative? How does my choice of objectives, learning outcomes and teaching strategies reflect the cultural, ethical, ideological, moral, political and social purposes of schooling?

In this type of discourse teachers analyse the wider cultural, social and political contexts, challenge their taken for granted assumptions and question their practice in relation to ideological and equity issues: 'universal consensus, free from delusions or distortions, is the ideal of a deliberative rationality that pursues worthwhile educational ends in self-

determination, community, and on the basis of justice, equality, and freedom' (van Manen, 1977: 227). The complex issues associated with power and politics as they relate to schools need to be understood if teachers are to meaningfully engage in critical discourse about their practice (Ghaye and Ghaye, 1998). This can be exemplified when teachers engage in critical reflective conversations that address questions concerned with 'why' the educational, ideological, political and professional systems of which they are an integral part serve either to constrain or empower them (Barnett, 1997: Carr and Kemmis, 1986; Moon, 2005) which can give rise to 'new understandings of previously taken-for-granted assumptions about practice' (Grimmett *et al*, 1990) and lead to 'a renewed perspective' (Jay and Johnson, 2002).

Concluding thoughts

This paper has sought to demystify the complex multifaceted and multi-layered nature of reflective practice by introducing a framework of reflective practice based around nine dimensions as well as qualitative distinctions between reflective conversations, which provide specific focal points to guide and structure the development of student, early career and experienced teachers as they strive to raise the quality of their teaching and move toward becoming extended professionals in their work within 21st century schools. Although the application of this framework is at an embryonic stage it has been presented to national and international critical audiences and is currently being developed with undergraduate, postgraduate and Masters students across universities in England. Sharing knowledge and ideas within a vibrant community has already begun and this has led to the emergence and exploration of creative tasks and learning pathways that are appropriate for student, early career and experienced teachers both within and across the dimensions of reflective practice. With minor modifications it can also be adapted for use within a range of practitioner-based professions. The current goal is to scale up this research and invite interested readers to become active members of a growing national and international discourse community. Those inspired to join can contact the author at the email address below.

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A Case Study:

Teaching/learning Activities in Schools of Latvia

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Abstract

'Learning results from what student does and thinks and only from what the student does and thinks. The teacher can advance learning only by influencing what the student does to learn.' (Herbert A. Simon, referenced in 'How Learning Works' by Susan Ambrose et.al). It is very important to empower teachers to develop deep understanding of how students learn, so that they can effectively apply and adapt teaching/learning strategies to meet their own goals and their students' needs. The goals for student learning are on the one hand simple, but on the other – complicated; students do not settle just for learning the "stuff" or enough "stuff" for a decent grade; they should be training their minds and sensibilities for a lifetime responsibility of critical, independent thought and commitment to personal and society goals. They should have high expectations of their own efforts and of their teachers' efforts. They should see learning as extending far beyond the classroom to most of what they experience.

Keywords: teaching/learning approaches, skills, teaching/learning methods.

Introduction

Employers around the world are expressing increasing dissatisfaction with the degree to which university graduates can access, evaluate and communicate information; use information technology tools effectively; think critically; solve problems and work well in teams.

21st century learning, in all of its varied expressions, is integrated and interdisciplinary; recognizes increasing globalization; addresses specific skills needed for the 21st century; emphasizes the flexible mindset essential to lifelong learning and focuses on individual student needs.

It is the 21st century student centered classroom that promotes development of students ability to function successfully in a highly technical society that is inundated with iPods, iPads, smart boards, and social skills that will eventually prepare students better for a career that meets 21st century requirements.

A change of instructional paradigm from passive to active learning strategies is clearly needed. In reality it is a shift from teacher-centred teaching to student-centred learning.

Traditional or instructional teaching/learning approach

Instructional teaching/learning (also called traditional or conventional teaching/learning) tends to consider students as passive receptors of information, without consideration of the need to actively participate in the learning process.

However, the shift of paradigms is difficult so the key role in it is played by teachers in schools, the curricular design is based on low levels of student participation. Indeed, it is a non-participatory approach, where students are rarely expected to ask questions or to be actively involved in learning activities. Student motivation within instructional learning settings tends to take the form of competition among students, largely based on grades.

In teacher-centred approach teachers are the key persons delivering the information to students. Most teachers stick to the instructional paradigm where the focus is almost exclusively on *what* is taught.

In terms of learning outcomes it means:

- discipline-specific oral and written information as the main focus,
- lower order thinking skills (e.g. recall, identify, define) based on the regurgitation of 'facts',
- memorisation of abstract and isolated facts, figures and formulas.

In terms of teaching strategies these are prescribed by the teacher and are based on two main principles:

- designed for the 'average' student,
- 'lecturing, note-taking, and memorising information for later recognition or reproduction' (MacLellan and Soden 2004, p.254).

Teachers organise and present information to groups of students; act as gatekeepers of knowledge, controlling students' access to information and direct learning.

Students expect teachers to teach them what is required to pass a series of assessments, act as passive recipients of information and simply reconstruct knowledge and information, without necessarily understanding it.

Student-centred teaching/learning approach

At the European level, SCL has increased in prominence over the past few decades. The Leuven/Louvain-la-Neuve Ministerial Communiqué (Bologna Process, 2009) attests to this – '... education also faces the major challenge and the ensuing opportunities of globalisation and accelerated technological developments with new providers, new learners and new types of learning. Student-centred learning and mobility will help students develop the competences they need in a changing labour market and will empower them to become active and responsible citizens (ibid, p.1).

Student-centred learning (SCL) does not have one universally agreed definition. In spite of the lack of definition, there is a principle which has been agreed by all proponents and researchers of the SCL approach. This is that SCL is based on the philosophy that a student/a learner is at the heart of the learning process. Each student may require different ways of learning, researching and analysing the information available.

Cannon (2000) reveals the essence saying that student-centred learning describes ways of thinking about learning and teaching that emphasise student responsibility for such activities as planning learning, interacting with teachers and other students, researching, and assessing learning.

Student-centred learning, as the term suggests, is a method of learning or teaching that puts the learner in the position of an active doer. (cf. MacHemer et al, 2007, p.9; Boyer, 1990).

Student-centred teaching/learning focuses on the needs, abilities and learning styles of the students. Sparrow (2000) stresses that learning is recognized as an active dynamic process in which connections (between different facts, ideas and processes) are constantly changing and their structure is continually reformatted. The focus is not just on what is taught but on *how* effective learning should be promoted.

Hall (2006) of ESL School wrote that student-centred learning is about helping students to discover their own learning styles, to understand their motivation and to acquire effective study skills that will be valuable throughout their lives. To put this approach into practice, teachers need to help students set achievable goals; encourage students to assess themselves and their peers; help them to work co-operatively in groups and ensure that they know how to exploit all the available resources for learning.

Hall (2006) considers that the main principles of student-centred learning are:

- the learner has full responsibility for her/his learning;
- involvement and participation are necessary for learning;
- the relationship between learners is more equal, promoting growth, development;
- the teacher becomes a facilitator/an advisor.

In spite of the variety of possible methods of implementation and application of the SCL approach, one can nonetheless identify some core aspects of SCL, but the first of these is *innovative teaching*, which has, as its main focus, the manner in which students are able to learn best and which promotes teaching methods which lead them to do so. The innovative teaching underlies the rationale of continuous professional development for teachers.

In terms of *learning outcomes* it means:

- an emphasis on interdisciplinary knowledge,
- strong encouragement of higher order thinking skills, e.g. problem-solving, access, organisation, interpretation and communication of knowledge.

Rust (2002) considers that in terms of intended student learning outcomes SCL means 'a greater emphasis on the development of skills, and in particular, general transferable 'life' skills in the context of lifelong learning (p. 146).

Learning outcomes can be defined as the knowledge, skills and understanding a student would be expected to acquire as a result of the learning experience (cf. European Communities, 2009). Taking a strictly student-centred approach, learning outcomes refer to the achievements of the learner and thus do not relate to the perspective of the teacher or of the teaching process as such.

Learning outcomes may be dealt with both on a programme and lesson level. The use of learning outcomes serves:

- to help students to manage their expectations both during and after their studies,
- as for future employers, it also serves to enhance their employability, as employers can fully understand the extent to which the learning undertaken by potential employees has served to equip them with the knowledge, skills and understanding required for the job in question.

In general terms, learning outcomes should:

- be written in the future tense;
- identify important learning requirements;
- be achievable and assessable;
- use clear language be easily understandable to students.

In terms of teaching strategies, these are based on the following:

- learning strategies are self-paced and designed to meet the needs of individual students,
- students are given direct access to different sources of information (e.g. books, online databases, etc.) and helped to solve a problem/task by making use of these resources.

Collaboration between students and teachers

As teachers have been the main focus in the traditional learning approach, it is with them that the responsibility for a shift towards the SCL starts, the more so that they are responsible for facilitating a learner-centred approach.

So the implementation of student-centred learning asks for a change in teachers' and students' roles, activities and competences. Abel et al (2009, p.6) shows how, as learning becomes less-teacher centred, teachers take on a role which is more that of a 'coach' guiding the student through the learning process. As part of SCL, teachers take on the role of promoting learning by lecturing less, in the traditional manner, and being more around the classroom than in front of it, signifying a shift of power from the teacher to a shared teacher-student relationship, thus creating mutual ownership of the education process (ibid). There should be synergy between teacher's teaching and students' learning.

Within these new roles for both the teacher and the student, the key factor in implementing a new approach to learning, as well as in maintaining it, is motivation, of both teachers and students.

Felder (2009) supports the statement that teaching methods shift the focus of activity from the teacher to the learners in student-centred approach. According to his classification SCL methods include:

- *active learning*, in which students solve problems, answer questions, formulate questions of their own, discuss, explain, debate, or brainstorm during class;

- *cooperative learning*, in which students work in teams on problems and projects under conditions that assure both positive interdependence and individual accountability;
- *inductive teaching/learning*, in which students are first presented with challenges (questions or problems) and learn the course material in the context of addressing the challenges.

Teachers act as facilitators, help students access and process information. This may mean 'less' work in class (as students are directed to solve carefully constructed tasks by themselves and in collaboration with their peers, under the teacher's supervision) but more work outside the class to prepare for the class and evaluate students' work.

Students take responsibility for learning, act as active knowledge seekers, construct knowledge by interacting both with teachers and the data gathered through different sources, with the purpose in mind of solving a problem/task that they have been given. Learning is thus more a form of personal development than a linear progression that the teacher achieves by rewards and sanctions. Errors are seen as a constructive part of the learning process and need not be a source of embarrassment.

The role of different information sources

As methods of teaching and learning develop over time, so do the ways in which knowledge is imparted and the tools that students use to learn.

In order to ensure and arrange the teaching/learning process so that students can cope with real life situations, teachers should have a set of competencies which meet the requirements of successfully, effectively and well-organized student-centred learning process. Teachers supporting SCL understand the need for updating teaching methods to be able to cope with the fast moving world and eventually meet the needs and expectations of the current generation of students.

Arko-Cobbah (2004, p.267) refers to the central role of ICT as a 'central component of the learning process, especially when it comes to SCL'. For example, he refers to the advantages of internet in that 'the internet ... enables education to occur in places where it normally does not, extends resources (information) where there are few, expands the learning day and opens the learning place as it connects place as it connects people, communities, and resources to support learning. Through the use of graphics, sound, video and other forms of interaction, it gives teachers and students alike multiple paths for understanding' (ibid).

Lu et al (2005) show how 'wireless internet has a positive and significant influence on student-centred learning in three dimensions:

- pedagogical
- technological
- cultural (Lu et al, 2005, p.530).

Pedagogically Lu et al (ibid) show how 'wireless internet improves collaboration and communication among classmates and teachers and make[s] class more active and

interesting; technologically, they find that it can provide enhanced access to online resources; and culturally, they show that it 'helps students find information from a variety of sources, adapt[ing]to their personal learning styles and support[ing] critical thinking'.

Arko-Cobbah (2004, p.267) refers to the need to create the infrastructure necessary for students to engage in some form of interaction with teachers, study groups and librarians, in order to lead to the mastery of subject content. This infrastructure includes all forms of media, whether digitised, print or multimedia. Technology therefore can be of use both inside, to help teachers in creating an interactive classroom environment, as well as outside the classroom, in order to enhance students' learning processes and complement what is learnt in a classroom setting. This can empower students to access information and analyse it critically in their own time and space. It can also prove to be a highly useful component in designing professional development programmes, as proposed by Lavoie et al (2007).

Pinto et al (2008) examine the concept of 'information literacy' via the use of information technologies, as a means to 'enable learners to master content and extend their investigation, become more self-directed, and assume greater control over their own learning (Pinto et al, 2008, p.53). Such information literacy technologies may take the form of e-portals via which access to information is made easier (Pinto et al, 2008, p.70).

Arko-Cobbah (2004, pp.268-269) clearly defines the role of libraries and librarians, which, via the use of technology are central to the process of SCL in four key areas, as follows:

- *Providing Information Resources:* In such a way that the library's traditional role of selection, organisation, storage and retrieval of information becomes more crucial as such information needs to be made retrievable in off -campus sites;
- *Fostering Partnerships and Collaboration:* In such a way that librarians collaborate more with teachers of various subjects within a school. This is in order for librarians to help teaching staff in using technology in innovative ways across the curriculum, to select appropriate technology resources and to collaborate with the learning community to plan, design, implement and continually refine an effective studentcentred technology plan. This is also to help students evaluate the sources available to them and to help computing staff to understand students' needs in the design and implementation of ICT-based student-support systems.
- *Developing Students' Information Literacy Skills together with Members of Teaching Staff :* In order to ensure that students know when they need information, identify the information relevant to addressing their problem, find, evaluate, organise and use the information effectively in addressing the problem they are faced with. For this purpose, librarians themselves need to 'be equipped with the skills to deal with people's needs and technological usage in order to maintain the [...] principle of equal access to information; and

- *Developing Outreach Programmes*: In order to ensure that information can be accessed outside the physical walls of the library building, in order to accommodate varied student and teacher needs.

The case study

The case study was carried out in the bilingual secondary school in Latvia. The school is situated in a town which is located very close to Riga, the capital of Latvia. A very convenient geographical location, convenient transportation, and proximity to Riga are the main factors that determine the further development of the town and, of course, the school. Now there are 370 students and 45 teachers in the school.

The aim of this pilot study was to find out which teaching/learning approach is mostly used by Latvian teachers and this particular study involved direct observation. Teaching/learning observation provides a holistic view of learning and teaching in the classroom and includes study of the interactions taking place between the teacher and students as well as among the students themselves. The teachers of four different subjects – Latvian, English, history and mathematics – agreed to take part in that case study. The researcher acted as the mere observer that means without participation. The lessons of those teachers were observed for one week and 3 parameters taken into account:

- type of the methods used during lessons
 - whole class activities
 - small group activities
 - individual work
- frequency of the use of those methods
- time spent for each method (a lesson = 40 minutes)

As the key issue of the observation was the use of different methods during the lessons, a special attention was paid to learning, teaching and resources.

Learning

How well learners learnt and made progress and to which extent students:

- understood the purpose of the lesson and what they were expected to achieve
- worked independently
- acquired new knowledge and skills, developed ideas and increased their understanding
- understood what they were doing, how well they were progressing and what they needed to do to improve
- were stimulated and showed interest in their work.

Teaching

How well teachers met individuals' needs and course requirements and to which extent they:

- showed appropriate knowledge and/or technical competence
- planned sessions effectively and showed productive use of learner's time
- built on previous learning and looked at future learning
- gave clear explanations and instructions and paced the lesson appropriately
- used methods of teaching and learning styles that matched individual learners needs
- ensured all members of the group were involved in learning activities
- identified and redressed poor motivation and inappropriate behaviour
- used assessment methods to inform future planning and present progress.

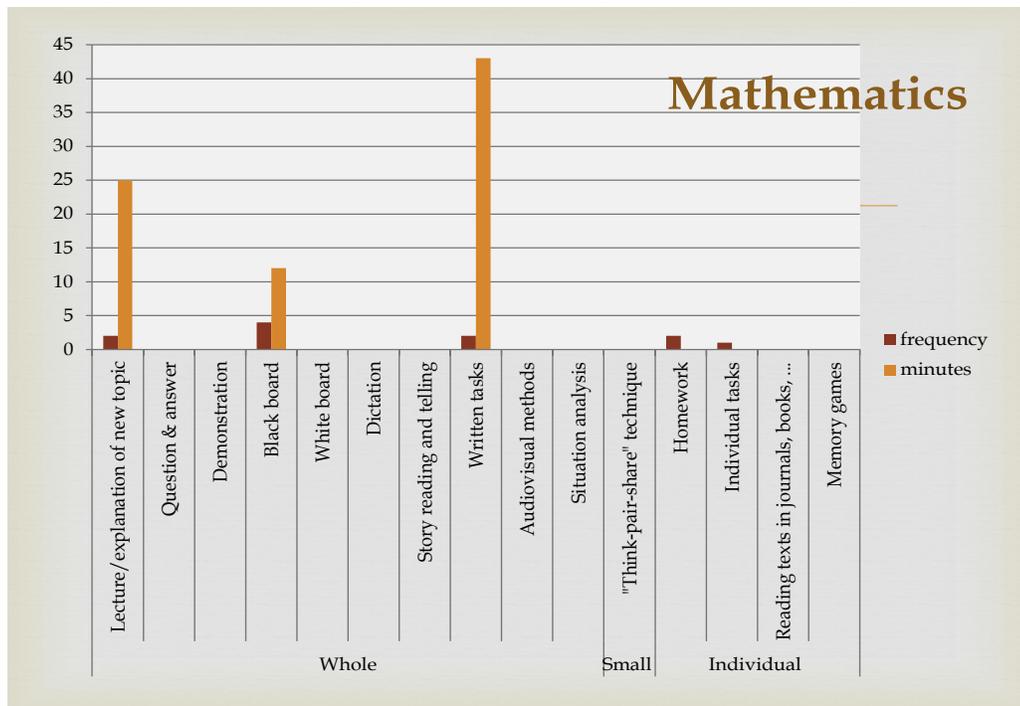
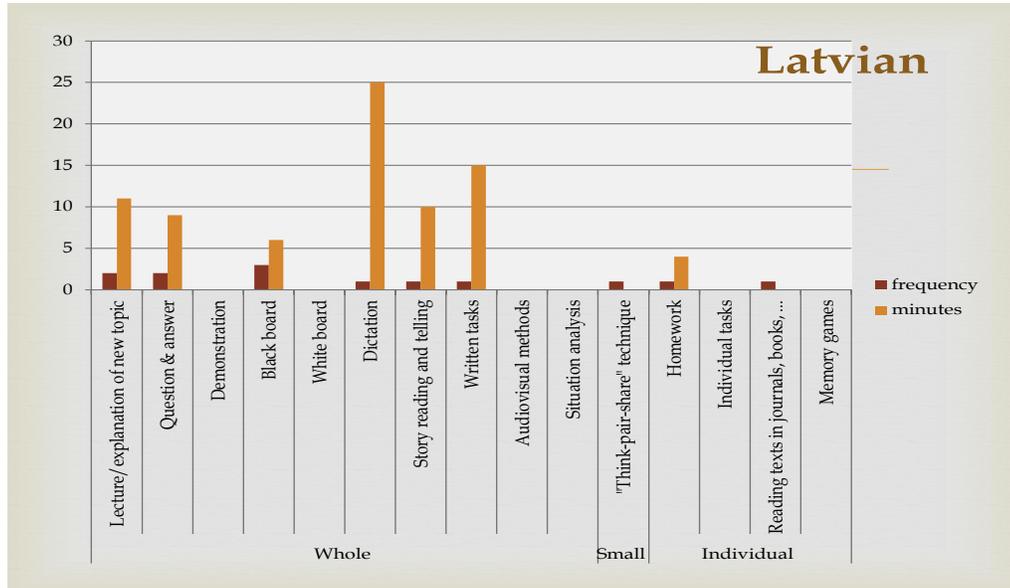
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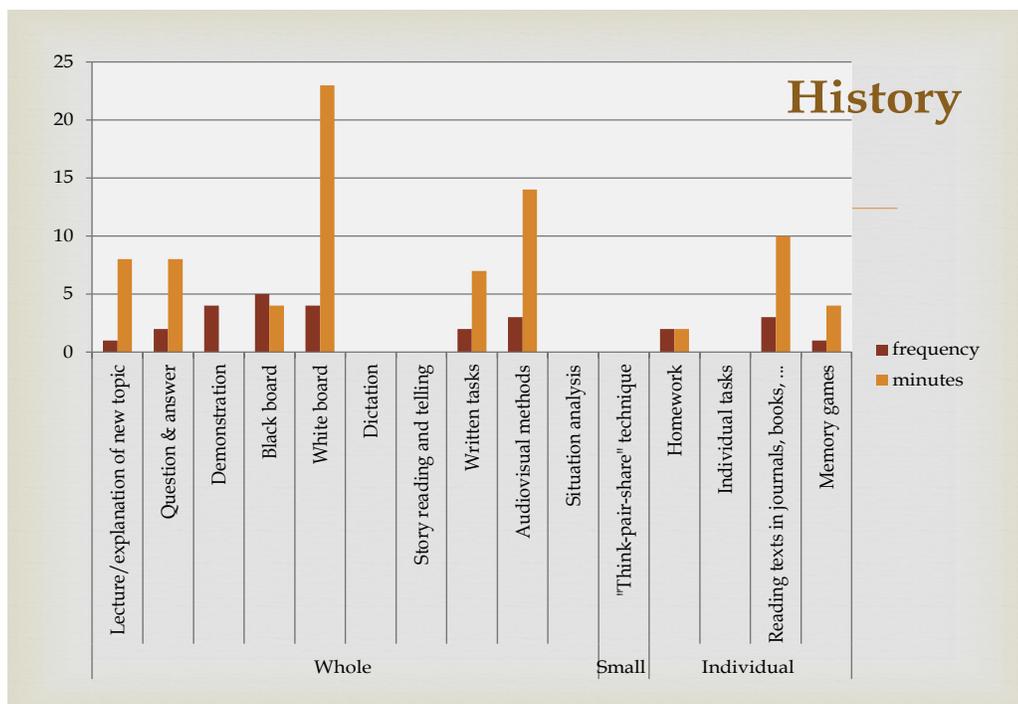
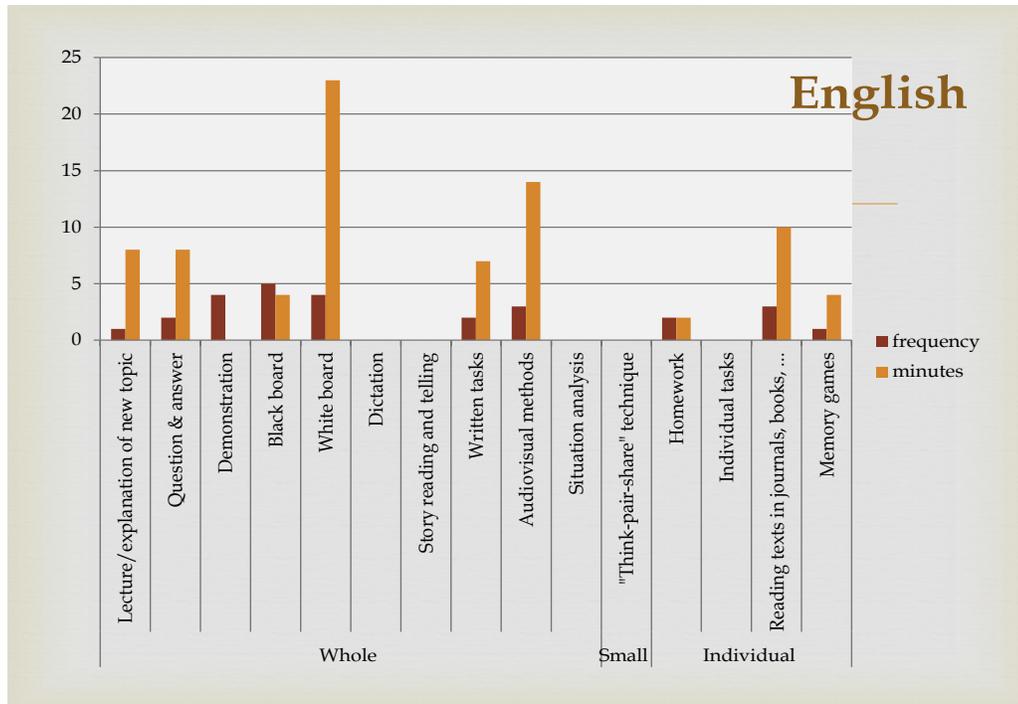
The adequacy, suitability and use of equipment were evaluated and to which extent:

- equipment and materials were used
- accommodation provided a suitable setting for teaching, learning and support for learners
- learning resources and accommodation allowed all learners to participate fully
- learners had access to and made effective use of appropriate learning and ICT resources.

In many literature sources teaching/learning are viewed as separate processes. But teaching and learning in schools is a simultaneous process, it is one unit, accordingly where it is necessary to develop an awareness of the nature of students' learning, the relevance of a teacher's own competences and abilities, and methods for managing the learning process in order to create opportunities for student learning.

But the results of that case study clearly showed that whole class activities, such as lecture, use of black/white board, demonstration done by a teacher, dominated in all lessons of four chosen subjects. Written tasks were widely used during the lessons of Latvian and mathematics, but audio/visual – in English and history. The interactive board was widely used in English. Small group activities like 'think-pair-share' were used in English and Latvian but not so much as whole class activities. Individual activities like homework, memory games, reading texts in journals/books were the most popular. If time spent on those activities during Latvian, English and history did not differ so much then in mathematics written tasks took the most time of the lessons.





The results of the case study gave some insight about of the choice of teaching/learning approaches Latvian teachers use and accordingly the application of the methods during the lessons. Still the traditional or instructional approach with a teacher as a key person and controller of the learning environment is prior to student-centred approach. Teachers play the role of instructors (in form of lectures) and decisions makers (in regards to curriculum content and outcomes.) They regard students as having 'knowledge holes' that need to be filled with information. Although it is very important to help students to develop learning skills such as independent work, initiative, work habits (e.g. homework completion), use of information, cooperation with others, conflict resolution, class participation, problem solving, goal setting

to improve work. The student-centred approach is essential turning point in ensuring development of those skills and putting this approach into practice.

Conclusions

The results of the case study suggest at what issues the continued research should be aimed at. It is necessary to find out whether the same situation exists also in other schools, because it causes danger for students' disability to live and work in the contemporary society and labour market where today's students but future employers and employees are to be able to:

- work effectively with people from different cultural backgrounds,
- work as a team members,
- use information technology tools effectively,
- function creatively and innovatively,
- have ability to solve problems and think critically,
- engage in continuous, independent learning.

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Professional Development of Teachers in Serbia - Beginnings, Current State, Trends

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Abstract

Professional education of teachers is the key issue in every country, as the quality of teaching sector is one of the main factors in student's achievements. This paper provides a historic layout of the course of professional development of teachers in Serbia, clarifies functions of the Catalogue of programs for professional development and explains the ways of implementation of professional development as well as the places where it is realized.

Keywords: teacher, professional development, catalogue, Regional centre, The centre for professional development.

Introduction

The title teacher has been established in 17th century in elementary schools in Europe. The teachers of that time did not have pedagogical education so people from different lines of work were teaching. In the seminars during 18th century teachers started to acquire first professional education. It was expected from teachers in every society and every period in history to be "versatile as an expert and perfect as a person".

Today, it is considered that a teacher should have general, as well as specific education, but also should constantly improve their education continually; meaning that for a teacher with a diploma the acquired knowledge is not enough. A teacher should constantly develop in a professional sense and gather knowledge all their life. Education of one person does not start with school nor does it finish with it, since it is a continuous process in the course of life. The essential characteristic of that process is connecting formal (structural learning that leads to a certificate, diploma), non informal (organized planned education outside the formal educational system, seminars, trainings) and informal education (unplanned individual education (Rosandić et al. 2004).

During the last twenty years, there has been a great deal of expectations and pressure on the education, because both politics and economy consider this sector responsible for the development of the society, creativity, innovativeness and progress. A teacher should have such a professional training so that they are able to respond to the challenges of a society, to be actively involved in the society, prepare the students for independent learning and permanent learning, and to at the same time constantly question the learning process and both their, and their students work. The importance of the teacher's role in the formation of good-quality professionals, is ability to adjust in times of dynamic change is unquestionable and education and improvement of teachers is an important part of improvement of the quality of educational system. That is why needs for new teacher abilities has become an integral part of global, European and national documents that deal with educational policies.

In Serbia there are approximately 120000 teachers that on a daily basis organize educational process, instruction just transfer of information and knowledge affect children with their opinions and values, in that way also affecting the future of a country. New technologies and daily changes of information demand also a change of the role of teachers. The concept of life-long learning (formal + non-formal + informal) and continuous professional development demand a teacher with the ability of critical thinking, knowledge of every student's potential and a teacher able to support every student in the process of learning. It is necessary for a teacher to recognize their own personal strengths and weaknesses in order to overcome them, and their own abilities in order to improve them further. With the scanning of personal weaknesses and abilities starts a new segment in a teacher's professional development.

Professional Development in Serbia – then and now

The concept of the *professional development* of teachers has changed considerably in the course of time, from the concept of "training" - meaning short termed, isolated training with a goal of gathering a certain set of knowledge and skills - towards the systematic approach to continuous professional development of a teacher, which is what Serbian system for professional development strives for. In both theoretical works and researches of educational psychology of teaching and learning processes during the last fifty years the *socio-constructivist* paradigm is dominant. Social constructivism is often associated with socio-cultural theory of Lav Semyonovich Vigotski. Learning and thinking are, in this view, more of a social context, rather than the individual mind. Through discussions with others, sharing ideas, reviewing and checking opposite views, we obtain new levels of conceptual understanding. In teaching process, it implies the interaction of different intellectual activities of children, in different social contexts of learning and with different intellectual content. The focus of teaching is no longer a learning program and its content, but also the learning activity. Key change in the educational process is to redirect the teacher activities, from preparing teachers with content that intends to speak at the moment, to create learning situations that will make students as active constructors of their own knowledge. It seems understands as an independent construction of knowledge of a student. With this concept of the process of learning a teacher is the key partner in an asymmetric interaction, being the one who sets the teaching in the zone of further development of a student and organizes the teaching situation (creates the situation for learning) so that it enables and facilitates the learning of specific materials for a specific group of students a teacher works with (Pešikan, Antic, Marinkovic et al. 2010.).

If a teacher is the key parameter of a good-quality education then their work competence is highly important in the light of the mentioned learning paradigm, and it is a challenge for the system to implement that paradigm through the teacher's beliefs.

In 19th century Vasa Pelagić wrote that teachers are required to, beside the regular education: *"...by reading useful book, newspapers and magazines improve ourselves, sharpen and as far as it is possible make ourselves wise and perfect so that we can use what we have learned in everyday life"* (Pelagić, 1971, pp.62).

Until 1991 professional development of teachers was performed in educational-pedagogical institutes and it was defined through the Law of continuous teacher development. Each teacher was required "...to regularly visit trainings and courses oriented towards the improvement of their professional competence" (Van Balkom and Mijatović 2006). Different

forms of professional development were organized several times a year on a subject chosen by a pedagogical consultant, and target groups were often homogenous-teaching associates, teachers, school principals. Seminars did not have the structure they have today, as they were thematic meetings, exchange of experiences of the practitioners and presentation of examples of positive practice. This period of professional development of teachers and teaching associates can be called “guided” or “centralized” learning, because teachers did not have a perceptible influence on the choice of what they wanted to hear, present or participate in.

After 1991 the role of “leader” in professional development of teachers was taken over by non-government organizations that offer free seminars for teachers and teaching associates in schools. In that period the Ministry of Education was affected by the economic situation, that results with collapse of the country, so professional development of teachers was marginalized. During the 1990s teachers were left to their own assessment and choice. Teaching contents that were offered in that period were very distant from school practice, were not based on needs of curriculum, there was no systematic program, no evaluation of the existing seminars, and frequenting seminars depended only on the teacher’s personal wish, not on the clear needs of school and the system. There was no further supervision of implementation of the acquired knowledge. However, in this way, new work methods entered schools and teachers found out more about communicational skills and conflict solving methods.

However, after 2000, it became obvious that this system of professional development had as a result the formation of good quality leaders who will lead and support the necessary changes in the educational system during the next period of reforms.

After political changes in October 2000, better times for Serbian schools and teachers started, in the sense of an organized system of professional development. A serious reform of the educational system started in 2001 and every serious attempt of change in the educational system demands a certain concentration of dedicated, motivated people. The educational system in Serbia at that moment had a number of teachers who wanted to participate in reforms, give their contribution, and make that changes real (Kovač-Cerović et al. 2004).

The system of professional development became better organized. Certain procedures were established and there was an emphasis on the importance and goals of professional development. Department for professional development of teachers was formed as a part of Ministry of education and sport. The role of this department was to ‘build concepts of continuous professional development of teachers, its implementation and evaluation’⁽¹⁾ Department for school development joined this department in the arias of professional development. It works of educating schools on how to detect needs for collective professional development and how to choose programs from Catalogue.

The main tasks in this period have been analyses of needs of teachers for professional development, as well as connecting different programs of professional development offered by government and non-government sector. However, the whole system became functional whit The Educational Law (2003) and the Code on professional development of teachers, (2005). The code on professional development from prescribes a number of lessons on professional development that - a teacher, kindergarten teacher and teaching associate is

obligated to frequent in the period of five years at least one hundred lessons from the article four of this code: 1) at least sixty lessons from the list of programs from the article six of this code from all the arias 2) up to forty lessons from the list of facultative programs.

The Educational Law (2009) puts an emphasis on the obligation of professional development was pointed out article 12 and the teacher that fails to have personal development can have their licence taken away.

The Catalogue

The basic problems in the field of professional development have been the lack of data-base on programs for professional development, lack of date base of employees, and lack of regulations that would regulate the way of acquiring certificates from seminars.

The solution for these problems was offered by the accreditation of programs and printing of the first Catalogue of programs for professional education for 2002-2003 school year. The Catalogue represents the first systematic offer of various programs for teachers in elementary schools, high schools, and preschool teachers.

Since then, the Catalogue of programs comes out at the beginning of every school year. In the course of 2004-2005 the Catalogue was not published as in that period there has been stagnation in the process of professional education. Even certain departments of the Ministry of Education have been canceled.

The content of the Catalogue-programs of professional development, the process of accreditation and the realization of the approved programs is determined and controlled by the Institute For The Improvement of Education (ZOUV). Each year there is an invitation for applications for the accreditation of programs for professional development, and in ZOUV expert councils are formed for each area, with the task to evaluate and approve (or disapprove) every program. The councils evaluate programs based on already defined standards and indicators. After the approving or disapproving of programs, the list of programs is approved by the Ministry of Education and it decides on which programs are obligatory and which ones facultative.

The list of obligatory programs includes programs that cover pedagogical-psychological knowledge, didactic-methodic knowledge and expert knowledge important for school teachers and kindergarten teachers. The accredited programs, approved and published in the Catalogue, are accessible to every employee in the educational system in Serbia.

As a support for employees in educational system, the institute for improvement of education has published a number of publications = the guide through professional development and improvement of teachers, kindergarten teachers and teaching associates (2007) and The handbook for planning professional development and advancement (2009).

Implementation of Programs For Professional Development

The constant professional development is achieved by a series of activities of an individual, schools, professional organs, the ministry of education, institutes, expert groups, and clubs, and since 2005, there are three Regional Centers for Education, and since 2009, 5 more Centers for Professional Development.

Teachers can choose any program from the Catalogue, frequent seminars and obtain a certificate, that is now a valid document for acquiring a title and renewing the licence. Schools are obligated to establish a plan for professional development every school year, according to their needs, needs of teachers and priorities of the Ministry of education.

Professional development is a condition for acquiring a licence for teachers, kindergarten teachers, and teaching associates, as well as a motivation for teachers and kindergarten teachers to advance. In their professional career teachers can attain various levels, which are defined by certain titles, such as pedagogical adviser, independent pedagogical adviser, senior pedagogical adviser. Teachers provide proofs about their work when they apply for these titles.

Financing of participation in seminars is mostly covered by the budget of local authorities and in other cases by donations, schools, teacher's themselves of the Ministry of Education if a seminar has public importance.

The places where programs and seminars are realized are Regional seminars for Education or Centers for Professional Development, then schools and often even hotels.

Coordinators of programs as well as trainers in seminars are obligated to do a report on each conducted seminar, that includes-evaluation of seminar participants, self evaluation of trainers and lists of participants. The complete report is sent to the Institute, which uses information for the next evaluation and reaccreditation of programs. The Institute conducts and controls the realization of the program-this is external evaluation of program realization.

In the past six years, the most common form of teachers' professional development has been attending accredited seminars picked from the Catalogue. The accreditation system for these programs represents a solid basis to develop a support system in the professional development of every teacher, and therefore it should be further advanced. A good critical review of the overall analyses of the program in the Catalogue is given in a paper of Pešikan et al. (2010.): „The Catalogue should connect, on the one hand, the demands of the educational system (what kind of education is required from the teachers), and on the other hand, everything the teachers (as professionals with a larger or smaller amount of professional experience) need to make decisions on how to manage their careers. Considering its role, what is contained in Catalogue should offer a model of (desirable) development and should guide the teachers' choice of programs. Some other forms of categorising the programs are missing, that could disburden the teachers in the process of deciding on the choice of program“ (Pešikan et al. (2010), pp 3). The authors point out that the concept of the catalogue is based more on the offered programs than on the demands of educational policy. The classification of the program was not performed in advance, but is based on the later received programs. Programs are categorised only as *compulsory* and *optional* (without explicit criteria discerning them), although it would be highly recommendable for them to be classified based on the type of training, i.e. whether they are conceptual by nature, or the kind of programs teaching particular types of behavior; whether the goals to be reached by the training are general, of widely transferous nature, or there is only limited possible transfer narrowed down to certain teaching situations. These are all suggestions useful in contemplating the improvement of catalogue offers of accredited programs, but nevertheless it is fortunate that the accreditation procedure has been included in the system of teachers' professional development.

Attending programs/seminars is the most common form of preprofessional development, it is not the only one, since there are also conferences, round tables, panel discussions, lectures, test classes, writing textbooks, taking part in school projects. Within the planned educational policy, there is enough space for all types of training, but what matter is when, in which order, and to what extent teachers should attend certain types of training.

Regional Centers for Education – Centers for Professional Development

At the end of 2004, Serbia started establishing its Regional Centers for Professional Development of Educational Workers. This was something quite innovative for the local circumstances – very specific institutions, never seen before, with completely specific aims and goals.

Regional Centers have the goal of “scanning” and analyzing the needs for professional development in the portion of the region. They are covering, to coordinate the needs and the offers for professional development, as well as to organize seminars and create new programs according to the manifested needs of the teachers in the region. Furthermore, Regional Centers should support the teachers, professional societies, and independent authors in their region in the accreditation of programs.

Simply put, these are places designed for professional gatherings of educational workers, with the aim of advancing the professional development of the employees, thus contributing to better quality in teaching. A Regional Center is an institution meant to provide the best way if satisfying the educational needs of the population in a region.

Until 2008, three such centers had been formed - Niš, Užice and Čačak. The Regional Center in Niš was established through a project of the Government of the Kingdom of Norway, the Serbian Ministry of Education and the City of Niš. The Centers in Čačak and Užice were formed through the Professional Development Project (PDP), thanks to the memorandum on understanding, signed on 24th July 2003 between the SDC Development and Cooperation Agency (representing the Swiss Government) and the Serbian Ministry of Education.

Since the end of 2008, the entire system of professional development in Serbia has been included in the PDP project. During 2009. and 2010., through this project and thanks to financial aid from Switzerland, Serbia established five more Regional Centers/ Centers for Professional Development, in Leskovac, Kruševac, Smederevo, Šabac and Kikinda, while the Regional Centers in Kanjiža and Kragujevac started working independently, with the financial aid of their local municipalities.

A striking curiosity is the fact that, before 2009, the Educational Law of the Republic of Serbia did not recognize Regional Centers for Education as parts of the Serbian Educational System. This was the case until September 2009, when the Centers became parts of the new Law on the System of Education and Upbringing (Official Gazette of the Republic of Serbia No. 72/2009, article 38), under the title of Centers for Professional Development. Therefore, some sort of 'confirmation' did arrive, the title was changed for no apparent reason but, most importantly, the jurisdictions of the Regional Centers were not yet clearly defined neither by the Law, nor by any bylaw.

Today, all ten centers are connected into the „RC and CPD Network of Serbia“, cooperating and defining collective activities, trying to provide a more useful, high-quality offer of all forms of professional development for teachers in Serbia.

Conclusion

Professional development of teaching staff in Serbia has the goal of training teachers for different roles, as well as independent planning, realizing and assessing the work process, active participation in the development of educational work, and also developing openness towards permanent and continual education. It is a process which requires time, monitoring and support. In order for all of this to be effective, it is necessary to provide high-quality programs, created with previously defined objectives of a certain particular policy.

What is a high-quality program? The answer can partially be found in the latest meta-analysis of the quality of development programs, performed by Guskey and Yoon (2009). This meta-analysis encompasses 1343 studies dealing with the efficiency of PDPs with their potential effects on the quality of students' education. The main characteristics of a high-quality program are: realization through interactive work, conceptual type of training (the principle in connection with a particular content or way), the content of the program should enable either better understanding of lessons or introduction and practice of the ways of teaching (how to make learning efficient).

This analysis highlights the necessity of monitoring and application of programs and advancement based on research results, which is certainly missing in our PDPs. This segment of support requires immediate contact with teachers, students and schools, and is therefore impossible to realize on the national level. Regional Centers and Centers for Professional Development can play a crucial role in monitoring the application of the programs in schools in various ways: as support to principals and professional service, through providing instruments and supporting the authors and implementers of the programs in creating ways of checking the application of the programs, so that, based on feedback, they could improve the existing and create new programs.

To sum up, it can be concluded that, in Serbia, we have a general, legal frame for an effective system of teacher development, but nevertheless it is necessary to improve its ways of operating by improving the system of program accreditation, the Catalogue, program quality, and the system of monitoring. All of this should result in better quality of learning and make Serbia more competitive on the market of knowledge.

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Responses to a Specific Mathematics Survey Comparing Science Majors and Non-majors

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Abstract

The purpose of the research is to investigate how ratios are represented by students attending a small private university in Alabama. The volunteer unnamed participants were asked to complete in 10-15 minutes a one page form which contains the following:

1. What does the term "ratio" mean to you?
2. When do you use ratio?
3. Who else uses ratio?
4. How do you represent ratio using mathematical symbols?
5. Draw several representations of how ratios are used.

The science and non-science majors' responses were analyzed and similarities and differences in answers to the four items listed above were presented. The results were used to give the instructors insight regarding students' concepts in an effort to improve the teaching learning environment. The information will also be used in professional development presentations for teachers.

Keywords: Science majors, Non-science majors, Ratio, Mathematical Symbols

Introduction

During the meeting of the Science and Mathematics Research and Development Centre (RDC) of the 2011 ATEE conference, the RDC members selected a research project related to pre-service and in-service teachers' understanding and use of ratio as determined through their responses to a five-question survey developed by one of the group members, Dr. Sarah Berenson. The project survey was administered by four RDC members, one from Ireland, one from Portugal, and two from the United States. The pre-service and in-service teacher participants were grouped as Primary Teachers (K-6), Secondary Science Teachers (7-12), and Secondary Mathematics Teachers, (7-12).

The volunteer unnamed participants were asked to complete in ten to fifteen minutes a one page form (Appendix 1) which contains the following:

1. What does the term "ratio" mean to you?
2. When do you use ratio?
3. Who else uses ratio?
4. How do you represent ratio using mathematical symbols?
5. Draw several representations of how ratios are used.

The results of the responses and the analyzes of these answers were presented in the Science and Mathematics Research and Development Centre (RDC) at the ATEE Conference in Eskisehir, Turkey , August 25-29, 2012 (Oldham 2012).

As the data was being collected and analyzed one RDC member from the United States had the opportunity to collect data from science major students not enrolled in the education program but who were also enrolled in mathematics and science classes required for the pre-service teachers. This situation called for a new research question: “How are the representations similar and different between science majors and non-science majors?”

Background to the project

The concept of ratio often causes difficulty for school students (Lamon 2007, Livy & Vale 2011, Lamon 2012). Suggestions as to how the topic of ratio can be addressed has been presented by teachers’ journals (Brinker 1998, Beswick 2011). Indeed this is a very complex concept and even teacher educators express differences in how ratio is viewed (Clark, Berenson & Cavey 2003). So it is no surprise that problems are encountered in teacher education regarding this concept (Chick & Harris 2007, Chick 2010).

The RDC has previously addressed topics and methods that span science education and mathematics education. Several papers have been presented involving both the “lesson preparation method” (Berenson et al. 1997, Oldham et.al. 1999) and how textbooks address complex concepts (Leite 1999). Therefore the concept of ratio was a natural choice for the RDC project. The group formulated the following research questions:

- a) What meanings do prospective teachers at primary and secondary levels in Ireland, Portugal and the United States give to the term ‘ratio’?
- b) What multiple representations do these prospective teachers associate with the term ‘ratio’?
- c) Do the prospective teachers’ descriptive meanings and representations indicate different levels of understanding for teaching ‘ratio’ (Oldham 2012)?

The research questions were addressed using a grounded theory approach (Strauss & Corbin 1990). The American version of the data collection questionnaire is shown in Appendix 1. The participants were students in various Education classes and their responses after being converted into English if necessary were tabulated. Codes (categories) were devised for the different categories of responses then entered into spreadsheets and shared among the authors. In some cases the information was adjusted to facilitate comparability of answers among the countries. Next the relative frequencies per question and categories were calculated and emergent themes were examined. The themes were examined in order to address the research questions (Berenson et.al. 2012).

Questions

To address this research question for this paper the responses of thirty seven (37) students in several science and mathematics courses were collected and analyzed. These students were designated as Group I, the Science Majors. The results were then compared to the responses for the sixty four (64) pre-service elementary teachers designated as Group II, the Non-science Majors. Several researchers have supported the possibility of comparing students in having different majors (Sundberg & Dini 1993, Cook & Mulvihill 2008). In the research process the collected data was analyzed and each participant’s response was recorded. Similar responses were calculated in sub-groups and a percentage value was

calculated and recorded (Appendix 2) for each question. The five questions and the sub-groups used for each question are given below:

Question 1: What does the term “ratio” mean to you?

- a. Use of the word “compare or comparison.”
- b. Use of the word “relation or relationship.”
- c. Percent or percentage.
- d. Fraction
- e. Any other term (14 different terms.)

Question 2: When do you use ratio?

- a. Mathematics
- b. Science
- c. Recipes/cooking
- d. Coaching/training
- e. Comparing
- f. Statistics
- g. Other (24 different terms)

Question 3: Who else uses ratios?

- a. Accountants
- b. Statisticians
- c. Teachers
- d. Engineers
- e. Mathematicians
- f. Scientists
- g. Business
- h. Cooks
- i. Everyone
- j. Other (19)

Question 4: How do you represent a ratio using mathematical symbols?

- a. Words only
- b. Fraction
- c. Percent or Percentage
- d. Using ____ to ____ or ____: ____
- e. Drawing
- f. Nothing
- g. Other (5)

Question 5: Draw several representations of how ratios are used.

- a. Fractions
- b. Percentage
- c. Words ____ to ____
- d. _____: _____
- e. Above a + b+ c or +d

- f. Drawings:
 - a. Boxes
 - b. Circles
 - c. Boxes and circles
 - d. Stick figures
 - e. C + D
 - f. Diamonds
 - g. Other (5)
 - h. Nothing
- g. Written explanation

Although there were thirty seven (37) Science Majors and sixty four (64) Non-science Majors involved in the study the students were not limited to the number of responses each could make on any of the five questions as long as the survey was completed in the time allowed. Because there were no limitations on the number of responses the number of responses varied on each question and the calculations with resulting percentages were based on the number of total responses for that question designated as “N” for that question. The number of students in each group remained the same with thirty seven (37) in Group I, the Science Majors group and sixty four (64) in Group II, the Non-science Majors group.

Comparisons

Comparison of Groups I and II for Question # 1

For question 1, “How does ratio mean to me?” there were forty five responses from Group I and sixty seven responses from Group II with the greatest percentage of responses containing the term “comparison” in both groups. Group I had 51.11% (N=45) using the term while Group II had 44.80% (N=67) using the term. The second most common term used in both groups to explain ratio was “relation or relationship” where Group I had 17.78% (N=45) and Group II (N=67) had 11.80%. The selection “Other” was selected by Group I at 11.11% and Group II at 29.40%.

Comparison of Groups I and II on Question # 2

For question 2, “When do you use ratio?” there were sixty one (61) responses from Group I and one hundred thirteen (113) from Group II. Both groups had the greatest number of responses as “Mathematics” in which Group I had 34.40% while Group II had 24.78% using the term. The second most used term for Group I was “Science” with 18.03% of the responses while Group II used the term “Comparing” with 23% of the responses using this term. Only 9.84% of the responses of Group I used “Comparing.” Only 6.19% of Group II used “Science” as a response. The selection “Other” was selected by Group I at 14.75% and Group II at 37.20%.

Comparison of Groups I and II on Question # 3

For question 3, “Who else uses ratio?” there were seventy two (72) responses from Group I and ninety nine (99) responses from Group II. Group I selected “Scientists” and

“Mathematicians” as the top two responses at 18.06% and 15.28% respectively while Group II selected “Teachers” and “Scientists” at 21.21% and 11.11% respectively. The selection “Other” was selected by Group I at 6.94% and Group II at 36.36%.

Comparison of Groups I and II on Question # 4

For question 4, “How do you represent ratio using mathematical symbols?” there were fifty five (55) responses from Group I and eighty two (82) responses from Group II. Both groups selected using ____to ____ or ____:____ as the number one selection with Group I at 58.18% and Group II at 58.54%. Both groups selected “Fractions” as the second most frequently selected item with Group I at 29.09% and Group II at 25.61%. The selection “Other” was only 3.64% and 7.32% for Group I and Group II respectively.

Comparison of Groups I and II on Questions # 5

For question 5, “Draw representations of how ratios are used” there were sixty four (64) responses for Group I and ninety three (93) responses for Group II. Both groups selected “Fractions” as the most frequent selection at 21.88% and 16.13% for Groups I and II respectively. The second most numerous selection was “____:____” for both groups at 42.19% and 33.33% for Groups I and II respectively. The selection “Other” was 3.13% for Group I and 20.43% for Group II.

Discussion

The responses to the five question survey were collected categorized and then analyzed by numbers of responses in two different groups (Group I and Group II) of volunteer students attending a private liberal arts university in Alabama. Group I represented Science Majors in mathematics and science classes and Group II represented Non-science Majors all who were pre-service elementary education students. There were thirty seven volunteers in Group I and sixty four volunteers in Group II. The possibility of comparing students in two different fields is supported by several researchers (Sundbery & Dini 1993, Cook & Mulvihill 2008).

The two most frequent responses from both groups on the questions one, two, four and five were very similar even though the actual percentage values were not the same. The responses to question three (“Who uses ratio?”) differed in the two groups with Group I selecting, “Scientist” at 18.06% and Group II selecting, “Teachers” at 22.21% for the most frequent selection. For the second most frequent response Group I selected, “Mathematicians” at 15.28% and Group II selected, “Scientists” at 11.11%. Both groups recognized the “Scientist” selection as important in using the term “ratio.”

It was noted that both groups had the selection “Other” in all of the five questions. Group II had the highest percentage of “Other” in all questions and although Group I did have “Other” as a possible selection it was always a low percentage. A possible explanation of this phenomenon is that the Group I students were preparing to teach in elementary schools and had a greater variety of subjects required in the liberal arts university while Group II students who were all Science Majors were studying primarily science and mathematics courses and applied the scientific and mathematics’ chain of thought to their selections on the survey.

Information gained from this study could be used by teachers in the mathematics and science courses required for the Science Majors to include numerous examples of how ratio is used and by whom. Teachers in the schools of education need to continue giving the broad explanations of who uses the term “ratio” and how it is used so that the pre-service teachers will be prepared to explain this term and use it to the benefit of their students.

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Appendix I

Survey on Ratio

We are conducting an international study with Ireland and Portugal concerning pre-service and in-service teachers' ideas of ration. You do not have to put your name on this paper. We will use your ideas to inform teacher educators from around the world who attend the annual conference of the Association of Teacher Educators in Europe next summer. Many thanks for your cooperation.

What does the term "ratio" mean to you?

When do you use ratios?

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Who else uses ratios?

How do you represent a ratio using
how
Mathematical symbols?

Draw several representations of
ratios are used.

|
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|

Circle all that describes you, your level, and your concentration: pre-service teacher or in-service teacher" elementary, middle, or high school? Mathematics, science, or other?

Appendix II

Question 1: WHAT DOES THE TERM "RATIO" MEAN TO YOU?

GROUP I			GROUP II		
		%			%
Science Majors			Non-Science Majors		
N=45 Responses (37 participants)			N= 67 Responses (64 participants)		
Comparison	23	51.11%	30		44.80%
Relation/ Relationship	8	17.78%	8		11.80%
Percent	1	2.22%	7		10.30%
Fraction	2	4.44%	2		2.90%
Proportion	6	13.33%	0		0.00%
Others	5	11.11%	20		29.40%
Total	45	99.99%	67		99.98%

QUESTION 2: WHEN DO YOU USE RATIO?

N= 61 Responses (37 participants)			N= 113 Responses (64 participants)		
		%			%
Mathematics	21	34.40%	28		24.78%
Science	11	18.03%	7		6.19%
Recipes/ Cooking	2	3.28%	4		3.54%
Comparing	6	9.84%	26		23.0%
Statistics	3	4.92%	2		1.77%
Coaching/ Sports	3	4.92%	0		0.0%
School	3	4.92%	3		2.65%
Punnett Sq.	3	4.92%	1		0.88%
Other	9	14.75%	42		37.20%
Total	61	99.98%	113		100.01%

QUESTION 3: WHO ELSE USES RATIOS?

N= 72 Responses (37 participants)			N= 99 Responses (64 participants)		
		%			%
Accountants	2	2.78%	2		2.02%
Statisticians	4	5.56%	6		6.06%
Teachers	5	6.94%	21		21.21%
Engineers	2	2.78%	4		4.04%
Mathematicians	11	15.28%	6		6.06%
Scientists	13	18.06%	11		11.11%
Sports	1	1.39%	0		0.00%
Cooks	3	4.17%	2		2.02%
Business	5	6.94%	6		6.06%
Doctors	4	5.56%	0		0.00%

Politicians	2	2.78%	0	0.00%
Students	2	2.78%	3	3.03%
Surveys	2	2.78%	0	0.00%
Geneticists	2	2.78%	0	0.00%
Everyone	7	9.72%	2	2.02%
Other	5	6.94%	36	36.36%
No Answer	2	2.78%	1	1.01%
Total	72	100.02%	99	101.00%

QUESTION 4: HOW DO YOU REPRESENT RATIO USING MATHEMATICAL SYMBOLS?

N=55 Responses (37 participants)			N=82 Responses (64 participants)		
Words only	3	5.45%	2	2.44%	
Fractions	16	29.09%	21	25.61%	
Percent	1	1.82%	4	4.88%	
Using "to" or ":"	32	58.18%	48	58.54%	
Drawing	1	1.82%	1	1.22%	
Other	2	3.64%	6	7.32%	
No Response	0	0.00%	0	0.00%	
Total	55	100.00%	82	100.00%	

QUESTION 5: DRAW REPRESENTATIONS OF HOW RATIOS ARE USED.

N= 64 Responses (37 participants)			N= 93 Responses (64 participants)		
Fraction	14	21.88%	15	16.13%	
Percentage	1	1.56%	0	0.00%	
Word "to"	2	3.13%	11	11.83%	
__:__(colon)	27	42.19%	31	33.33%	
Dashes/Slashes	2	3.13%	0	0.00%	
Drawings:					
Boxes	0	0.00%	3	3.23%	
Circles	4	6.25%	9	9.68%	
Stick fig.	2	3.13%	1	1.08%	
Diamonds	1	1.56%	1	1.08%	
Molar/					
Proportion	5	7.81%	2	2.15%	
Other	2	3.13%	19	20.43%	
No answer	4	6.25%	1	1.08%	
Total	64	100.02%	93	100.02%	

Academic Authorship of Newly-graduated Doctors in Education and The Use of Digital Supports in Their Courses: Looking for a More Complete Learning

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Abstract

This paper aims to understand the processes emerging in the life of academics when using digital supports. It analyzes the professional practices of contemporary academics in a phase in which the traditional analog media is merged with the new digital media. Sixteen newly post-graduated doctors have been selected for this study, which composed a multiple case study through semi-structured interviews. Seven major thematic categories emerged through an exhaustive content analysis. When using digital supports, the academic author is influenced by numerous factors: the chosen research topic, the initial motives of interest in the use of technology, the willingness to explore new available resources, the type of empiricism and the type of sources needed as the theoretical basis of study. The analysis model showed innumerable unique individual practices, such as *continuous circular search* in different supports, *simultaneous* and *layered writing* and the use of *new empirical sources*. The habits related to the use of print and analog media, and the underutilization of the available potential for communication still remain. This paper can aid in the development of activities and courses which aim to enhance learning about the use of digital media in Education doctoral courses and in the humanities in general.

Keywords: doctors in Education, academic authorship, research practices, digital technologies

The digital world and the changes in authorship

Authorship, based on printed and analog supports (e.g. books, encyclopedia and magazines), originated from the creation of the printing press and was preceded by the *manuscript* and *oral* era (Lévy, 1993), is undergoing significant changes due to the introduction of new digital technologies, as described and pointed out by historians like Roger Chartier (2002) and Steven Roger Fischer (2009).

These new forms of creation and publishing originated with the use of digital supports; mainly through the *internet connected personal computer*. Several academic studies have addressed different aspects of the recently emerged authorship phenomena, focusing on its remaining characteristics and transformations. Coincidentally, all of these studies express a surprise with regard to the collective authorship production and digitization of its products, which emerged in the 90s and were intensely developed in the 2000s.

Some authors, like Shirky (2011; 2012) and Tapscott & Williams (2007), express their surprise from an optimistic point of view by being enthusiastic about the new ways of collective creation of products on the internet. On the other hand others, like Keen (2009), have a pessimistic opinion, criticizing the “amateurs” and their overload of content; these “pessimistic” critics behave in a similar way to the early cinema and television critics who then announced a “cultural decay” in progress. A more neutral, but conservative point of view

can be seen in the work of Eco & Carrière (2010) with regard to the traditional value of the printed book, and on the work of Darnton (2010) on the transformations and risks digital supports pose to the conservation and maintenance of physical libraries' collections.

This article describes and discusses the research results of my doctoral thesis, undertaken between 2009 and 2012 (Rosado 2012), considering the impact of digital supports in authorship and the new configuration it is acquiring. This investigation originated from a previous research, performed between 2006 and 2008, on the emergent modes of non-formal writing and publishing observed during a case study on the virtual community Wikipedia in Portuguese (Rosado 2008).

Our previous research indicated that during the emerging collective authorship process, materials resulting from formal academic research, such as articles, dissertations, thesis and books, played a key role in the construction of texts, serving as main reference to their content, rules and presentation standards in the studied virtual encyclopedia (Rosado 2008). The tradition of *academic culture*, built over nine centuries since the use of the analog printed support, from the earliest Italian (University of Bologna, founded in 1088), French (University of Paris, 1090) and English (Oxford University, 1096) institutions, remained the main reference model for authors who inhabited the cyberspace.

The current study focuses on how academics use digital supports in their research and in their authorship process, during a time influenced by the rise of the web 2.0 (second half of the 2000's) and its collaborative mode of production (O'Reilly 2005).

A qualitative study, based on memory rescuing interviews, was undertaken to facilitate our understanding of the dimensions in which digital supports have been adopted by the doctoral students in their daily activities of development of their thesis. The choice of newly graduated doctors as the "ideal" sample was intentional, since they represent the top of the authorship process in formal academic courses.

As the central hypothesis of the study, it was assumed that the changes caused by the digital format in the last 30 years - personal computer (PC) in 1981 to tablets and cellphones in 2012 - and the rise of new media authorship supports led to changes in academic research and in the production of scientific texts throughout their various stages (bibliographical research, data collection, reading and writing, organizing findings, communication with peers). Among the main features of these new media is the network connection (Castells 1999) and the unification of the various formats, now encoded in bits, and the stages of production and publication, now present on a single device only, the computer (Chartier 2002).

The simplification of interfaces (decrease in technical difficulty) facilitated the production of multimedia hypertexts (text, video, audio) and opened up a path for users who previously played the role of mere receivers of what was produced by only a few (Lemos 2003). Content creation by the masses emerged as a whole new process of networked collective creation.

This freedom of producing and sharing content agrees with the hacker culture, which originated in computer engineering labs in the 1970s (Macek 2005), and spoke of *free access* to means of information production and the breakdown of *hierarchies*, which allowed the power of expression only to the few who owned the means of circulating information.

It is important to emphasize that these new digital supports do not determine their modes of use and do not represent the extinction of previously created objects. They only enable new forms of ownership and new phenomena that deserve to be studied and mapped.

Hidden processes, unveiled memories: researching the authorship of doctors

Our main research question was: “How did newly post-graduated doctors in Education use digital supports during the research and authorship process of their thesis”?

The methodology was conducted through the application of several in-depth interviews, which altogether were the basis of a multiple case study (Yin 2001), represented by the doctoral students’ authorship construction process. To suit our proposed investigation question, each participant was interviewed about their academic authorship activity developed over several years.

The respondents were recently post-graduated doctors (between 2005 and 2010), with different degrees of use of digital communication resources (understood here as the use of the computer and the internet). They also showed cultural differences with regard to the use of these resources. The participants comprised doctoral students in Education (the majority), doctoral students whose thesis was related to Education or those from different subject areas (minority). They were taking their post-graduation in renowned catholic universities in Brazil and in Italy (PUC-Rio and UCSC Milano¹⁵).

In order to establish a numerical balance among the respondents, we selected 8 respondents from Brazil and 8 from Italy. One hour interviews were performed from May, 2010 to September, 2011. The critical analysis of the interviews followed Bardin (1977) and started with an overall reading and highlighting of the emerging themes – those that were recurrent in the interviews.

Seven thematic categories were listed: (I) Academic and digital life path; (II) Use of technology; (III) Reading mode; (IV) Writing mode; (V) Use of references; (VI) Organization style; and (VII) Communication style.

The sequence above was in agreement with the main themes covered in the interviews. They were used in the creation of an extensive thematic categories table (45 thematic categories in total), containing detailed data of the analysis, including the respondents’ authorship process.

The creation of the thematic categories (authorship analysis dimensions) was aimed at organizing the interviews’ scattered content, and developed progressively during the reading of the transcriptions.

The *theme* was selected as the basic unit of coding (and meaning) of the analysis. It can be understood as the highlight of a set of sentences or even of a single sentence or fragment, because the meaning of these sets could highlight facts in the interviews about authorship with the use of digital supports. Each of the 16 transcribed cases was classified, and the excerpts and transcripts that corresponded to each of the forty-five thematic categories were selected.

¹⁵ Università Cattolica del Sacro Cuore di Milano.

The summary cards, the printed materials and the thematic categories were the basis for data analysis, resulting in a set of trends and remaining habits, merged with the revision of previous empirical studies.

The contribution of previous empirical studies

In order to have more elements for the interpretation of the data of this study, a survey of important issues arising in other researchers' empirical studies in several countries was undertaken. Innovations and remaining habits related to individuals and their personal and professional circumstances and activities were detected. These studies were then compared with my own, and many of the drawn conclusions are convergent with those of the sixteen analyzed cases.

A list of studies on the use of digital supports by academics, focusing on professors, masters and doctoral students, was compiled. These studies comprised research undertaken since the first half of the 90's¹⁶ until the present¹⁷, and described the rapid evolving process of IT equipment during two decades of transformations.

Three key factors for the analysis of the two decade studies in countries with varied infrastructure can be highlighted: (1) the degree of internet and computer adoption and diffusion depend on the economy and investment policies of the studied countries; (2) the year the data was gathered is a determining factor, since the types of applications and computer configuration changed accordingly; (3) the public and the degree of resources available at the university – varying from universities with a low budget, situated in peripheral countries to wealthy American universities, pioneers in the adoption of digital technologies.

The first period, the 90's, marks the beginning of the public internet and the arrival of personal access digital technology in universities. However, the exact sciences departments showed significant differences with regard to the use of these technologies when compared to the social sciences and humanities departments (higher cost and less need of use). The 90's was a period characterized by the *instability* of equipment and computer programs, by the recent release of internet resources and graphical interfaces and by the users' low familiarity with more advanced tools.

During this first stage it was possible to observe an increase in equipment availability, the access to "newly created" electronic databases beyond university walls and the creation of online discussion groups. However, there were barriers related to familiarity with the use of digital supports and the lack of appropriate training. The characteristics of this first stage can also be noticed in the further stages of new technology adoption – computer and internet – by academics in the developing countries, due to the delay in the installation of the necessary infrastructure.

The second (2000-2005) and the third (2006-2011) stages of new technology adoption by academics, happened during the 2000's. Studies about these stages are slightly more

¹⁶ Bane & Milheim 1995; Walsh & Bayma 1996; Lazinger, Ba-Ilan & Peritz 1997; Fidzani 1998; Chang & Perng 2001.

¹⁷ Seyal, Rahman & Rahim 2002; Uddin 2003; Pinheiro 2003; Barret 2005; George et al. 2006; Junni 2007; Lopes & Silva 2007; Kai-Wah Chu & Law 2007; Khan & Ahmad 2009; Aqil & Ahmad 2011.

numerous than those from the previous decade, and their described results are similar to our research respondents' reality (Rosado 2012).

It is from the 2000s that the use of the computer and the internet become virtually an indispensable part of the researchers' daily activities. These technologies also become more "advanced" and better understood in the academic environment, reducing significantly the technical difficulties posed by the first interfaces used in the 90s. The difference in access between academics from the exact sciences and the social and humanities is also less evident than in the previous decade.

When analyzing these studies, it is noticeable that the barriers in the use of digital supports were more related to the *type of research object* selected by the researcher and to the *type of data needed* for the research, instead of being related to equipment availability, which was accessible and widespread.

The digitization of printed documents collections and historical artifacts is still not comprehensive enough to replace the need of physical libraries searches by the academics from the humanities. Online search is a complement and is used mainly for recently published documents, such as scientific journal articles, thesis and dissertations. At the present, there is a noticeable balance between the use of printed and digital sources.

Despite developments in technology, the studies indicated that academics made very basic uses of it (e.g. e-mails, participation in discussion lists, use of text editors and spreadsheets) as part of their daily activities, which still remains the same at the present. Resources such as chats, videoconferences and those requiring large data consumption were still not widely used, especially in the early 2000s.

From the 2000's, internet browsing previously dispersed services were combined in one place. Online search engines became the facilitators of more comprehensive and precise searches. Looking for new references found in printed documents, for example, became a faster process with the adoption of online content search. However, this has not prevented post-graduate students to request human help (e.g. to their professors, librarians, class colleagues and study group members).

In the analyzed studies, a strong interrelationship between human, physical (material) and electronic means, is observed; one leading to the other during the search and use of references.

It is also noticed in these studies that the internet has not had a deep impact on the general mode of search performed by the academics – i.e. searches in scientific journals, books, thesis, events and additional materials. There was a slight impact on the speed and the number of searches performed, instead of on the nature of the process itself.

As pointed out in my previous research (Rosado 2008), the academic (with a doctorate or masters degree), does not produce texts according to the cyberculture, i.e. texts are not produced through collective negotiation and are not open to other contributors, as it is seen in wikis, for example. The analyzed studies also revealed that post-graduate students still preferred the traditional materials (from certified repositories and university libraries) as their trusted sources of references over the web 2.0 collaborative type of production.

The same pattern can also be observed in the communication with colleagues. The process itself becomes faster, but its essence remains the same as the way by which academics search for updates in their fields of study, share materials and exchange research suggestions.

The analyzed studies indicate that factors such as the timing of the academic's career, their generation, their area of academic study, the infrastructure offered at the university, the type of computer and internet access (or not) at their residence, their present academic professional development stage (undergraduate, masters and doctorate), the relationships that they develop within and outside the university and their countries' funding policies, have multiple influences on the way they access and use the computer and the Internet.

Therefore, in order to understand how academics make use of the internet and the computer, one cannot study them separately. It is crucial to identify the participants' personal, professional and social context, bearing in mind that there are new "fissures" for innovation, but also elements which represent a defined and inherited cultural tradition.

Research results

The following results are based on the speeches of the 16 respondents and on their recurrence in relation to the total number of cases. There was also an attempt to relate the findings from the present study with those from the studies described previously.

The respondents' speeches will not be described here. Descriptions, divided into nine main topics, will only refer to the general aspects observed during the analysis, by confronting the observed innovative trends with the remaining habits of the academic and cultural traditions in relation to the use of printed supports.

From restricted access to daily presence:

- *digital media, previously accessed via formal institutions, is now an informal part of the researchers' everyday activities.*

The respondents who already had a computer at home or at work, the resources used in the 90s were: file storage, occasional access to static websites and text editors that turned the computer into a sophisticated "typewriter" and "data repository". In the 90s, the most sophisticated multimedia applications were provided in CD-ROMs and diskettes, and the home production of images, audios and videos was virtually nonexistent.

In the recorded interviews, it is evident that great part of the "90's generation", who were graduating or taking a masters degree during this period of time, had their first contact with digital supports in their places of work or study. However, their learning has taken place with the informal help of friends, relatives and colleagues. Accessing a privately owned computer at home was not the observed standard. The acquisition and incentive for using these new supports depended on institutional funding. Thus, initial access and facilitated use were more present in institutions that invested in the acquisition of equipment, innovating and motivating academics in the use of new supports.

Nevertheless, the observable trend in more recent studies was that the initial informal and everyday contact with digital supports was happening at the academics' home, and a clear transition between types of supports, as it happened in the 90s, was not observable; in particular the *typewriter-personal computer transition*. It was possible to notice, despite not being declared in many interviews - probably because of its novelty -, that the proliferation of digital supports beyond the personal computer and its constant network connection, as in the case of mobile phones and tablets, is generating new possibilities of access, reading and writing.

It is also important to emphasize that the initial lack of infrastructure and equipment (networks, computers) in the humanities departments, as pointed out by Lazinger, Ba-Ilan & Peritz (1997), Aqil & Ahmad (2011) and Khan & Ahmad (2009), was never an issue in the universities studied in this research (PUC-Rio and UCSC Milano). Both universities offered access to computers and wi-fi access throughout the campus and their researchers owned notebooks and other forms of personal digital equipment. In some cases, where the doctorate post-graduation began around 2005 (minority of the cases), some respondents reported having problems with internet access, which was resolved with the installation of the necessary equipment.

Average use predominates:

- *the use of digital media is at an intermediate level, and, in some cases, at beginners level.*

The use of digital media is already part of researchers' daily activities who are also making a more frequent use of it. However, there is an observable trend which maintains their level of use at beginners or intermediate, and basic applications are still in use, in opposition to the responses given by two IT experts also interviewed as part of our study. It was observable that not every researcher dedicates part of their time to learn more about advanced resources which could be useful to their academic activities.

This statement goes against the expectation that the more advanced a computer software becomes and more resources are available (e.g. new software, and broadband connection), the more advanced would their users' skills be. This assumption could have been reinforced by many studies, such as Uddin (2003), which stated that the lack or the precariousness of access infrastructure and available resources, as well as the researchers' short experience, were limiting factors in relation to their use of computers.

Fidzani (1998) and Junni (2007) pointed out that the lack of specific training by post-graduate students on the use of the digital resources offered by libraries and their search mechanisms could generate low or even lack of use. The authors related this issue to the assumptions and expectations university professors made on their post-graduate students' familiarity with these resources.

George et al. (2006) described the difficulties faced by nearly half of the interviewed post-graduate students with accessing data and references platforms, and with attempting to find relevant databases for their studies. This same pattern can also be observed in the empirical data analysis, which is still performed manually by most of the respondents of the present research.

Thus, access to e-mails, search engines (general or specialized ones), e-commerce, social networks, news portals, desktop publishing programs and to spreadsheet predominate over the use of specific applications for automated reference search, advanced data treatment software and "in the cloud" data storage applications. Despite being available since the half of the 2000's decade, resources facilitated by broadband connection, such as video files, multimedia collections and videoconferencing, were also not frequently used by the respondents.

A large amount of time devoted to the use of digital media does not imply in a more sophisticated use of it, since the same activities are repeated. What is important to consider is the planning of activities and the selection of which resources will be necessary for their execution. With these criteria in mind, the user can define their needed level of use of those resources, consequently requiring more or less time for learning and familiarization.

Despite the high investment, by the government of Taiwan, to facilitate the acquisition of equipment and network access by their population, Chang & Perng (2001) stated that university graduate students declared that they did not know about or rarely used online scientific journal databases. Seyal, Rahman & Rahim (2002) noticed a similar pattern with regard to the low use of the internet by academics of technical and vocational colleges in Brunei, despite high government investments in infrastructure.

It is important to emphasize that additional training offered to post-graduate students with the help of librarians and experienced professors, and supported by the departments of Education and other humanities departments, could introduce or even enhance the use of more advanced software and online resources.

This training is understood by Seyal, Rahman & Rahim (2002), as a way of increasing the post-graduation students interest in the observed usefulness and easy of use of digital resources. Following the same line of thought, Lopes & Silva (2007) emphasizes the importance and the knowledge of librarians, and Khan & Ahmad (2009), highlighted the lack of technical knowledge and training by post-graduates students in the use of scientific journals.

In general, we could state that the basic use of digital media encountered among academics of the humanities areas, is allowed and feasible, since their main activities still remain those related to text production through the consultation of printed academic sources mainly, which only requires a more basic level of technical knowledge and, consequently, a lower need of use of digital resources.

The use of the Internet as an empirical source and as a communication tool between academics was cited by a very few number of respondents. Some of these cases can be considered as pioneering in their areas, because they made use of the new open opportunities of the cyberspace.

Reading mode: in transition; writing mode: consolidated

- *academic writing is performed with the use of computers, but the reading process of scientific materials still remains divided.*

According to the results of the interviews, reading modes are still divided; some respondents declared they read only from a screen, either from desktops or, in less numbers, from tablets; other stated that their reading mode was paper based, either from materials already in this format or from those printed originally from digital files. Exactly half of the respondents declared they used both modes of reading, without a specific preference for one in specific.

Therefore, it is possible to notice that there is a clear indication of transition in the reading modes supports. However, the digital ones have not yet established themselves as the feasible option, especially when desktop screens are concerned, and a large amount of time is required in the reading of large documents. It is also worth mentioning that a great part of academic work is still only published in print, with no digital version.

The difficulties initially encountered with the use of tablets, and that were seen as a barrier to its full adoption as a reading tool, included file and reading annotations sharing. At the present, these difficulties have already been overcome by the newer generations of this type of digital support.

Nevertheless, the computer became the main reading tool, due to the easiness in making annotations and collating information in files for future reference. A very few number of respondents mentioned making separate annotations on paper. Even when reading was performed on paper, the main points were written on a computer, either during at an initial scattered reading stage or at the final stage of the text production. In general, annotations were stored locally and were not shared, indicating individualized authorship as the standard practice among academics, since the required final product is based on this model of authorship.

If reading modes support uses are still on a transitional stage, writing activities are exclusively performed on the computer, especially because of the ease of electronic editing, much faster and flexible than writing on paper or using a typewriter.

It is important to emphasize that the basic method of reading-writing-cataloging has remained the same, but simultaneous writing, either in the form of being controlled in more defined stages or in the form of the more "radical" method of writing all parts simultaneously, breaks the linearity built by and inherited from the printed media. Thus, during the different stages of the thesis development, both methods merge, forming successive layers added over the time.

The choice of writing mode is basically related to how the doctorate student conceives their production and is not related anymore to the limitation caused by the media. Digital media allows for both styles of writing. Some students, though, are more conservative and some are more adventurous in their use of writing resources. By selecting simultaneous writing and their related non-linear processes, a greater planning and control over the themes, through the use of summaries and mind maps, is required, as well as a greater control over the origin of the selected references.

Handwriting was a method rejected by some of respondents, who declared finding it very demanding when required; they also described having difficulties in using a typewriter for text productions.

Individual or semi-collective authorship:

- *the tradition of individual academic authorship remains the same and it is still based on well-known references, renowned authors and institutions.*

The tradition of individual academic authorship could be observed in the majority of the interviewees' responses. Whilst new supports offer a structure of fast networked connections, facilitating collaborative work, this was not the pattern observed among academic authors who participated in this study and neither of those who were part of the review of previous empirical studies.

Therefore, it is possible to infer that networked and collaborative writing is still not being widely and appropriately adopted by academics, who use the internet mainly as a source of information (access to databases) and as an eventual communication tool, as a place of content extraction and as a place for publicizing their essentially individual authorship.

The practice of co-authorship was observed in semi-academic peripheral documents, such as work reports or scientific papers written by a few authors, who wrote their parts separately, joining those later into a single final document. This type of "collective" writing was observed mostly between close work colleagues through direct communication and rarely between those geographically distant, as it is commonly noticed in the emergent web 2.0 collaborative authorship processes. Our research observations are in agreement with the results described by George et al. (2006).

Some professors still refuse receiving their post-graduate students' texts sent over the internet, and request their physical presence and the printed support for analysis. It is also important to emphasize that in our study, the participants are newly post-graduated doctors at their initial career stage; they do not have an extensive network of contacts and professional partnerships yet, and they work mainly with other geographically closer peers. Pinheiro (2003) pointed out that the pattern of internet communication, as well as the sharing of pre-prints between Brazilian researchers with years of career experience is expressive; this indicates a change in the communication pattern among peers, according to their career stage.

It was observed in our study that the interlocutors (authors and searched sources) still quote other authors based on academic prestige and the place of publication. On the other hand, informal and open internet (web 2.0) production are still considered as "underground", "unofficial" or "marginal" sources, serving mainly as a starting point leading to the renowned authors.

Junni (2007) mentioned that despite increase in access to internet grey literature, between 1985 e 2003 access did not increase, because academics considered those sources lacking in quality. Kai-Wah Chu & Law (2007) stated that their interviewed post-graduated doctors, used formal and human sources as their primary references, including scientific journals, books, other authors and specialists, events and conferences' publications, thesis and libraries, and secondarily they used the "marginal" sources.

Thus, the work published in blogs, wikis and virtual communities by new non-formal authors served as *shortcuts* that were not officially listed as references; in the same way, colleagues

who served as "human sources" were also not cited. *Scholars generally opt for the safety of repositories, traditionally certified by their peers.*

The way this parallel production was legitimated by the interviewed academics was through its use as an empirical source, i.e. through their speech, manifestations and marks left online, in order to complement the chosen research topic. As an example, we can cite cases where the internet is the empirical field of research, such as the use of forums by students or the creation of blogs as a teaching and learning resource, in an attempt for solving contemporary issues. Thus, the agility to locate and retrieve data, either by instruments or by observation of the records left by their users, make the Internet a valuable source for data collection.

Broadening the scope of sources:

- *digital supports help in the dissemination and diversification of the selected source types.*

We can assume that the provision and search for information has suffered a great impact by the introduction of digital supports, increasing the number of sources and decreasing their age (Junni, 2007), as well as their increasingly higher frequency of access and use (Ahmad & Khan, 2009). Due to the available internet search engines (specific or generalists), the process of searching and accessing materials became faster and unified with the desire of the researcher in obtaining immediate access to information and content.

This ease of access (speed) contrasts with the need of displacement and the delay time necessary to obtain materials from physical libraries and institutions (Lopes & Silva, 2007), which have been criticized by some of our respondents for not being as updated as the internet, where they are published instantaneously. Also, the types of available materials have diversified; in addition to texts, there are audiovisuals (multimedia) and even those exclusively numerical (shared institutional databases) materials.

Academics started taking a more intensive part in the *referencing network* due to the increase in the process of digitization of photographs, videos, images and printed work. Nevertheless, the number of available reference sources and authors also increased, demanding more elaborate search and materials selection strategies. The unification of several databases into integrated search engines caused an overload of *available materials* (data and information excess) and made the *internationalization of studies* possible because it was available on the internet, for anyone, anywhere.

The challenge now is to be *able to navigate through the types of sources and supports*, defining a balanced criteria for selecting materials; this issue was found in the respondents' statements. Part of the respondents believed in the development of a certain type of "wisdom" for making these selections. According to Barret (2005), this wisdom increases with the development of academic experience – graduation, post-graduation and university lecturing and research.

When seeking for information, our study respondents mentioned that during their doctorate post-graduation course they consulted experienced professors and their course peers – the *human sources* – who indicated readings, authors and reference places, facilitating the

access to sources not as easily accessible through online search engines. A similar pattern is observed in the work of Lopes & Silva (2007), where the studied researchers declared that when seeking information, work colleagues and members of their research group were their first choice of human sources, followed by colleagues from other universities.

Circular search between supports: finding a place in the referencing network

The *diversification of sources*, the *immediacy of access* and the *introduction of digital supports* caused searches to be increasingly *circular*, either between printed and analog multimedia materials or between digital materials, using for this several triggers: local, author, group, publication.

Citation chaining or *citation chasing* (Barret, 2005) is the practice of following connected bibliographical references from one study to the other; it is a method of shortening the path of searching the excess of information. George et al. (2006) found that postgraduate students' search path begins with the use of general search systems ending at the use of more specialized databases. This pattern of deepening the search process was also observed in our study when we realized that the doctoral student is slowly entering the network of associations and references belonging to their research field.

Junni (2007) pointed out that part of "classical" academic materials (i.e. renowned authors' texts) were still in printed format, which requires circulation between supports. This is the procedure observed in the respondents' discourses. It was their mode of situating themselves among the available references and citations of their research field. Thus, the level of *depth in layers* just depends on the time, the interest in the subject and the "energy" invested by the researcher.

The future of restricted access and open access is still unknown

There is still no major solution with regard to access to sources of information. Some still defend totally open access, whereas others persist on advocating for access to information only via subscriptions. In the case of international research, in order to access information in other countries, subscriptions to databases are required. These are made by the universities' libraries, which then intermediate the process when the researcher does not need to be physically present.

Our results showed that there is still a high dependency on libraries by the Italian respondents in order to have access to articles and other forms of academic texts, since open files availability is still not the standard adopted in the country; the subscription to journals is required and mediated by librarians. Despite this limitation, remote access to academic articles via the internet enabled library support without necessarily requiring the physical presence of the researcher. A similar process was detected by Khan & Ahmad (2009) in Indian universities. In their study, 90% of the respondents declared accessing electronic journals through library support.

In Brazil, despite the availability of international databases signed by universities, the observed standard was seeking information in open databases, especially in *Scielo* (Scientific Electronic Library Online), and in the dissertations and thesis databases created by governmental research funding agencies, which unify national academic production in

specialized portals. Free access to information benefits and facilitates the immediacy of searches, since it does not require the contact with libraries. However, it can lead to the lack of knowledge by academics about databases with restricted accesses which, at the present, enable the internationalization of academic research. Some respondents did not access such databases and did not ask librarians for guidance on the search for references.

Migration to online databases was already evident in the study by Pinheiro (2003), when only 19% of experienced researchers declared accessing exclusively printed sources, and 61% preferred accessing electronic documents. Lopes & Silva (2007) and Aqil & Ahmad (2011) also pointed out an equal division in the preference between electronic and printed format documents.

Thus, the question that remains open is: How will open access to documents influence universities' policies, both in Brazil and in other countries, based on the ease of publishing and distribution brought by digital supports?

New types of databases: extra-officials, semi-officials and non-academic

Open networks and the ease of publishing content with the use of digital supports enabled the rise of new types of repositories, in addition to universities' and those repositories trusted by the academics. These repositories of data and files became a source of reference for scholars during their searches. Although not being "certified" by academics in their citations, these repositories are accessed and used by them, especially as an empirical source and complementary documentation. Added to these repositories, are virtual communities, blogs and wikis, forums, social networks and news portals.

Non-academic sources (i.e. those certified by institutions and produced by experts in their fields) can also be included in the group above. Examples of non-academic sources are: databases of digitized images, scanned books and documents' repositories (with or without their authors' authorization), bookshop collections, databases of videos from seminars and scientific events' interviews and, finally, social networks dedicated to the dissemination of book reviews. These materials do not require physical presence for their search anymore, since they are online, which enables searches in other countries' available sources, which cannot be imported and maintained by local universities.

It was through these extra-official sources that many researchers reported getting help via virtual communities, including the application of questionnaires and interviews. This indicates how communities that bring together people interested in the same topic, but who are geographically dispersed, can become a valuable place for data collection, which would have been previously impossible due to the high cost of implementation and deployment of people.

Supports complement each other:

- *analog support complement some academic activities.*

In many of the respondents' described activities (i.e. reading, searching for sources, organization of materials or empirical activities), it was noted that the use of analog supports

complement each other, even with the increase in the use of digital supports and its predominant trend, in the next coming years, with the increasing digitization of collections.

Meanwhile, the computer, as a major support for writing, is replacing manuscript work due to the agility and the flexibility of the digital format, also prevailing as a main support for communication (i.e. e-mail and instant messaging and discussion lists).

In terms of seeking for information, Aqil & Ahmad (2011) pointed out that in India about half of the post-graduate respondents considered the internet as their main source, still showing a balance between the simultaneous use of supports, although the trend, according to Ahmad Khan & (2009), is that digital will gradually prevail.

Complementarity between supports has not excluded, in some of the cases analyzed in this study, the stronger adherence to one or another type of support. Going almost exclusively to physical libraries for searching academic materials or using almost exclusively digital format sources stored on personal computers were the most extreme attitudes found in our study and were related to the topic and the personal preferences regarding the use of varied types of supports.

The "dispute" between supports can lead to the development of pairings, such as reading on-screen/reading on paper, linear writing/simultaneous writing, face to face communication/online communication. However, in practice, the majority of respondents used them in a balanced and complementary way.

In the specific case of information sources, Lopes & Silva (2007) called a hybrid library this new space with "double function", in which data can be accessed through digital supports or through printed supports. Would this also originate a hybrid reading process, a hybrid communication and to a lesser extent a hybrid writing mode? It seems like it. In the coming years, it will be possible to tell if the trend is the hegemony of digital support or the maintenance of this hybridization.

Analog legacies found in the digital supports:

- *the analog supports legacies present during this transitional moment in time.*

Despite being replaced by digital supports, analog supports will not disappear completely, even when they cease to exist physically, because a series of habits and characteristics of use, built throughout centuries of existence and tradition, remain in the routine of academics when they start using new supports.

The case of digital and online databases can be cited as an example: they resemble library bookshelves (with static, in series and fixed in time collections), despite being able to be edited and updated at any time. This need for an historical mark, when new media dismiss this limitation, is a clear legacy of a way of knowledge building based on the growing accumulation of information along the time.

In practice, we observe this analog support legacy in the download of PDFs, either in book format or in the format of a scientific article, building, in an analogy, the virtual library of the academic, who is still following their peers productions through the volumes of scientific

journals volumes. In some of the digital supports currently used for reading (i.e. tablets), the shelves of a library and even the act of turning pages, like in the printed format, are simulated.

Therefore, it is not surprising that the open, informal and collective production of the web 2.0 cause a certain panic in those who expect that a piece of writing should be stable and physically located. The new spaces for production are so dynamic that they become difficult to be referenced and have their content retained; the rate of change these virtual communities go through is so intense due to the participation of their members. Some of the reported strategies of the respondents of the present study was the retention of the content of web pages they visited, by copying it into fixed files and eventually printing those which they considered important for further analysis.

In relation to reading and writing, remaining habits are high in number and are often represented by the necessary academic final product, which is still almost the same: the thesis. A thesis, when completed, becomes a printed book, and in order to achieve this stage, it must have the same elements of books: cover, table of contents, chapters, numbered pages, footnotes, quotations, references. These are the typical elements of printed supports and are now created more quickly and flexibly through the use of digital supports; nevertheless, they still remain the same.

Thus, linear production still maintains, in some cases processes, such as seeking sources, summarizing the main points of the read materials and writing in closed chapters, which represents a process with well-defined and consecutive steps. In our opinion, this is a kind of limitation that should not exist with the use of digital supports, but it remains as a habit, when academics believe that writing simultaneously can result in loss of control of the management of multiple writing fronts.

Regarding the organization of materials, the computer now offers the metaphors originated the culture of print, as a desktop (work desk), folders, files, tags (labels) that influence their use by analogy with the physical space. It was not uncommon to find researchers who stored their data in the same way they did in the physical space (their printed materials) as they did in the digital space, on their computers.

We can conclude that digital supports reinforce the legacy of the printed support when elements from previous periods are still present, improving speed and range performance, but only introducing some innovative elements.

Converging to the computer:

- *the computer enabled the grouping of the academic stages of work production into one place.*

In general, we note that the computer has integrated all the steps which are part of the production of academic material, without excluding the complementary use of analog supports: writing, reading, searching for sources, notes, storage of collected materials, text editing and final printing of the document. These steps are not always grouped in a natural way; for some of the respondents, part or all of these steps were executed through the use of material, analog and printed supports.

Starting from the idea that there is a researcher who has fully realized this grouping of uses, based on the strategies observed in the 16 studied cases, it is possible to draw six main modes of ideal use of the internet and the computer during a doctoral student life. However, these are not a prescribed formula, because it is known that the subject of research and the object of study determine, in part, the greater or lesser use of digital supports. It happens beyond the personal preferences of the doctoral student, although these are also determinant factors in the choice.

Thus, for general reference, this "ideal" doctoral student would use digital supports as:

1. Academic source – using data from digital libraries, official databases produced by government bodies and research centers, e-books and scientific articles in online journal, official government websites and other entities, non-academic posts, unofficial, and all types of information available in digital format.

2. Empirical field – collecting online research data in forums, from questionnaires, focal groups, produced or not originally by the researcher.

3. Space for analyzing data collected through the use of statistical analysis software and/or qualitative analysis, forming databases through the empirical field chosen and handled on their personal computer.

4. Place for communicating with other researchers, research subjects and other participants of their research.

5. Place for organizing and storing collected data, holding sources and notes, as well as charts and reading schemes; in their personal computer or in storage services in the cloud.

6. Reading and writing place, when these two activities are carried out entirely on the computer and on the Internet, which indicates the full independence of the use of printed materials; the digital space is the medium used for text elaboration and for reading the materials already collected in this format

It is worth emphasizing that the presence of these "ideal" modes of use was almost always incomplete among respondents due to various issues arising from the multiplicity of uses, including the chosen theme and the availability of field data in digital format.

Multiple factors determining the uses:

- *despite the new properties of digital supports, the practice is determined by multiple factors.*

It is important to emphasize that throughout the research interviews and the review of similar studies from the past two decades, it was evident that, in addition to the inherent properties of the new digital supports (hypertext, its flexibility and network connection), other factors played a role in how academics use digital supports. These factors go beyond the digital supports themselves. The multiple factors determining their use is not a new finding, having been discussed by Walsh & Bayma (1996) when checking extra-technological factors involving the different uses of computer among different areas of university research.

It was only possible to identify the multiple factors that influenced the use of digital supports by the researched academics through a qualitative study based on open interviews. This complexity of factors could not have been identified through a closed study.

The following list summarizes the main factors resulting from our empirical study. It provides a closer overview of the analyzed cases, and is more related to the areas of Education and human sciences:

- Factor 1. **Researchers' needs** to perform their research.
- Factor 2. **Career stage and type of additional activity carried out.**
- Factor 3. **Use of digital supports** based on work needs.
- Factor 4. **Academic origin:** originally from humanities or migrating from exact sciences.
- Factor 5. **Topic of research:** related or not to digital supports.
- Factor 6. **Types of sources or supports** used in the research.
- Factor 7. **Type of empiricism:** subjects of research are geographically distributed?
- Factor 8. **Patterns of organization** in their personal lives.
- Factor 9. **Access to supports** at home, at work, at the university.
- Factor 10. **Experience with the use of digital supports** – with family or friends.
- Factor 11. **Technical knowledge level** acquired formally or informally.
- Factor 12. **Time dedicated to deepening of learning:** basic or advanced resources?
- Factor 13. **Way of understanding** the possibilities of digital supports.
- Factor 14. **Habits acquired** with the use of analog supports.
- Factor 15. **Academic and governmental evaluations, regulations and rules.**

All these factors must be taken into account in the analysis of cases involving the use of digital media for purposes of study, research and development of an academic paper in the form of an authorial product, either in a traditional format or in a more advanced one.

Conclusion

The thesis as an inherited product of the second phase of the intelligence technologies

The first and most important conclusion of this study is related to the type of product generated by academics in their research activities. Academics' main task during their post-graduation courses is the creation of a final research product, called the academic thesis, and all their activities converge to the development of this product; it may take a longer time, as it is the case of Brazil (four years) or a shorter time (three years), as defined in Italy by the Bologna Process (Azevedo 2007).

The thesis is presented in the traditional format, created with the classical writing and printing instruments, in the second phase of intelligence technologies according to the classification of Lévy (1993), because during primary orality there was no possibility of consistent written records, accessible from one generation to the other. The academic thesis is a book; it has the format of a book and requires all the techniques and elements used to compose a printed book. Therefore, the development of this product requires, partially (but not essentially), the use of contemporary instruments created by digital supports.

For the development of a thesis, one can even reject the use of digital supports during parts of the production stages, as it was possible to observe in some of the respondents' cases, like those who rejected the use of digitized books and articles, going directly to libraries, or those who have chosen to conduct their empiricism in person, and those who communicated with other researchers, attending formal academic events such as conferences and seminars. We could state that the academic thesis is, in all aspects, an analog legacy, with a linear structure and with elements arising from the use of paper, in *manuscript format* and also in the *printed format* (Le Goff 2010; Verger 1999).

The academic thesis would not exist without the printed media, since it requires the accumulation of knowledge, recorded in time and space, and the subsequent debate among the authors involved in the production of its texts. However, the opposite is not true, since the essential elements of the digital supports, such as non-linearity, links and nodes which form a hypertextual network with instant access to the parts that compose it, are not found in the thesis that are produced at the present, as they are delivered in paper. According to the classification proposed by Ribeiro (2006), a thesis can be considered a type of *printed hypertext*.

Going a step further and strictly speaking, an academic thesis can ignore any of the resources offered by computers and the internet, and all the potentialities allowed by hypertext and by the instruments created by the members of the cyberculture and the cyberspace. Academics, however, in order to speed up the process of production of their thesis, make an indirect use of these new instruments of authorship to accelerate the process of search for similar materials, for text edition, for collecting online data, for automated data analysis and possibly for communication with peers.

It is then possible to state that the academic author, most of the time alone - especially in the field of humanities, without major funding opportunities, research team or partnerships with profitable objectives - *use digital supports in certain processes which do not alter the essence of their activity*, i.e. they use these supports in "fissures" where the entry and use of digital supports is allowed, although the classical model of *issue-channel-message-receipt* of textual documents in the format of scientific papers is maintained as the essence scientific exchanges. This process is evident when we notice that the essence of academic digital databases, such as the PDF format documents' repositories, repeat the logic of printed documents.

To some extent, we can conclude that academics "visit" the cyberspace, but do not inhabit it completely when it is related to the use of their potentialities. According to the classification proposed by Santaella (2004), which creates categories for the old (contemplative, moving) and new readers (immersive), academics do not immerse themselves completely into the digital space, since the logic of writing and reading remains subject to the requested final product. The new supports are not being used for the development of new products, despite accelerating some of its production with software that simulate and meet the needs of the process, which was performed previously with the use of printed supports.

Requesting new products: a challenge to post-graduation courses

The main problem pointed out here is the need to *request new products*, different from a classical academic thesis, which are more in tune with the possibilities offered by the digital supports and by the contemporary cyberculture (Macek 2005), in which computers and the internet are widely available to our society and do not represent the culture of a group of experts anymore.

Digital supports can only be used to its fullest possibilities, if the development of innovative research projects (central activity of academic) include: (1) objectives that require working with the new languages emerging from the digital supports, (2) presentation of other results (products) in different formats (3) keeping in touch with other studies and other researchers from the initial theoretical treatment and throughout the development of the academic work.

Currently, collective authorship, as a method of intellectual production, is flourishing in non-academic spaces such as virtual communities (whose production is noticed – e.g. open source software and Wikipedia texts), but is not achieving the same prestige and recognition historically accredited to products derived from academic research, being even called by some authors, in a derogatory manner, as products derived from the activities of amateurs (Keen 2009).

The academic thesis is an essentially individual and institutional product required to be made this way. The academic entry in the networks of the cyberspace is more an activity of extraction of content than one of sharing production, since not even the results of their reading (notes) are shared and discussed in the cyberspace, being stored and protected on their personal computers for personal use only.

The theoretical approach of Foucault (2006) about what is an author and on the notion of what constitutes a piece of work, would still be valid in order to analyze the current production of academics, since their activity continues to produce a series of texts with the characteristics and marks of their individual styles.

It is naïve to question and propose the change of an entire apparatus created and focused on the production of a thesis with the final format of a book, and sent for approval in current post-graduation courses. Centuries of history and structures were created to maintain this model and the construction of an academic identity (Bauman 2010; Said 2005). The ingenuity of suggesting a complete rupture can be replaced by the presentation of a set of proposals that will gradually collaborate in changing consolidated cultural habits and introducing other models of research.

Thus, instead of trying to propose radical ruptures, it is possible to recognize that new fissures can be open in the existing model of scientific academic authoring, proposing other formats that will coexist with the creation of formal text (either theoretical or empirical-theoretical) today universally required from post-graduate students.

We cannot accept that digital support technology should dictate new rules and forms of creation and planning of academic products, but, on the other hand we cannot be oblivious and indifferent to the possibilities that they offer through the fissures already open, confirmed

throughout this empirical study. It is already a good start when we think about the products currently generated.

We can think of new products that add to the emerging collective production with the web 2.0, not being fully closed and finished as those present in the mass culture industry. Products that invest in the creation of pieces of work containing links and nodes to other pieces, a process made possible by the digital networks, using video, image and audio (multimedia authoring) efficiently. These are perspectives that are foreseen for an academic production more open to the participation and intervention of their target audiences.

I agree with Silva (2006) when he proposes - for the field of education - the study and application of the concept of interactivity, using as an analogy the public participation in the open work *Parangolé*, by Hélio Oiticica. Perhaps with this model, the researcher does not become so distanced from their audience (the academic and the empirical), making their work more alive, constantly open to interventions and with conclusions that exceed those he would have reached individually or that were presented as a frozen and final text in the form of a book. Somehow, the ideals of the hacker culture are present in this proposal for collective intervention, when it understands information and its production as a collective and shared good.

Some of these gaps were found in this study, in each of the 16 analyzed cases; some topics suffered the biggest changes (writing and search for sources) and others remained closer to the tradition (communication) according to each respondent profile. I am not advocating here that in certain cases one respondent tends to be more innovative in the use of digital media than the others due to their own personal initiative, because authorship and the use of supports is determined by many factors; some external to the authors and others directed by them, as it is the choice of research topic and of the subjects that will be part of their empiricism.

The analysis of this authorship profile, which uses new digital supports, allows in the *didactic assistance and guidance of the post-graduation courses* with the aim of developing products that are an alternative to the classic academic format of the linear thesis. For this process to take place, professors, teachers and the institution itself need updates that foster and encourage the development of these new products.

On the other hand, it is also important to be aware that the new features and possibilities allowed by digital supports are not always known and part of the everyday uses of postgraduate researchers, especially those less experienced in research and in the sources usually accessed by more experienced researchers. We must then invest in ongoing training, as the resources themselves change with great speed every year.

The Education sector, in particular, is in full need of new teaching methods, new educational objects, new products that will enrich the academic and non-academic educational environment. We cannot restrict these innovative recommendations only to elementary, secondary and undergraduate courses; there is also need to change post-graduate courses and their frozen production models, so that transformation can also be taken to the other levels of education.

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Rethinking Teacher Education – A Holistic Approach

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Abstract

This study provides a short retrospective as well as an actual and prospective view of teacher education with a focus on Secondary Schools. With the introduction setting the scene and a brief literature review to consider the theory – practice divide and the difficulty to strike the right balance between academic and professional studies - two of the sensitive findings which the present study has revealed, other mechanisms of research study will be looked into. In the course of our discussion and analysis, we shall be considering how teacher educators can become reflective practitioners through research and inquiry with a view to enhancing the effectiveness of their school through the quality of their teaching and learning. And, finally, some avenues which prospective researchers can consider for further exploration will be explored.

The argumentation is based upon specialized institutions which dispense professional preparation programmes to aspiring and practicing teachers referred to as teacher learners. Teacher educators are those who have the duty to prepare teacher learners. My findings are based upon analyzing the programmes on offer in some institutions, my observation and my experience as teacher educator involved in the teaching practice of the teacher learners as well as the feedback/data obtained from interviews, questionnaires and focussed group discussion with teacher educators, practicing teachers and, mainly, novice teachers.

Note: 'Teacher preparation' is preferred to 'teacher training' because the word 'training' smacks of mechanistic and ritualistic activities, lacking in creativity and inventiveness and is closely associated with animals mimicking others.

Keywords: Teacher education, content knowledge, pedagogical content knowledge, teacher preparation, the theory-practicum divide

Introduction

Education, an issue high on the agenda from the layman to the Head of state, has always sparked tension and controversy. One preoccupation which has been haunting the mind of people since the existence of educational institutions has been the quality of education that 'schools' have been dispensing to their wards. Educational quality is generally associated with the teacher learners than any other stakeholder. It is believed that the more qualified and prepared they are, the better would be the quality of education dispensed. Today, as education has gained in importance more than ever before, especially in our globalised world, teacher education has become vital in shaping the quality of life of individual learners, the communities, the nation and the world at large.

Brief Historical Overview

Teacher education arose with the advent of the establishment of normal schools. Previously, education was dispensed by itinerant teachers as it was believed that "teaching by second

nature” was a skill that many people had and anyone, having “a bit of book learning” though they were untouched by pedagogy, was considered fit to manage a school and teach the kids. In those days, teachers were required to know the basics of the subjects they taught and, consequently, the prerequisite for teaching was knowledge, especially academic knowledge and the ability to keep order in the classrooms. It was held that “experience will teach them how to organise the classroom and cooperate with institutional authority.” Hansen, D.T. (2008:10.)

But, as interest in education grew through the compelling demands from all stakeholders, teacher education gradually progressed and its importance was acknowledged and recognised. Then, formal training institutions were set up in order to prepare teachers for the profession as there was no place for “naïve” teachers but “educated” ones – Murray, B.F. (2008:1314). Basically, teacher education “seeks to give teacher learners the expertise needed to deliver instruction and manage learners” Armstrong et al. (2009:34)

Today, teacher education has grown to be far different from what it was a century ago. The rapidly changing world and its economic, social, technological upheavals as well as intensive globalization, environmental problems and world uncertainties have “radically changed society, the workplace and the knowledge needed in the twenty-first century.” Houston W.R. (1990: xxxi). Consequently, all these broad social, economic, political and cultural forces are influencing educational practice and are dictating the necessity for a strong and effective education and the formal and professional preparation of teachers.

Literature Review

Teacher education is as old as teaching and learning and the fundamental issues and criticisms facing teacher education are not new except that they have been viewed from different perspectives at different times. It is an issue which has been rehearsed and debated over time and the research interest has not yet been quelled as researchers are exploring more varied problems and formal institutions are coming forward with more complex programmes of more divergent quality to satisfy the learners who are the principal stakeholders coming from different socioeconomic backgrounds, with different learning abilities and different values. Ravitch, Diane (2008:1313) sums this feeling well in this encompassing line ...‘The long history of teacher education has been beset with debates about how it should be organised, whether it should stress on pedagogy, whether it should be professional or vocational and whether it is necessary at all.’

Our reading of the current literature on this subject highlights the fact that teacher education is a very broad term, covering the very variations of training activities that fall between formal, university degree-granting programmes and short term, informal, in-service programmes for unqualified or/and under qualified teachers. According to Howard B. Leavitt (1992: xii), teacher education is “the deliberate preparation and upgrading of teaching personnel from pre-service to in-service education.” William S. Learned et al (2008:1313), opines that the curriculum of teacher education should “combine content and pedagogy and each course should demonstrate how to teach subject matter to students, regardless of their goals”

Literature on teacher education divides teacher preparation broadly into 3 main components:

1. Content knowledge

2. Professional courses
3. Teaching Practice/the practicum.

The practicum permits the demonstration of mastery of instructional, non-instructional and interpersonal competencies under supervised actual classroom conditions. In most countries it ranges from 60% to 35% and 5% roughly.

Now, let us address the theory-practicum divide and teacher education. It is a critical issue which has been worrying all those in education, especially teacher educators and teacher learners. One complaint frequently rehearsed by teacher learners is that there is a great disparity between what is taught and gained at the training institutes and the reality of their classrooms and schools. The issue puts in perspective content infusion. The major debate is how to resolve the tension between the university ideal of knowledge for the sake of pure scholarship and the professional use of knowledge for practical education. A balance must be struck. But what is that desirable balance? Within the programme of teacher education, what balance should be established between the competing demands of background studies in the disciplines to be taught, education and curriculum studies and the practicum.

Literature on teacher education lays much stress upon the fact that teacher educators should provide training whereby the teachers can adapt the subject to be taught in an educational context in the interest of the learners. It is said institutions involved in teacher preparation have to develop preparatory programme that balance strong subject matter content with course in pedagogy skills as teachers need to be versatile. They have to address the changes in society, especially social and technological changes.

This feeling is shared to some extent by teacher educators and they talk of the inevitable tension between theory and practice because the real world and firsthand experience speak so loudly. Richard Elmore (2006) adopts a similar stance by raising these questions how teacher learners are being taught, what is being taught, and the connection between practice and theory and expresses his apprehension that teacher education is "dissociated from the current practice" and finally warns that we have to "prevent theory from becoming shriveled and dry if they become divorced from practical."

Our reading of the literature on this subject, our observation and the feedback gathered from teacher learners from various formal institutions speak in the same vein.

In this part of the literature review, we turn to another issue which is in line with our study - teacher educators and teacher learners as learners and researchers. There is much outcry that this issue has not been given enough attention in teacher education by both private and public educational institutions offering professional preparation. Literature on teacher education stresses upon the fact that research should become a normal activity for teacher learners and teacher educators principally. Jack Whitehead (1995) states that research in teacher education will contribute to the professional development of reflective teacher learners and teacher educators. Researches will not only revive interest in teacher education for the teacher learners but teacher educators would also be developing a keen interest in this field. Researches will dictate teacher educators how best to prepare teacher learners and whether to prepare them or not. They will serve as propitious avenues for teacher educators to think about these thorny issues and to begin to reconsider the professional preparation of teacher learners. They will illuminate ways to deepen candidates' academic strengths and related pedagogical ability. Hansen, D.T (2008:13).

Methodology, Methods, Sample, Target Population and Research Questions

Participants in this study, which is a survey, were teacher learners enrolled for teacher education programme after having obtained a bachelor university degree in their respective disciplines, teacher educators and Heads of Schools. The sample population for this study consisted of 100 practicing and 100 novice teacher learners, 30% males and 70% females, five teacher educators who have been involved in teacher preparation for more than ten years, 10 Heads of (Secondary) Schools who have been in managerial and leadership position for 15 years and above. The methodology used included the questionnaire, interviews and focus group discussion (mainly with the teacher learners), apart from the researcher's observations. The aim of the study, the purpose of the questions being asked and the reasons for recording data for the study were explained clearly to all participants. Confidentiality and ethical issues were ensured.

It is an undeniable fact that teacher education is central to the quality of teaching and learning and this study aims at exploring the following umbrella research questions.

1. Is there a need for teacher education?
2. What is the importance and relevance of teacher education for teacher learners, teacher educators and Heads of Schools?
3. How far are the issues discussed in formal educational institutions related to the practicum and classroom realities?
4. How could teacher education programmes be enhanced with a view to providing quality teaching and learning?

Data Analysis and Discussion

When the participants were interviewed concerning the need to have teacher education, feelings ranged from 'a waste of time' to 'necessary and worthwhile' and 'formal and rigorous preparation', 'rigorous subject-matter examinations' and 'a mode of socializing new candidates into an occupation, inducting them into a profession, initiating them into a social and moral vocation', amongst others. But the general consensus was that 'teacher education is a must and has still got its place in education.' And one participant, during the focus group discussion even went so far as to say that teacher education would have 'to be invented if ever it did not exist'. Most teacher educators concur that a college degree is insufficient to convert a person into a successful teacher and this view is shared by both the practicing and novice teacher learners. Mention was made of many teachers who are well qualified academically but turned out to be a wreck in the classroom. On another line of thought, a great majority of them were convinced that teacher education should be restricted to formal preparedness in pedagogy and be thoroughly equipped with pedagogical tools. The one basic or core belief and expectation which has emerged is that teachers should be well versed in the subject matter they teach and the methods of teaching they use. The views reflected here are in line with what Diane Ravitch (2008:1313) states. She stresses upon the fact that aspiring teachers have to be thoroughly immersed in pedagogical preparation. She argues the point that there are many well-intentioned teachers who have a superb education but are unable to get across what they want their students to learn. These people have a secured knowledge of their subject but are unable to figure out how to teach it in ways that adolescents understand. So, teacher learners "need a certain foundation of pedagogical

content knowledge so that they can know how to teach what they know to the children in their care, thus building professional commitment.”

A serious fallacy observed and passionately criticised by all respondents, especially by novice teacher learners in teacher education, is that teacher learners do not have enough time to practice and they are choked by a bulky programme. They state that the time spent on the mastery of contents and on teaching practice is not well balanced to expose them to models of effective teaching. They further say that the exposure that they are having is inadequate and this explains the lack of confidence on the part of some novice teacher learners.

When teacher educators were asked about the supervision of teacher learners and the frequency of their visits, the study reveals that teacher educators supervise teacher learners only 2 or 3 times. This was confirmed by all the other respondents. This concern is shared by Willis D Hawley (1992: 260) in his studies which he carried out, stating that ‘supervision is carried not more than three times and this hardly makes up to 2% of the whole time allocated to teacher preparation.’

The issue of ‘the theory-practicum divide’ aroused heated and passionate criticisms when it was presented to all the respondents. One set of reactions pointed to the difference between teaching in schools and lecturing at the tertiary education levels. This is a feeling shared by almost all teacher learners who underline to the prevalence of these abstract theoretical course which has produced institute graduates with no knowledge of the realities of the schools. They go on further to say that there is a lack of integration between the teaching of subject matter and pedagogy. Some of them even go as far as to say that pedagogy is the least useful subject of the entire course and claim that it is a waste of time, that the programme is limited, ill focused and unrelated to the real experiences of teachers and does not meet the needs in the constantly changing socio-economic realities that affect their classrooms. Consequently, teacher learners become frustrated, disappointed and disinterested. Teacher learners state that they are often frustrated because the material taught in educational institutions does not appear to survive teaching and seldom seems to become part of their practice. They complain that they are inadequately prepared in educational institutions for the reality of the classrooms. This is a view which is shared by many respondents. Teacher learners often claim that teacher education course work that are offered are too theoretical, helpful but often unrelated to issues to classrooms. They say that there is a lack of integration between the teaching of subject matter and pedagogy. This issue has been worrying all those in education especially teacher educators and teacher learners and there is a unanimous ill-feeling about the disconnectedness between theory and practice.

Recommendations and Suggestions

Teacher education is an issue which will always remain high on the agenda of educational problems. Educational institutions dispensing teacher education are clearly aware of the many challenges facing them. As the pressure mounts for teacher education to stay relevant and to respond to the exigencies of its time, a holistic approach is to be envisaged. The recommendations suggested below are indicative but no means exhaustive.

Networking is an issue which has been discussed and it is worth looking into. The issue of intra and inter school networking has been raised by teacher educators principally. They talk about the involvement of secondary and elementary school personnel in the preparation of teacher learners. Furthermore, they are of the opinion that teacher learners, when under the guidance of mentors at schools, will gain much as effective teacher competence takes numerous years to develop and is an on-going process. Mentors can assist teacher learners develop and refine practice. Under their guidance, teacher learners will have more opportunities to collaborate with members in rethinking their practice based on various evidences of pupil learning.

Another suggestion which needs to be considered is delay in certification. Participants stress upon the need for a rigorous certification process. Following this line of thought, schools have to put in place mechanisms to link with pre- and in-service teacher education. Teacher learners can be assisted by teacher educators, mentors, experienced teachers, heads of departments and rectors. One teacher educator states that in Japan, newly recruited teachers stay under the guidance of experienced teachers for some time. The aim is to assist teacher learners in their continuing professional development. It is believed that these teacher learners will develop appropriate attitudes, relevant skills and techniques for the profession and appropriate values shared by the professionals in the trade. And these can only be acquired slowly as students learn and practice the profession.

On the issue of not having enough time to practice, we concur with the numerous views expressed in favour of allocating one additional year for internship with very close supervision. There are suggestions that teacher learners spend extensive time – a full year for instance, observing experienced teachers using different strategies for different purposes. In this way, they would develop a wide repertoire of practices along with the knowledge - under the direct supervision of one or more teachers who would model expert practice with students having a wide range of learning needs. The teacher learners would gradually assume more independent responsibility for teaching. In this way they will grow “roots” in their practice, and develop “codes of good practice”. This points to the fact there is recognition that teacher learners cannot possibly learn all that they need to know in pre-service programme. More attention must be devoted to inducting support to novices.

With a view to addressing the question of the theory and practicum divide, the following can be considered. In some countries there exists the practice of sending teacher educators back to school at some point during their teacher education course in order to give them the opportunity to gauge the practicality of things taught at the institute in school realities, to explore the dilemmas of practice and, finally, to see whether they could still be successful teachers. This demarche would quell this often heard criticism that teacher educators are cut off from the realities of schools and that they are shut up in their ivory tower and suffer from Ivory Tower syndrome. According to Anna Richert (2004) “teacher educators need to be learners so that they can respond to the changing circumstances of their work and constantly learn to do it more effectively. Teacher learners in turn need to be learners for the same reason that the student learners of those teachers learners need to be learners.” This is another issue which is worth investigating by prospective researchers.

The issue about striking a balance between academic and professional studies should give rise to these questions which are worth exploring by institutions which provide teacher education. What is that desirable balance? How can teacher learners be prepared to work effectively under authentic classroom conditions? Within the programme of teacher education, what balance should be established between the competing demands of background studies in the disciplines to be taught, education and curriculum studies and the practicum. How can the tension between the university ideal of knowledge for the sake of pure scholarship and the professional use of knowledge for practical education be resolved? How can innovative methodologies be offered in an attempt to make both pedagogy and curriculum content more relevant to learners' lives? What are these innovative methodologies? The questions can still go on and on and on. As mentioned above, this is an issue for further researchers to start exploring.

Some countries are experimenting with interactive video as a substitute for some practical experience while others are using teleconferencing as a strategy for supporting and broadening students' exposure to curriculum content. As there is a paucity of research in this direction, it can be an ideal avenue for prospective researchers.

Conclusion

In this study, we attempted to look at teacher education from the perspectives of those who are closely associated with it. One stark initial observation is that it is unclear how teacher education will continue to evolve. Our next observation is that teachers are all prepared in the same way. The following questions become pertinent: Are there efforts to create equitable learning environments for all students? Are we preparing teachers for teaching in diverse school settings? Are the programmes geared to meet them? Are the programme geared to meet issues of diversity and multiple intelligence? Time and context are changing and, consequently, teacher education will have to be on the watch out for these changes and adapt to them. A paradigm shift is needed and it is time to rethink teacher education.

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Health Policies in Schools: The Health Curricula and the Role of the Teacher in Portugal

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Abstract

In Portugal there is a national basic law regarding the education system where all official and private schools are obliged to follow its guidelines. The Secretary of State for Education considers the inclusion in the school educational project issues related to health promotion and education as mandatory and stating the following areas as priorities: nutrition and physical activity, substance use, sexuality/ STIs, including AIDS, violence in schools and mental health. The school's educational project should be designed in accordance with the priorities identified and in articulation with the families of students. To help to achieve these goals, each group of schools has a coordinator who must be the responsible entity in the school for the project and articulate it with health centres to develop actions aimed at the protection and promotion of global health. In this sense, this paper will discuss the health curricula and the role of the teacher in Portuguese schools in the context of European guidelines, and the Schools for Health in the European Network.

Keywords: Health curricula; Role of teacher; Portuguese schools; Schools for Health in the European Network

Introduction

In 1986, Portugal participated and rectified the Ottawa Charter which advocates for health in all contexts, since health promotion is not the sole responsibility of the health service, but all sectors including education which have the responsibility for creating overall wellbeing.

In Portugal there is a national Basic Law Regarding the Education System, where all official and private schools are obliged to follow its guidelines. Since 1999, all schools are considered by the law as health promoting schools which involve the planning, development and evaluation of a school educational project that must follow the core values of the Schools for Health in the European Network – The SHE network: equity, sustainability, inclusion, empowerment and action competence, and democracy.

Portuguese schools are committed to apply the SHE pillars in their functioning, which means the development of a global school approach to health which involves coherence between the school's policies and practices in the following areas which is acknowledged and understood by the whole school community (Buijs, Jociuté, Paulus, and Simovska 2009, 106):

- a participatory and action-oriented approach to health education in the curriculum;
- taking into account student's own concepts of health and well-being;
- developing healthy school policies;

- developing the physical and social environment of the school;
- developing life competencies;
- making effective links with the home and the community;
- making efficient use of health services.

Within the Portuguese government, there exists a General Directorate of Innovation and Curricular Development (GDICD) within the General Directorate of Education, which belongs to the Ministry of Education and Science. The GDICD is the entity responsible for the creation of the legal, pedagogic and didactic instruments which allows schools and teachers to play effective roles. The GDICD operates in several areas, namely in health education in schools, and is responsible, among other aspects, for the design of programs and guidelines for the various subjects and non-subject curricular areas, as well as for the activities for the enrichment of the curriculum and for the management of projects that support the curriculum and the pedagogical organization of schools.

The GDICD, through the Nucleus for Health Education and School Social Action (NHessa) is responsible for supporting, monitoring, developing and evaluating the activities of health promotion and education in schools, within the priority areas of intervention. It is also the role of the GDICD/NHessa according to its website, to contribute to the development of policies on health promotion and education and train teachers in the following priority areas of intervention: nutrition education and physical activity; prevention of the consumption of psychoactive substances; sexuality and sexually transmitted infections; and within the area of mental health, violence prevention in schools.

According to the GDICD/NHessa, in its website in the school context, health education means providing children and youths with knowledge, attitudes and values which help them to make appropriate choices, and takes adequate decisions to their health and their physical, social and mental well-being as well as the health of those around them, thereby providing them with an active role. In this sense, following the core values of the Schools for Health in the European network, the General Directorate of Innovation and Curriculum Development assumes as its role: to track, monitor and evaluate activities for health promotion and education in schools; to contribute to the definition of policies regarding health promotion and education adapting and following the policies of WHO and the Council of Europe (SHE) in the field of health education, in which the Ministry of Education is represented.

Within this context, a brief summary of the guidelines set forth by the Portuguese Government for schools to develop health promotion and education in the several priority areas of intervention will be presented.

Nutrition Education and Physical Activity

In order to promote nutrition and physical activity in schools, the GDICD/NHessa established that meals and food supply in schools must follow the dietary principles of variety and quality, whose definition is the responsibility of the Directorate General for Innovation and Curriculum Development. To promote health in this area, the objectives of the GDICD/NHessa according to its website, are the following: to improve the overall health of young people; to reverse the trend of increasing disease profiles associated with poor nutrition; and to promote young people's health, specifically with regards to healthy eating and physical activity.

In this sense, Order no. 1242/2009 of 12th October (Ministérios da Agricultura, do Desenvolvimento Rural e das Pescas, da Saúde e da Educação de Portugal 2009), establishes the Regulation of the School Fruit Scheme (RSF), defining the rules of complementary national aid for the scheme of the distribution of fruit and vegetables and their derivatives to students of the 1st cycle of basic education (6 to 9 years) in schools, under the European system of distribution of fruit in schools. This Law integrates the accompanying measures to promote the consumption of fruit, namely (Ministérios da Agricultura, do Desenvolvimento Rural e das Pescas, da Saúde e da Educação de Portugal 2009, 7482):

- a) Organization of visits to farms, markets and horticultural plant farms;
- b) Installation of flower beds in schools, for the establishment of a connection to their origin;
- c) Provide materials (books, notebooks of activities, contests, games, cards or data sheets with the names of fruits or vegetables, CDROM information);
- d) Provision of leaflets for children, captivating their curiosity about the subject;
- e) Providing small bag of seeds for sowing by children;
- f) Performance or display of children's videos or films depicting the program;
- g) Achievement of leisure: theatres, dances, songs and poems, depicting the program;
- h) Carrying out activities that depend on and contribute to the institutional website of the RSF;
- i) Providing books for teachers and other educational material for teaching children the necessary habits of healthy-feeding;
- j) Awarding prizes or rewards to encourage the consumption of products;
- l) Initiatives aimed at enhancing the RSF from the aggregated family of children.

Prior to this law, Circular no. 11/DGIDC/2007 established recommendations for school snack bars (Ministério da Educação – DGIDC de Portugal 2007a) and Circular no. 14/DGIDC/2007 (Ministério da Educação - DGIDC de Portugal 2007b) and Circular no. 15/DGIDC/2007 (Ministério da Educação - DGIDC, Portugal 2007c) for school cafeterias. It was defined that the school snack bars are complementary services to the school cafeteria and should therefore provide healthy between-meal snacks to students and other members of the educational community, and reinforcing nutrition education in the curriculum.

Therefore, in order to contribute to a proper nutritional education, the Ministry of Education published a book (Baptista 2006) for a healthy food offer, aiming at nutrition education in the school. This book recommends and provides effective guidelines regarding eating habits in schools, with an explanatory component in the selection of some foods over others by contextualizing the different options in a wider context: the concerns that Portugal shares with nations and organizations in Europe and the world. With these guidelines, the Ministry of Education intended to guide schools and their leaders to offer healthy food in schools and to clarify the educational community of the guiding principles for the food supply in school snack bars. The Director-General for Innovation and Curriculum Development explained that this referential aims to encourage dialogue among teachers, students and families, because the approach that requires new behaviours always demand debate, discussion and cooperation.

This framework developed by the Ministry of Education was primarily directed at schools with the objective of contributing to the following aspects (Baptista 2006, 7):

1. Improving the overall health of young people;
2. Reversing the increasing trend of disease profiles which is translated into an increased incidence and the prevalence of diseases such as obesity, diabetes type II, tooth decay, heart disease and others;
3. Overcoming nutritional needs of the student population most in need, providing them with nutrients and energy necessary for good cognitive performance;
4. Promoting young people's health through health education, specifically in respect to Healthy Eating and Physical Activity.

A leaflet on "School snack bars - healthy food" with advice for parents about healthy and nutritionally appropriate food for specific ages of students is available at the school snack bars (foods to promote, to limit and not make available) and was also published. For students of 1st (1st to 4th years) and 2nd (5th to 7th years) cycles, the Ministry of Education with the collaboration of the Portuguese Catholic University and other international partners produced the didactic material: "Food Security for the Youngest: Support Materials for Teachers of Basic Education", funded by the program Leonardo Da Vinci of the European Commission. The material is organized into two levels: For teachers of the 1st cycle it includes: a "teacher's Guide" that introduces the presentation of the content and activities, four presentations of content to the students (The discovery of the invisible world; The invisible world in food; From supermarket to the home; It's time to eat!); twelve activities, and a game. For teachers of the 2nd cycle (5th to 7th years), together with the teacher's guide and the introduction and presentation of the content and activities, there are five contents for students (The world of microorganisms; Food contamination and its prevention; The factory: a large kitchen; How to buy and store food; We can cook!), ten activities and three questionnaires.

The concerns of the balance of energy between intake and expenditure are essential to health. Therefore, it only makes sense to talk about food, when speaking also about physical activities. The GDICD/NHESSA has always valued physical activity as a constant target for health promotion, not only in the aspect of physical education as a curricular subject, and part of the "School Sports Area", but also in the perspective of the movement of recreational and leisure activities. Following the guidelines of the GDICD/NHESSA according to its website, the school is responsible for the development of skills in physical activities in young people, helping them to develop a taste for this subject and creating spaces and time where young people can spend energy in a safe manner. Furthermore, other agencies, including local authorities, are encouraged by the GDICD/NHESSA to create infrastructures that will enable young people and respective families to feel safe in the route between home and school in order to encourage the use of bike paths or pedestrian accesses routes.

The Prevention of the Consumption of Psychoactive Substances

According to the GDICD/NHESSA, the information and prevention of the consumption of alcohol, tobacco and illicit drugs in schools are issues that are part of the National Curriculum

of Basic and Secondary Education and can be addressed and developed in different disciplinary and non-disciplinary areas of the curriculum, like Citizenship Education, activities or projects that promote the enrichment of the curriculum, the development of healthy life skills and the building of attitudes based on active and responsible citizenship.

The guidelines of the GDICD/NHESSA in its website, define that throughout compulsory education, it is essential that students: recognize the dangers of alcohol, tobacco and other drugs in order to maintain a healthy lifestyle; identify and explain the consequences of drug use and its effects on the life process and social relationships; characterize risk behaviour (e.g. tobacco, alcohol and other drug consumption) to the physical or psychological integrity of the individual and explain some of its main consequences. The activities conducted in and by basic and secondary schools, framed by the school's educational project and the class curricular project, contribute to increase the level of information/ awareness on psychoactive substances and the acquisition/ development of healthy life skills and critical attitudes regarding risky situations by children and youths.

To promote healthy lifestyles and conditions, taking into account this problem, the National Assembly recommended twelve points for the Government to consider in the fight against alcoholism, in particular the following (Resolution of the Assembly of the Republic no. 76/2000 of 18th November):

(...) 2 – to develop an information project at the national, regional and local levels, focusing on schools and families, aiming at alerting the population to the risks and damage due to excessive alcohol intake;

3 – to promote a national campaign to improve awareness regarding excessive alcohol consumption, with messages and resources for specific target groups like pregnant women, children, adolescents, and heavy alcohol consumption;
(...)

5 – to equate the possibility of raising the legal age to permit the consumption of alcoholic beverages; (...)

7 – to regulate or prohibit the advertising of alcoholic beverages, especially with regards to sports associations or other specific activities aimed at young people;

8 – to regulate the functioning of bars and cafes near schools; (...) (Assembleia da República de Portugal 2000, 6584)

In the same month, the Resolution of the Council of Ministers no. 166/2000 of November 29th approved the Plan of Action Against Alcoholism, which is an integral part of this resolution. This plan highlights the main guidelines for action and measures to be taken to promote health and health education, developing and supporting programs in the area of alcohol consumption that include the development of public information campaigns, school curricula approach and awareness raising and training for specific high risk groups, that calls attention to the excessive, inappropriate or inconvenient consumption of alcoholic beverages, particularly in terms of (Presidência do Conselho de Ministros de Portugal 2000, 6840):

(...) b) Induction of instability and emotional and organic disturbances in children and young people with negative interference in school learning and intellectual ability in general, and adaptive capacity in the social environment, either by

integrating families with excessive consumption or alcohol dependence or by consuming alcoholic beverages;

c) Increase of disturbances in family relationships, with emphasis on domestic violence, the abuse of children and social violence;

d) Facilitation of risky behaviours among consumers and those around them especially in connection with acute alcohol intoxication particularly in young people, such as: aggressive and violent attitudes; dangerous driving of vehicles; unprotected and/ or unwanted sex, and with casual partners; increased susceptibility to drug abuse and eating disorders, suicide attempts and suicide;
(...)

This Resolution, amended by Decree-Law no. 332/2001 of 24th December (Presidência do Conselho de Ministro, Portugal 2001) limited advertising rules, for example: by extending the period of prohibition of advertising on television and radio of any type of alcohol between 7 am and 10:30 pm; including the labelling of all alcoholic beverages with warning messages regarding the possible negative effects by its consumption, especially by children, pregnant and nursing mothers and emphasizing that excessive, inappropriate or inconvenient consumption seriously damages health; establishing that marketing campaigns and advertising of any events involving minors, including sports, cultural, recreational or others, should not show or make any reference, implicit or explicit to a brand or brands of alcoholic beverages, and prohibiting sponsorship by alcohol companies to any sport, as well as cultural and recreational activities, aimed at minors. This Law also defined, among other things, that it is prohibited to sell and consume on the premises of sale, alcoholic beverages to individuals under 18; reinforced the control measures regarding the sale and consumption in restaurants, cafés or other establishments frequented by youths under the age of 18, and established a perimeter around the schools and any other settings aimed at children and young people within which the installation of new drinking establishments or any structures intended for the sale of alcoholic beverages will be prohibited. Decree-Law no. 9/2002 of 24th January (Presidência do Conselho de Ministro de Portugal 2002), amended previous Decree-Laws, establishing surprisingly, that it is forbidden to sell or for commercial purposes make available alcoholic beverages in public places to individuals under the age of 16 instead of 18, as was previously legislated!

Regarding tobacco, the Portuguese Government, by Decree no. 25-A/2005, 18th November (Ministério dos Negócios Estrangeiros de Portugal 2005), adopted the Framework Convention of the World Health Organization for Tobacco Control, adopted in Geneva by the 56th World Health Assembly on May 21st, 2003. In 2006, by Decree-Law no. 14/2006 of January 20th (Ministério da Saúde de Portugal 2006) updating Decree-Law no 226/83, May 27th, Portugal updated its rules on advertising and sponsorship of tobacco products, transposed into a national law by Directive no. 2003/33/EC of the European Parliament and the Council of 26th May on the approximation of laws, regulations and administrative provisions of member states in this matter. This law is based on the fact that tobacco consumption in Portugal is also one of the major determinants of health therefore the Government is declaring the fight against the consumption of tobacco a priority area of action, included in the broader objective of disease prevention and health promotion by encouraging the adoption of healthy behaviours and lifestyles. In this sense, this Law established that the use of tobacco in the following locations is forbidden: in units that

provide health services; in schools, including classrooms, study, reading or meeting rooms, libraries, gymnasiums and cafeterias; in places for minors (16 or under), in concert halls and other indoor sports and similar closed arenas (Article 2, paragraph 1). In these sites, it may be permitted to use tobacco in areas specifically designated for smoking, which should not include areas where sick people, individuals under 16, pregnant or nursing mothers and sports people have access (Article 2, paragraph 2). It is also forbidden to smoke on urban public transport and on suburban and interurban public transport when the duration of the travel is less than one hour (Article 3, paragraph 1). All forms of tobacco advertising through national advertising channels or based in Portugal are forbidden (Article 6, paragraph 1) and all packages of cigarettes intended for consumption in the national territory shall include: messages that alert consumers to the harmful effects and discourage tobacco consumption and showing for the content of each cigarette, the nicotine levels and the classification of "low", "medium" or "high" references in the respective levels (Article 8, paragraph 1).

On January 1st, 2008, Law 37/2007 of 14th August, the Tobacco Act (Assembleia da República de Portugal 2007), adopted rules for the protection of citizens from involuntary exposure to tobacco smoke and introduced measures to reduce the demand related to dependence, and cessation of its consumption was implemented at a national level. This Act reinforces the prohibition of smoking on urban and on suburban and interurban public transports and in certain places, including schools, and determines that it is prohibited to smoke in places intended for children under 18, including kindergartens, nurseries and other childcare establishments and also, the sale of tobacco products to minors under the age of 18.

To promote health through the prevention of consumption of psychoactive substances, the GDICD/NHESSA in its website has released a set of documents and educational resources for the prevention of the use of psychoactive substances in schools, namely a book (Sousa, Pinto, Sampaio, Nunes, Baptista, and Marques 2007) that aims to provide schools and the entire educational community with technical and scientific well-founded information on the consumption of alcohol, tobacco and illicit drugs and provide arguments to carry out reflection/ action for their prevention in schools. The GDICD/NHESSA in its website also provided schools with the "Annual Report 2011 on The Evolution of The Phenomenon of Drugs In Europe" (Observatório Europeu da Droga e da Toxicodependência 2011), the "Action Plan on Drugs and Drug Addiction 2009-2012" (Instituto da Droga e da Toxicodependência 2010 a), and the "National Plan for Reducing Problems Linked to Alcohol 2010-2012" (Instituto da Droga e da Toxicodependência 2010 b) and encouraged them to involve students in an interactive website, with content related to the issue of preventing the use of psychoactive substances, entitled Juvenile Website: Are you part of it? (Sítio juvenil: tu alinhas?) (<http://www.tu-alinhas.pt/InfantoJuvenil/homepage.do2>).

Sexuality Education in Schools and the Prevention of Sexually Transmitted Infections

Sexuality education in schools is mandatory and is intended for all institutions of basic and secondary public, private and cooperative schools in the national territory with agreements with the Portuguese Government. According the GDICD/NHESSA, in its website, sexuality education in the school community should: contribute to the improvement of affective and sexual relationships among young people; contribute to the reduction of possible adverse events arising from sexual behaviour, such as early pregnancy and infections (STIs); and to contribute to informed decision-making in the area of health education and sexuality

education.

The website of the GDICD/NHESSA has also been providing schools with the legislation on sexuality education in the last five years, and reports prepared by the Working Group on Sexuality Education created by Order no. 19 737/2005 (2nd series), 15th June 2005 (Ministério da Educação-Gabinete da Ministra de Portugal 2005) in order to propose the parameters of the program guidelines for sexuality education in schools.

In 2009, Law no. 60/2009 of 6th August (Assembleia da República de Portugal 2009, 5097) established the following guidelines for sexuality education:

- a) The valuation of sexuality and affection among people in individual development, respecting the pluralism of existing conceptions of the Portuguese society;
- b) The development of young people's competencies that enable them to make safe and informed choices regarding sexuality;
- c) The improvement of affective-sexual relationships of young people;
- d) The reduction of negative consequences of risky sexual behaviours, such as unwanted pregnancy and sexually transmitted infections;
- e) The ability to protect oneself against all forms of exploitation and abuse;
- f) The respect for the differences between people and different sexual orientations;
- g) The value of informed and responsible sexuality;
- h) The promotion of gender equality;
- i) The recognition of the importance of participation in the educational process of parents, students, teachers and health professionals;
- j) The scientific understanding of the functioning of biological reproductive mechanisms;
- l) The elimination of behaviours based on sexual-discrimination or violence based on gender or sexual orientation.

This Law also determines that in primary education, sexuality education must be integrated within the health education area in the non-subject curricular areas, namely in Citizenship Education, and in secondary education which falls within the scope of health education in subject and non-subject areas, in accordance with the posterior regulation by the Government. In 2010, Ordinance no. 196-A/2010 of April 9th (Ministérios da Saúde e da Educação de Portugal 2010) established the system of the implementation of sexuality education in schools defining that in either basic or secondary education, the content of sexuality education is developed in the context of health education in the non-subject areas and should respect the inherent transversal contents of the various subjects which they are integrated in. The content of sexuality education must attain the following minimum objectives for the 1st Cycle of Basic Education (1st to 4th years):

1st year: notion of the body; the body in harmony with nature and its social and cultural environment; notion of the family; differences between boys and girls; and body protection concepts of limits, e.g. saying no to abusive approximation;

2nd year: in addition to the content included in the programs of the "Physical Environment" area, the teacher should explain to students, issues and

questions that arise naturally, responding in a simple and clear way;

3rd and 4th years: in addition to the contents included in programs of the “Physical Environment” area, the teacher can develop themes that lead students to understanding the need to protect their own body to defend themselves against possible physical abusive approaches, advising them that if they encounter any questions or problems, they are entitled to ask for help from people who they can rely on such as the family or school. (Ministérios da Saúde e da Educação, Portugal 2010, 1170(3)-1170(4))

This program of the 1st cycle encourages teachers to provide students with a learning environment that develop students’ ability to construct their own sexual and gender identities and simultaneously, to solve any problems connected with their own psychosexual development.

In the programs of the 2nd and 3rd cycles, the principal concern is to give continuity to the program of the 1st cycle by continuing to explore the contents/problems and abilities to be developed in a spiral approach, and to promote the sexual and the reproductive health of students taking in account the awakening of their sexual maturity, which means: the new biological capacity of reproduction; the re-definition of their self-image and the configuration of their sexual desire. The content established by the Ministries of Education and Health for the 2nd Cycle (5th and 6th years) and 3rd Cycle of Basic Education (7th to 9th years) are the following (Ministérios da Saúde e da Educação de Portugal 2010, 1170(3)-1170(4):

2nd Cycle

- Puberty- biological and emotional aspects; body transformation, secondary sexual characteristics; normality, importance and frequency of their biopsychological development, diversity and respect;
- Sexuality and gender;
- Human reproduction and growth, contraception and family planning; understanding the menstrual cycle and ovulation;
- Prevention of sexual abuse and abusive approaches;
- Ethical dimensions of human sexuality.

3rd Cycle

- Ethical dimensions of human sexuality; understanding sexuality as one of the most sensitive component parts of the individual in the context of a life project that integrates values (e.g., affection, tenderness, growth and emotional maturity, ability to handle frustrations, appointments, voluntary abstinence) and ethical dimensions;
- General understanding of the physiology of human reproduction, understanding the menstrual cycle and ovulation; understanding the use and accessibility of existing contraceptives methods and, briefly, their mechanisms of action and tolerability (side effects);
- Understanding the epidemiology of major STIs in Portugal and worldwide (including HIV infection/Human immunodeficiency virus and HPV2/human papillomavirus, and its consequences) as well as their methods of prevention;
- To know how to protect ones own body, preventing violence and physical and

- sexual abuse and sexual risky behaviour, assertively refusing sexual and emotional pressures;
- Knowledge of rates and trends in maternity and paternity in adolescence and understanding their respective significance; knowledge of rates and trends regarding abortion, its consequences and its meaning;
- Understanding the concept of parenthood as part of a healthy and responsible sexual and reproductive health; and
- Prevention of abuse and abusive approaches.

In secondary school education (10th to 12th years), the program continues to be concerned with the progressive deepening of the biological, psychological, social and ethical dimensions of sexuality, however, it is more focused on the ethical aspects of human sexuality and in the development of a critical thinking regarding students' own sexuality and those of the community. The contents established by the Ministries of Education and Health are the following (Ministérios da Saúde e da Educação de Portugal 2010, 1170(3)-1170(4):

- The ethical understanding of human sexuality: without prejudice to the content already listed in the 3rd cycle, where deemed necessary, shall return to the previous themes/problems discussed because experience shows the advantages of re-addressing them with students who could already have started to be sexually active at this stage of their studies. The approach must be accompanied by a reflection on attitudes and behaviours of adolescents in the present;
- Understanding and determination of the menstrual cycle in general, with particular attention to identifying when the ovulatory period is, depending on the characteristics of menstrual cycles;
- Statistical information, e.g. on: the age of the onset of sexual intercourse in Portugal and the EU; pregnancy and abortion rates in Portugal; contraceptive methods available and used; safety provided by different methods; reasons that prevent the use of appropriate methods;
- Physical consequences and psychological and social aspects of maternity and paternity in teenage pregnancy and abortion;
- Diseases and sexually transmitted infections (such as HIV infection and HPV) and their consequences; prevention of sexually transmitted diseases;
- Prevention of abuse and abusive approaches.

In accordance with the limits defined in Article 5 of the Law 60/2009 of 6th August (Assembleia da República de Portugal 2009), the workload of sexuality education cannot be less than six hours for the 1st and 2nd cycles of basic education and not less than twelve hours for the 3rd cycle of basic and secondary education, distributed evenly over the year by the school. They are also obliged to adhere to the defined time space of the curriculum of sexuality education in the time spent on the subjects and extracurricular actions that relate to this area.

Mental Health - Violence Prevention in Schools

In Portugal, according to GDICD/NHESSA in its website, the prevention of violence in schools as part of mental health promotion and education of youths, is considered an inevitable approach in schools, since it cuts across all other priority areas of health education. The Portuguese National Mental Health Plan (2007-2016) approved in the Resolution of the Council of Ministers no. 49/2008 of March 6th (Presidência do Conselho de Ministros de Portugal 2008) argues that educational institutions must implement validated prevention programs, targeted to specific areas and most vulnerable groups. In the framework of the intersectorial articulation of this mental health plan, prevention activities for mental disorders and mental health promotion in schools are encouraged with the aim of reducing risk factors and promoting protective factors, reducing the incidence and prevalence of mental illness and minimizing the impact of disease on people, families and societies. In the National Mental Health Plan, the following promotion and prevention strategies are prioritized (Presidência do Conselho de Ministros de Portugal 2008, 1405):

Early childhood programs, including prenatal counselling, early intervention, parental training, prevention of domestic violence and child abuse, family interventions and conflict resolution;

Education programs on mental health at school age, the sensitization of teachers, youth violence prevention, counselling for children and adolescents with specific problems, drug abuse prevention programs, personal and social development, prevention of suicide and eating disorders.

In this ambit, the GDICD/NHESSA on its website established the following objectives for this area of health promotion and education in schools: to identify the various types of behaviours related to violence; to support awareness raising and promotion of mental health; and to promote continued knowledge-based intervention in partnership with relevant institutions in the field of mental health. Therefore, in order to support schools in the planning of their projects in this area, schools were provided with a book entitled: Violence in the School Context (Matos et al. 2010), which became a benchmark for supporting work in schools, in order for teachers to understand the phenomenon and to identify prevention strategies to develop in the school context. This book aims to help teachers to (Matos et al. 2010, 7):

- describe different types of violence;
- identify factors associated with the phenomenon of violence in schools;
- identify risk factors and protective factors associated with violent behaviour;
- describe individual and social factors of protection and risk of violence in children and adolescents;
- describe different types of approaches to intervention with antisocial behaviours;
- characterize different perspectives on juvenile delinquency;
- identify strategies of violence prevention developed in schools;
- identify responses of school to bullying/teasing among peers;
- describe prevention programs on violence based on the promotion of personal and social skills;
- identify, intervene and evaluate to facilitate the prevention of violence.

Taking into account the needs of mental health promotion in the Portuguese society, and since Portuguese students are in school about two-thirds of their day, integrating violence

prevention in the design of health promotion and education in the school setting becomes central to their health promotion.

Final Considerations

In Portugal, the reorganization of the educational system in 1986, ten years after the end of the dictatorship in the country, created the necessary conditions for an integrated approach to health education in the school environment, since non-subject cross curricular areas emerged in the school curriculum and health education among other areas of personal and social development were included in them. Currently each group of schools has a teacher-coordinator and an interdisciplinary team of teachers involved in health and sexuality education. This class project should be compulsorily included in the educational project of the Group of Schools, respecting the guidelines established by their General Council after hearing from student and parents' associations and teachers.

Portugal has been a member of the European Network of Health Promoting Schools (ENHPS) since 1994. The national network started with ten schools of all school levels and four health centres and in 1997, the challenge to schools to join the process of enlarging the National Network of Health Promoting Schools, according to the criteria set out by the ENHPS: democracy, equity, empowerment and action competence, school environment, curriculum, teacher training, measurement of success, collaboration, communities and sustainability was launched.

Since 2005 Health Education is compulsory for all schools in Portugal, and exist the following priority areas of intervention which have been worked on within the principles of health promoting schools: nutrition education and physical activity; prevention of consumption of psychoactive substances; sexuality and sexually transmitted infections; and within the area of mental health, violence prevention in schools.

However, there are some constraints that have emerged. First of all, despite the effort that has been made in the in-service teacher training on health education, it has not been sufficient to cover all teachers and all of their training necessities in this pedagogical and content area. Other constraints are the resistance by teachers to work on a transversal area for which they have not been trained, to work collaboratively, to develop their capacity to reflect in and on action and to carry out the assessment of their own health education projects.

Therefore, academic research on theory and practice in this area continue to be a challenge for researchers who are concerned with the sustainable increase of health promotion and education in the school communities.

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The Curricula of Sexuality Education in Mozambican and Portuguese Schools

What are the challenges for teachers and international partnerships?

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Abstract

The Ministry of Education and Culture of Mozambique has integrated in the curriculum of primary and secondary education, contents of Sexuality Education as cross-curricular themes. In Portugal, the Ministry of Education has already established from the 1st to 12th grades, similar cross-curricular contents of sexuality education with a different approach to integrate sexuality education in the school curriculum, including subject and non-subject curricular and extracurricular areas.

In this context, a comparative analysis between curricular integration of Sexuality Education and the challenges for teachers and schools and other professionals and organizations which collaborate with schools in sexuality education will be discussed with the aim of emphasising the potentials of international collaboration among students from different countries, especially those speaking the Portuguese language, and among researchers and other professionals regarding this particular area of teaching.

Keywords: Curricula of Sexuality Education, Teacher, International collaboration, Mozambique, Portugal

Introduction

The scientific community has shown that the quality of the first romantic experiences established in early adolescence is a significant milestone in a young person's development of the pattern of lifelong intimate partnerships that can establish a baseline for subsequent patterns among couples living in cohabitation, marital partners and the parental relationships with their children (Adams and Williams 2011). In this sense, Sexuality Education aims to teach about relationships and sex, in an culturally relevant and age-appropriate way, providing scientifically accurate, realistic and non-judgmental information to provide opportunities for participants involved in the educational process to allow them to explore their own values and attitudes and build decision-making, communication and risk reduction skills on the various aspects of sexuality (UNESCO 2009a, 2009b, Vilaça and Jensen 2011, Vilaça 2012).

However, although a large consensus regarding this vision of Sexuality Education exists (Vilaça 2012), and studies have shown that understanding the school environment can provides valuable information about the sexual behavior of students (serving as a filter for the promotion of sexual health or inhibiting it), and also the range of sexual knowledge and curiosity that underpin their sexual behavior may increase the effectiveness of interventions to prevent sexual risk taking behaviors in the sexual debut, few studies have incorporated the perspectives of adolescents on Sexuality Education (Charmaraman, Lee, and Erkut 2012).

In the last decade, a large number of studies in the ambit of the European Network of Health Promoting Schools applying the Democratic Health Education Paradigm by Bjarne Bruun Jensen (1997), have shown the efficacy of the IVAC methodology (Investigation – Vision – Action & Change) to value students' visions and their participation in order to develop their action competence, which means their ability to perform reflexive actions and bring about positive changes in relation to their own or community health (Jensen 1997, Simovska and Jensen 2003, 2008, 2009), and more specifically to their own or community sexual health (Rodrigues and Vilaça 2010 a, 2010b, 2011, Viegas and Vilaça 2010, 2011, Vilaça 2006, 2007 a, 2007b, 2008 a, 2008b, Vilaça, Squeira, and Jensen 2009, 2010).

The first phase of the IVAC methodology - Investigation (I) - illustrates the issues that should guide students to achieve a shared (common) perception about what the real problem they are working on today is: Why is this issue important for us? Why is it important to others? (consequences of the problem); What influence have lifestyles and / or life conditions had on this health problem? (causes of the problem). Students must be actively involved in choosing the problem and looking for an answer on why this problem is important to them. They should also work with the historical dimension in order to be able to conclude how the current condition or a given development of the problem was influenced; this is important to understand what the determinants that contributed over time to the development of these conditions were (Jensen, 2000). In other words, it is necessary to look at the problem from a historical perspective and include the social sciences to clarify the causes behind the problem remembering, in this sense, to use the observation methods to show the social, economic, cultural and social structures in which the problems were developed (Jensen 1995, 1997, Simovska and Jensen 2003, Vilaça and Jensen 2010).

The second phase - Visions - deals with the development of views on how the conditions in which participants' work could be seen in the future. This phase deals with the development of ideas, perceptions and views of students about what they want for their future lives and the society in which they will grow up in relationship to the problem under study (Simovska and Jensen 2003, Vilaça and Jensen 2010).

In the third phase of the sexuality education project - Action & Change - it is important that there is a space for the target population to use their imagination and think creatively to propose a large amount of possible actions related to the possibility of achieving some of the visions that were previously developed (Jensen 2000, Simovska and Jensen 2003, 2008, 2009, Vilaça and Jensen 2010, 2011). For every action proposed, their potential outcomes should be discussed in relation to the desired changes and the barriers that may arise and prevent the action, will result in desired changes in lifestyles and / or living conditions (Vilaça, Sequeira and Jensen 2011). Finally, the decision should be taken on what should be the first action to perform and plan, including how it will be assessed in relationship to the desired changes (Vilaca and Jensen 2010).

Some of these studies have shown how Information and Communication Technologies (ICT) could improve the establishment of co-partnerships between various schools of the same country (Vilaça 2006, 2009) or between countries (Simovska and Jensen, 2003).

In this context, a comparative analysis between curricular integration of sexuality education and the challenges for teachers and schools and other professionals and organizations which collaborate with schools in sexuality education will be discussed with the aim of

emphasising the potentials of international collaboration among students from different countries, especially those speaking the Portuguese language, and among researchers and other professionals regarding this particular area of teaching.

The Sexualisation of Curricula in Mozambican Schools

In the ambit of cultural reforms, the Ministry of Education and Culture of Mozambique has integrated in the curriculum of primary education (1st to 7th grades), general secondary education (8th to 10th grade) and medium level of general secondary education (11th to 12th grades), contents of Sexuality Education as cross-curricular themes, such as sexuality, sexual and reproductive health, sexually transmitted infections/AIDS, self-discovery and the prevention of unwanted adolescent pregnancies in various subjects (e.g., Natural Sciences/ Biology, Portuguese Language and Citizenship and Morals Education).

Mozambique, like other countries in the Sub-Saharan region, is facing serious problems related to HIV / AIDS and the sexual and reproductive health of young people and adolescents. As a result, AIDS has become not just a public health issue but also the major cause of death in both young people and adults in this country (Misau 2001). In terms of global efforts to prevent and combat this pandemic among young people and adolescents, (sexuality) education plays a major role in their training and awareness; in countries where the epidemic is severe, sexually active youths with higher education are more likely to use condoms than those with lower education levels (Jackson 2004).

In this context, the Mozambican Ministry of Education, as part of its curriculum reforms, made the integration of the content on Sexuality Education (Sexuality, Sexual and Reproductive Health-SSR), cross-curricular themes in the curricula of Primary and General Secondary Education, highlighting the 8th grade. Sexuality and Reproductive Health Education, apart from addressing or transmitting only a set of information about anatomy and physiology of genitals and the reproductive system, is also related to sexually transmitted infections (STIs) and AIDS prevention and demands a deep and serious reflection about values, beliefs, attitudes and behaviours regarding sexuality.

The content on sexuality is introduced for the first time in the curriculum of the 3rd grade in the Natural Sciences subject. In this grade, sexuality is treated in the Self-Discovery Unit, which has a workload of two classes per week, each with duration of 90 minutes. The main content in this teaching unit is the different transformations that occur throughout the lifecycle (childhood, adolescence and adulthood) and the main objective is to enable the student to understand the different stages of life that are part of human development (Table 1).

Table 1. The Self-Discovery Unit in the Natural Sciences subject of the 3rd grade

Specific objectives	Contents	Basic skills	Methodological suggestions
<i>Student should be able to:</i>		<i>The student:</i>	
- Describe the different stages of a person's life	Stages of life: childhood, adolescence, adulthood	Understands that the different stages of life are part of human development	From the family of the students to get them to identify the different stages of people's lives

In the 4th grade, the Self-Discovery Unit is also addressed in the Natural Sciences subject, also with two classes per week with duration of 90 minutes. According to the program, this theme is aimed primarily at developing students' self-esteem through knowledge and the knowledge of body care. In this unit, contents such as body knowledge, respect for the body and body hygiene are present (Table 2).

Table 2. The Health and Self-Discovery Units in the Natural Sciences subject of the 4th grade

Specific objectives <i>The student should be able to:</i>	Contents	Basic skills <i>The student:</i>	Methodological suggestions
<i>Health (4 hours)</i>			
- Identify some of the most common diseases	Some diseases (e.g., cholera, tuberculosis, measles, malaria, tetanus, AIDS)	Knows the most common diseases, their signs, symptoms and method of prevention	Students may obtain from the survey knowledge about the most common diseases, and describe their signs and symptoms
-Discuss some measures of disease prevention	- Measures to prevent some diseases		
-Identify the modes of transmission of most common diseases	- Modes of transmission of more common diseases		
<i>Self-Discovery (2 hours)</i>			
-Develop self-esteem through knowledge and body care.	- Knowledge of his/her own body - Respect for his/her own body - Hygiene of his/her own body	-Respects his/herself and respects others -Values him/herself	- Students can make different designs for short, tall, thin, fat people, etc. and starting from there the teacher explains that people should be treated with respect, equality and dignity as human beings. - Develop the spirit of personal self-esteem or value.

In the Natural Sciences subject of the 4th grade, the Self-Discovery Unit is preceded by the Health Unit, where students study some more common diseases in Mozambique (e.g., cholera, tuberculosis, malaria and AIDS), and their mechanisms of transmission, prevention and treatment with four teaching periods of 180 minutes being reserved for this theme. The main objective is to enable the student to understand and identify the most common diseases, their symptoms and prevention methods.

Sexuality is also addressed in the 4th grade of the Social Sciences subject, for example, in the Family Unit, where students discuss: the social, economic and cultural roles of family members, the rights and duties of the family; rites and ceremonies; and rules and basic principles to be observed in key moments of the family (birth, birthdays, adolescence,

marriage, death, rites and rituals). This topic has 16 teaching periods and among other objectives, this Unit aims to develop students' skills and abilities and allow them to know the environment which they live in, which means their community and their country; to prevent diseases like AIDS and other sexually transmitted infections; to appreciate and value their culture, including traditions and patterns of behaviour and to demonstrate positive attitudes and values to the society in which they live.

The Social Sciences subject of the 5th grade does not have any topics related to sexuality and reproductive health. In this grade, sexuality and sexual and reproductive health issues are treated with great and particular emphasis in the Natural Sciences subject, although other subjects such as the Portuguese language subject makes some reference to topics such as: Family, Health and Hygiene, feelings, desires and attitudes and dealing with their sexuality in their own socio-cultural and affective aspect.

The Natural Sciences subject addresses the issue of health in a global way, that is, basic rules of hygiene, and prevention of some common diseases, and in the Reproductive System Unit, the anatomy and physiology of the human reproductive system is dealt with in four teaching periods. In this unit, the following contents are addressed: the constitution of the male (penis, testicles, seminal canals, urethra, and scrotum) and female (vagina, uterus, fallopian tubes, ovaries) reproductive systems, genital hygiene and fertilization / reproduction (Table 3).

Table 3. The Reproductive System, Self-Discovery and Health Units in the Natural Sciences subject of the 5th grade

Specific objectives <i>The student should be able to:</i>	Contents	Basic skills <i>The student:</i>	Methodological suggestions
<i>Reproductive system (4 hours)</i>			
- Know the importance of reproduction in living beings	- Male reproductive system (penis, testicles, seminal canals, urethra, scrotum)	Identifies the major organs and functions of reproductive systems	The teacher may use pictures or murals and can ask students to produce posters representing the male and female reproductive systems
- Identify the main organs of the female and male reproductive tract	- Female reproductive tract (vagina, uterus, fallopian tubes, ovaries)		
- Describe the functions of the major organs of the reproductive system	- Hygiene of genitals		
- Understand the process of fertilization.	- Fertilization		
<i>Self-discovery (4 hours)</i>			
- Recognize the changes that occur at puberty	- Transformations that occur in puberty, pregnancy and childbirth	-Recognizes the characteristics of behavior in the different phases	Asking students to say if they notice differences in their own bodies and
- Accept the changes that occur in his/her			

- | | | | |
|---|---|---|--|
| <ul style="list-style-type: none"> - Discuss the issues of having or not having children - Recognize the signs of pregnancy - Understand the consequences of teenage pregnancy | <ul style="list-style-type: none"> - Consequences of teenage pregnancy | <ul style="list-style-type: none"> of change -Understands that the changes occur in all people and are part of the development of the individual -Prevents situations leading to teenage pregnancy | <ul style="list-style-type: none"> those of colleagues or older siblings. |
|---|---|---|--|

Health (4 hours)

- | | | | |
|---|--|--|---|
| <ul style="list-style-type: none"> - Identify the modes of transmission and prevention of AIDS - Develop behaviors of solidarity with people living with AIDS - Explain how diseases spread - Apply preventive measures | <ul style="list-style-type: none"> - Methods of transmission of AIDS - Solidarity with people living with AIDS - Infectious diseases (cholera, meningitis, flu, scabies) - Non-communicable diseases (malaria, heart disease) - Some preventive measures for contagious and non-contagious diseases | <ul style="list-style-type: none"> -Protects him/herself from diseases including AIDS -Understands the ways of transmission of diseases including AIDS | <ul style="list-style-type: none"> -The teacher leads the way with advertising posters on HIV / AIDS and explores with students, the messages contained therein. If possible, ask a health professional to conduct a lecture on HIV / AIDS according to the respective ages of the students. |
|---|--|--|---|

According to the program, it is expected that at the end of this thematic Unit the student is able to: know the importance of reproduction in humans; mention the main organs of the reproductive system (male and female); describe the functions of the main organs of the reproductive tract, and be familiar with the process of fertilization. After the Self-Discovery Unit (introduced in 3rd grade) is developed, and for the first time, the term "sexuality" appears explicitly in the curriculum, integrating the Self-Discovery and Sexuality Unit. In this Unit, aspects such as changes that occur during puberty, pregnancy and childbirth, and the consequences of teenage pregnancy are treated in four one hour segments. According to the program, the objectives are the following: helping the student to recognize the changes that occur at puberty; discuss the question of whether or not to have children; and recognizing the signs of pregnancy and its consequences in adolescence.

Finally, the Health Unit, which had also been treated equally in previous grades, is dealt in greater depth in four one-hour segments. This thematic Unit covers among other topics, the ways of transmission and prevention of AIDS and solidarity towards individuals living with AIDS. Also, the main objectives of this Unit are to develop students' skills to prevent being inflicted with diseases including AIDS, knowing the ways of transmission of diseases including AIDS, and developing behaviour patterns of solidarity with people living with AIDS.

The content on sexuality (from the social point of view) has its beginning in the 6th grade, in the Morals and Civic Education subject, in its 3rd Unit, Man and the Environment, that has a workload of 15 hours. This Unit, among others, includes the following contents: the different relationships between men and women; the sexuality of the human body (male and female); physical changes in pre-teens; puberty – the physical, psychological and behavioural changes of the body (Table 4).

Table 4. Man and the Environment Unit in the Morals and Civic Education subject of the 6th grade

Specific objectives <i>The student should be able to:</i>	Contents	Basic skills <i>The student:</i>	Methodological suggestions
<i>Man and the Environment (15 hours)</i>			
- Identify the importance of different kinds of human relationships	- The different relationships of man with himself, with others, with nature	-Knows him/herself	-Brainstorming
- Encourage the understanding of all physical changes that lead to sexual maturity	- Human sexualized body: male and female	-Respects him/herself and others	-Starting from simple aspects that distinguish a man from a woman, and to go deeper as students grow and note differences among themselves.
- Observe in everyday life, the rules of personal and public hygiene	- Changes in the period of pre-adolescence / puberty: physical changes and psychological changes in the body and behavior	-Respects the differences between men and women	
	- Rules of personal and public hygiene	-Recognizes the changes that will occur in his/her body as he/she grows	

The major objective of this unit is, according to the program, to encourage student to understand all the physical changes that lead to sexual maturity.

Sexuality and Sexual and Reproductive Health issues are also addressed in the 6th grade in the Natural Sciences subject in the Self-Discovery and Sexuality and Reproductive Health Units (Table 5).

Table 5. The Self-discovery and Sexuality, Reproductive Health and Reproductive System Units in the Natural Sciences subject of the 6th grade

Specific objectives <i>The student should be able to:</i>	Contents	Basic skills <i>The student:</i>	Methodological suggestions
<i>Self-discovery and Sexuality (5 hours)</i>			
- Describe the menstrual cycle	- Menstrual cycle	- Is able to determine the fertile period	-To draw a picture of the menstrual cycle
- Determine the fertile	- Initiation rites		
	- Factors influencing		-To develop posters

<ul style="list-style-type: none"> period - Identify the initiation rites of their community - Discuss sexual rights 	<ul style="list-style-type: none"> decision making (family, school, church, community, taboos) - Sexual Rights 	<ul style="list-style-type: none"> -Exercises his/her sexual rights 	<ul style="list-style-type: none"> concerning sexual rights.
<i>Reproductive Health (9 hours)</i>			
<ul style="list-style-type: none"> - Recognize that the responsibility for the prevention of STDs / HIV / AIDS belongs to both the man and woman - Recognize that the responsibility for the prevention of a pregnancy belongs to both the man and woman -Discuss reasons to postpone sexual relationships - Respond assertively to pressures to have sex - Recognize the importance of counseling before starting sexual life - Recognize the importance of family planning in protecting women's health - Discuss the consequences of teenage pregnancy 	<ul style="list-style-type: none"> - Responsibility of both the man and woman in the prevention of STDs / HIV / AIDS - Responsibility of both the man and woman in preventing pregnancy - Contraception - Learning to say no to pressure from friends and partners - Searching for help / advice - Access to information and programs on reproductive health 	<ul style="list-style-type: none"> - Understands that the prevention of STDs / HIV / AIDS and pregnancy is the responsibility of both of the man and woman -Resists sexual pressures -Seeks for help when necessary 	<ul style="list-style-type: none"> -To prepare and carry out a survey of who is responsible for the prevention of STDs / HIV / AIDS and from there to explain that it is the responsibility of both individuals -To develop a short questionnaire to interview some people about who has the responsibility of preventing pregnancy -To prepare a survey of the reasons for delaying the onset of sexual intercourse -To invite a Technician of The Maternal Child Service to give a lecture on contraception and the importance of family planning -Role-play in which youths can say no to sex Role-play about situations in which it is necessary to seek advice

Regarding the Self-Discovery and Sexuality Units, the following topics are developed: the menstrual cycle; initiation rites; factors influencing decision making (family, school, church, community, taboos); and sexual rights. In the Reproductive Health Unit, topics such as the following are approached: the responsibility of men and women in the prevention of STIs/ HIV/ AIDS and pregnancy; contraceptive methods; resistance to social pressures (learning how to say no to the pressures of friends and partners, especially regarding sexual intercourse); searching for help / advice; and accessing information on reproductive health programs.

The content on sexuality and reproductive health is deepened and consolidated in the 7th grade, both in the Morals and Civic Education subject and in the Natural Sciences subject. In the Morals and Civic Education subject, despite adding more depth and consolidation in the Man and the Environment Unit, two new Units: Self-Discovery and Sexuality, and Reproductive Health are introduced (Table 6).

Table 6. Man and the Environment Unit in the Morals and Civic Education subject of the 7th grade

Specific objectives <i>The student should be able to:</i>	Contents	Basic skills <i>The student:</i>	Methodological suggestions
<i>Man and the Environment (21 hours)</i>			
-Get to know him/herself Valuing friendship and love with colleagues, neighbors and the wider community	- Human body: health and hygiene, and first aid - Transition from childhood to adolescence and adulthood: physical changes and emotional, psychological - Relationships with others: What should I do so that others do not do what I do not want?	-Identifies the phenomena of physical growth that leads to adulthood - Concludes that the student's physical growth is accompanied by changes in his/her behavior and affections	-Students discuss between themselves the physical modifications that they feel as they grow -The teacher can explain to students what is psychic and emotional behavior

In the Natural Sciences subject, Sexuality and Reproductive Health topics are addressed in the Human Reproductive System, together with the Self-Discovery and Sexuality Units (Table 7).

Table 7. The Reproductive System and Self-discovery and Sexuality Units in the Natural Sciences subject of the 7th grade

Specific objectives <i>The student should be able to:</i>	Contents	Basic skills <i>The student:</i>	Methodological suggestions
<i>The Reproductive System (5 hours)</i>			
- Recognize the major organs of the human reproductive system - Recognize their roles	- Functions of the reproductive organs: .Female (vagina, uterus, fallopian tubes and ovaries) .Male (penis, testicles,	-Knows the physiology of the major organs of the reproductive tract	-Use of models, drawings showing the main organs of the reproductive system.

vas deferens,
epididymis, urethra,
prostate, seminal
vesicles).

Self-Discovery And Sexuality (9 hours)

- | | | | |
|--|--|---|------------------------------|
| - Recognize some feelings of friendship and love | - Factors influencing the decision making | -Is able to discuss with parents about sexuality issues | - Role playing relationships |
| - Identify relationships in adolescence | - Relationships in adolescence (Friendship and Love) | - is able to report sexual harassment/ rape or sexual abuse | |
| -Enhance the role of parents as advisors and friends | - Situations that affect self-esteem | -Understands that sexuality is part of life for all people | |
| -Discuss situations that affect self-esteem | - Parents as advisors and friends | | |
| -Accept the diversity of values | - Difference between sex and sexuality | | |
| -Differentiate sex and sexuality | - Respect for diversity of values | | |
| -Discuss some aspects of sexuality | - Initiation rites | | |
| -Report harassment, violence and sexual abuse. | - Virginity | | |
| | - Sexual orientation | | |
| | - Masturbation | | |
| | - Sexual harassment | | |

Thus in the first Unit, the functions of the human reproductive organs are approached. In the second Unit, on the one hand, some contents are treated in a more in-depth and consolidated way, namely: factors that influence our decision-making; relationships in adolescence (Love / Friendship); situations that affect self-esteem; initiation rites; and respect for diversity and values. On the other hand new themes are introduced, such as: parents as counsellors and friends; virginity; sexual orientation; masturbation; discovery of some diseases by examining the breasts and testicles; sexual harassment; gender differences and sexuality. For all these topics, 53 hours plus an additional 15 hours for the local curriculum are reserved, which makes a total of 73 hours for the treatment of these aspects in this grade.

The approach to human sexuality and sexual and reproductive health in the 8th grade are made up around two main areas: Reproduction and Human Development and Sexual and Reproductive Health. In this context, these issues are addressed in the Reproduction and Ontogeny Unit, lasting for 19 hours.

The Reproduction and Human Development content includes human reproduction and ontogeny. The first topic includes: pregnancy and its stages of development - fertilization, implantation and formation of the embryo, foetus, pregnancy - signs, duration and care; childbirth-phases: initiation, expansion, expulsion and exit of the placenta, type of birth, breastfeeding and its importance); reproductive anatomy: constitution of the reproductive system (male and female); and reproductive physiology: male and female reproductive system; function of glands: prostate and seminal vesicles; function of the genital tract - fallopian tube, uterus and vagina; pregnancy and its development stages; signs of

pregnancy, duration and care; childbirth and its phases; types of delivery; and breastfeeding and its importance. The second topic, Ontogeny, includes the stages and characteristics of child, youth and adult development:

The second thematic area, Sexual and Reproductive Health, includes: contraception (contraceptive methods - advantages and disadvantages of each method); early marriage and pregnancy – consequences and prevention of early pregnancy; the reproductive system and health (hygiene of genitals, common STIs in Mozambique and HIV / AIDS - transmission, symptoms, prevention and treatment - diseases related to male and female reproductive systems).

In summary, previously the contents related to sexuality and sexual and reproductive health and, HIV / AIDS were analysed in the Mozambican national education programs from the 3rd to 8th grades. We rely specifically on thematic Units, its contents and its workload, the type of approach, the specific objectives to develop students' basic skills and methodological suggestions.

Sexuality Education Projects in Portuguese Schools

In Portugal, based on the distribution of AIDS cases until December 31st 2011, 41,035 cases of HIV / AIDS in different stages of infection were reported; the analysis of the distribution of AIDS cases by gender shows that 80.9% corresponds to males, and the analysis by age group shows that 25% are between 20 and 29 (MS, INSRJ, DDIURVE and NVLDI 2012). Given the long latency period between HIV infection and AIDS diagnosis, these young adults were probably infected as teenagers. Other concerns are the high incidence in Portugal of teenage pregnancies (World Health Organization 2010) and abortions before 20 years of age (World Health Organization Regional Office for Europe 2011).

The Portuguese Ministry of Education has already established from the 1st to 12th grades in the majority of curricular subjects (e.g. Natural Sciences, Morals and Catholic Religion Education, Languages, History, Geography), similar to Mozambique's cross-curricular topics of Sexuality Education but with a different approach, to integrate Sexuality Education in the school curriculum, including subject and non-subject curricular and extracurricular areas, which have emerged in recent years by way of the planning of a Health and Sexuality Education Class Project that is carried out under the coordination of the class tutor. This project should be compulsory in the educational project of the groups of schools, respecting the guidelines established by their General Council after hearing from Student and Parent Associations and teachers. In addition, by the Law no. 60/ 2009 (Assembleia da República de Portugal 2009), each class has a teacher responsible for Health and Sexuality Education whose function, together with the Class Director and all class teachers, is to develop at the beginning of the school year, the Class Sexuality Education Project, which should contain the contents and themes which will later be approached, the initiatives and visits to be made, and the invited authorities, technicians and specialists outside the school. This class project should be compulsorily included in the educational project of the school groups, respecting the guidelines established by their General Counsel after hearing from student and parents' associations and teachers.

According to the Law no. 60/2009, the content of Sexuality Education should be developed within the framework of non-subject curricular areas and should respect the transversality

inherent in the various subjects and also, integrating the subject curricular areas. This Law also establishes that the groups of schools of the 2nd and 3rd cycles of basic education and secondary education should make available to students an Information and Student Support Office (ISSO). The care and operation of the respective ISSO provided by trained professionals in the areas of Health Education and Sexuality Education must operate at least one morning and one afternoon per week, coordinating its activity with the respective Health Units of the local community, or other state agencies, including the Portuguese Youth Institute, and should ensure a site on the Internet with information that promptly ensures an answer to questions put forward by students and, have a comfortable, functional and discrete environment for its operation, organized with the participation of students, which ensures confidentiality to its users, and adequate access to contraceptives methods.

The number of hours devoted to Sexuality Education should therefore be tailored to each level of education, and each class should not be less than six hours for the 1st (1st to 4th grades) and 2nd (5th to 6th grades) cycles of primary education, and twelve hours for the 3rd cycle (7th to 9th grades) of primary education and secondary education (10th to 12th grades). In Portugal, Sexuality Education is understood as being part of the entire educational process and one of the components of health promotion where students should be the principal actors (ME, MS, APF, and CAN 2000). Since sexuality is considered as a life area and a space for dialogue, students should be allowed to put forward problems and collaborate in their resolution (CNE 2005). The curriculum of Sexuality Education must meet the minimum objectives that were set for the 1st to 12th grades by the Portuguese Education and Health Ministries (2010).

Compared with the Mozambican curricula for the 3rd and 4th grades, the Portuguese National Guidelines for Sexuality Education of the 1st cycle of primary education (from de 1st to 4th grades) is similar to the Mozambican “Self-Discovery” Unit. Portuguese Guidelines have established that teachers should create conditions for students to become aware of their own bodies and discover the differences between boys and girls, as well as to increase their awareness regarding the existence of different kinds of families, to be able to protect their own body and to understand the notions of limits, such as saying no to abusive advances (Table 8).

Table 8. The Portuguese contents of 1st Cycle (from 7 to 10 year-old)

Concept of body
The body in harmony with Nature
Notion of Family
Differences between boys and girls
Protection of the body and notions of limits, saying no to abusive approaches

According to Vilaça (2006), these contents conform to the bio psychosexual development of this phase of the lifecycle because from around six to seven years of age, children have already generally acquired a clear understanding of the basic anatomical differences between the sexes and usually begin to not want to expose their bodies; the internalization they are making of the sexual morals of adults through comments and gestures that they see in sexual behaviors and examples they received from adults, brings about a strong modesty in the exhibition of their bodies. Vilaça (2006) argues that the attitudes and practices of

parents influence children's self but at the same time, the curiosity of the child is likely to bring out games like "playing doctors" which can simply add games to inspect the genitals of one another or by sometimes touching, kissing or rubbing these organs; by eight and nine years of age, children are generally still unaware of the erotic element of sexual activities and only see them as jokes, therefore sexual arousal is more a sub-product of these deliberate activities.

The Portuguese contents from the 5th to 6th grades are similar to the Mozambican contents of the "Reproductive System" and "Self-Discovery" Units of the Natural Sciences subject of the 5th grade and the "Man and the Environment" Unit in the Morals and Civic Education subject and the "Self-Discovery and Sexuality" Unit in the Natural Sciences subject of the 6th grade, as is described in table 9.

Table 9. The Portuguese contents of the 2nd Cycle (from 11 to 12 years of age)

Puberty: biological and emotional aspects
The body transformation
Secondary sexual characters
Normality, importance and frequency of bio-psychological variants
Diversity and tolerance
Sexuality and gender
Human reproduction and growth, contraception and family planning

The WHO Europe, Federal Centre for Health Education and BZgA (2010) advocates that between the ages of 11 and 13, the interests of pre-adolescents shift as they start concentrating more on a detailed knowledge of the body and the sexual organs, and especially those of the opposite sex. They argue that during puberty, social identity is supplemented by the search for a psychological identity; adolescents reflect on their personal qualities and significance and consider their place in the world, forming an identity that is closely linked with their self-image. Vilaça (2006) adds that sexual development is accelerated during puberty; at puberty begins biological sexual maturation, including the maturation of the reproductive system and the development of secondary sexual characteristics which leads to a sudden change in the configuration of the body. As a consequence, the mental representation that pre-teens have of their body, together with the attitudes and feelings that it arouses in others, evolves throughout life as they experience different sensations in their relationship with their environment and those around them. In this sense, according to Vilaça (2006), at this age pre-teens need to assume a new potential function of the body, its reproduction capacity, and to learn how to cope with the re-definition of their self-image and about new sensual and sexual responses.

The Portuguese contents from the 7th to 9th grades develop in a more in-depth way the previous contents of the 2nd cycle but add the development of the reflexive thinking in students to promote their self-reflection regarding their own and peer values and attitudes regarding: prevention of violence and physical and sexual abuse and sexual risk behaviours; adolescent maternity and the termination of pregnancy; and parenting as part of a healthy and responsible sexual and reproductive health (Table 10).

Table 10. The Portuguese contents of the 3rd Cycle (from 13 to 15 years of age)

General physiology of human reproduction
Menstrual cycle and ovulation
Sexuality as one of the most sensitive components of the person, in the context of a life project that integrates values and an ethical dimension
Use and accessibility of contraceptives methods and side effects
Epidemiology and prevalence of major STIs (HIV and VPH2), prevention methods
Prevention of violence and physical and sexual abuse and sexual risk behaviours, say no to sexual and emotional pressures
Percentage and understanding of adolescent maternity and terminations of pregnancy, and their respective sequels meaning
Notion of parenting as part of a healthy and responsible sexual and reproductive health

These contents are more focused on sexual and reproductive health and how to gain access to contraceptive methods and for the first time, HIV/ AIDS and other STIs are approached in the curriculum. Therefore, the prevention of STIs is carried out later in Portugal than in Mozambique but other contents from the 7th to 9th grades are similar to Mozambican grades.

From the 10th to 12th grades, the Portuguese Education and Health Ministries (2010) have established that the curriculum of the 3rd cycle should be approached in secondary education (from the 10th to 12th grades) but using as a starting point, the national and EU reality regarding: first sexual intercourse; evolution and impact on rates of pregnancy and abortion and epidemiology of STIs, namely HIV/ AIDS (Table 11).

Table 11. The Portuguese contents of secondary schools (from 16 to 17 years of age)

Repeat contents linked to the national reality:
Trends in age at first sexual intercourse
Contraceptive methods available and used. Reasons for their failure and for teens do not use them
Evolution and impact on rates of pregnancy and abortion (between us and the EU)
Aspects related to the incidence and sequelae of STIs (HIV and HPV)
Physiology of human reproduction: identifying the menstrual cycle and fertile period depending on the characteristics of their menstrual cycles

The principal differences between Mozambican and Portuguese programmes regarding Sexuality Education are not related to the content selection but on the ways of their integration in the school curriculum and regarding the methodological approach. In Portugal, students have always been regarded in the Law as the principal actors in Sexuality Education, accepting sexuality as an area of life and as a space for dialogue, where students should put forward their own or their community's problems and collaborate, individually or collectively, in seeking solutions to these problems. Following this logic, only the active

participation of students in school activities contributes for their genuine involvement in Sexuality Education.

The family is described by the Portuguese law as the cornerstone of Sexuality Education in the school [e.g., Law No. 3/84 (Assembleia da República de Portugal, 1984); Law No. 120 / 99 (Assembleia da República de Portugal, 1999; Decree - Law No. 259/2000 (Ministério da Educação de Portugal, 2000)]. It is also always very explicit in the law that the role of co-partnerships, especially with the Health Centre of the local area of the School, and structures to support Health and Sexuality Education in the school community cannot be overlooked. As a starting point for this reorganization at the school level, the Decree - Law No. 190/91 of 17 May (Ministério da Educação de Portugal 1991) declared that the Psychology and Guidance Service is to be considered a specialized unit of educational support integrated into the school system, with the role of contributing to the overall development of the students and to the construction of their personal identity, and support for students in their learning process and integration into the systems of interpersonal relationships and the school community. No less important was the emergence of the Students Support Office in schools by Law No. 120/99 (Assembleia da República de Portugal, 1999):

The creation of a Student Support Office should be promoted, which among other goals set by the school after hearing the Parents' Associations, will hold various activities to promote health education, particularly on human sexuality and reproductive health, in conjunction with the Health Services (Article 3).

The partnerships established for Sexuality Education at the central or local level were also being encouraged by national policies. First, the Ministry of Education created the Health Promotion and Education Programs in schools by developing the *Life Project* (Projeto Vida) and the *Hurray School Project* (Projeto Viva a Escola) and later, the *Program for Health Promotion and Education*, which ended with the entry of Portugal in 1994, in the European Network of Health Promoting Schools (ENHPS), currently known as Schools for Health in Europe. In the academic year 1995/1996, the Ministry of Education implemented the Experimental Project of Sexuality Education and Health Promotion in Schools in partnership with the Association for Family Planning (APF) and supported by the General Directorate of Health. As a consequence, there appeared the "Report Prepared for the Ministerial Plan of Action on Sexual Education and Family Planning." This document was prepared by a committee made up of elements of the Ministries of Education, Health, Justice, Labour and Solidarity and, the Ministry of Youth and became a national guide to sexuality education because it delineated the roles of the state, defined the first legal document on sexuality education in schools, and established a national strategy based on three principles: the promotion of the development of Sexuality Education as a component of global education and also, as a component of health promotion; coordination between the various ministries to achieve the main objectives of Sexuality Education; identifying particular actions already undertaken in schools in order to develop their potential.

The priority objectives identified in this report, highlighted three characteristic elements of "individual and social participation," which are: "active participation", "decision making" and "making potentially correct choices" to solve individual and social problems. These objectives underlie the option for pedagogical approaches that promote the development of competence for participation in students, as these objectives highlight the notion that

Sexuality Education should integrate the development of individual abilities to live their own sexuality and to make personal decisions about their own sexual behaviour, particularly with regards to refusing sexual coercion. They further clarify that this personal decision-making has to be a personal responsibility and an activity of one's own autonomy. When this personal decision-making is not possible, the objectives contemplated that other means must exist within the community to help individuals make their own decisions. These objectives also clarify the scope of sexuality education as defined sexuality education and as a component of the overall education process and a component of health promotion in the school environment in its various dimensions: curriculum, psychosocial, ecological and community.

In order to attain these objectives, the IVAC methodology, with the use of information and communication technologies above referred to has been successfully applied in Portuguese Sexuality Education Projects (Rodrigues and Vilaça 2010 a, 2010b, 2011, Viegas and Vilaça 2010, 2011, Vilaça 2006, 2007 a, 2007b 2008 a, 2008b, Vilaça and Jensen, 2009, 2010, 2011). All students were unanimous in their agreement that the most attractive element for them in this action-oriented project was seeing their ideas and work taken seriously by adults, who worked with them as equals (teachers, doctors, psychologists and nurses), and especially by parents during their experiences of action. In these projects, the extensive possibilities for students to genuinely participate in projects intentionally directed towards the development of collective actions to solve sexual or reproductive problems with peers (peer education) or adults in the community (interviews, questionnaires and roundtables) aimed at changing life conditions, helped to enable students to make their voices heard in the school and in their society, helped them to acquire a better balance between the involvement of teachers and students at work in the school and, provided an open and reflective environment regarding sexual health and the role of students and teachers in a democratic health promoting school.

Some of these projects involved the twinning of classes of different Portuguese schools (Vilaça 2006, 2007 a, 2007b 2008 a, 2008b, Vilaça and Jensen, 2009, 2010, 2011) or classes from other countries, having students express the desire to increase their competences to talk with youths from other countries regarding sexual behaviour, sexual problems and ways to solve them (Vilaça 2006, 2008b).

Conclusions and implications for the future: Challenges for Teachers and International Partnerships

The White Paper on Intercultural Dialogue (Council of Europe, 2008) argues that intercultural dialogue can only thrive if: the democratic governing of cultural diversity is adapted in many aspects; democratic citizenship and participation should be strengthened; intercultural competences should be taught and learned; space for intercultural dialogue should be created and widened; and intercultural dialogue should be taken to the international level. Mozambique and Portugal have good possibilities to promote intercultural dialogue in contributing to solve sexual and reproductive health problems because: i) these countries share the same contents of Sexuality Education to be learnt by students and, their democratic political system wishes to empower students to control their own sexual and reproductive health; ii) although with different integration in the school curriculum, both countries use active pedagogic activities focused on students; iii) in Portugal, research

programs regarding sexuality education have been successful using action-oriented sexuality education projects with the use of ICT to promote student action competence and national and international collaboration by way of the Internet.

Therefore, currently, teachers from both countries face the following major challenges to promote an international partnership to develop collaborative work to promote sexual and reproductive health between students of Mozambique and Portugal:

- the strengthening of the links between basic and secondary schools and the university of their country, namely sharing material by way of the Internet;
- encouraging students to plan their action-oriented sexuality education projects involving twinning classes of Mozambique and Portugal;
- the promotion of action-oriented learning and practice on Sexuality Education and maintaining them throughout the lifecycle in formal, non-formal or informal educational activities;
- encouraging students to be change catalysts within their family and their community of reference to promote their sexual and reproductive health which will enable them to act as an active and responsible citizen respectful of others; and
- strengthening democratic citizenship and the participation of students.

These challenges imply working on three key competence areas: democratic citizenship, language and history and the identity of both countries involved. Applying IVAC methodology in sexuality education involves civic, historical, political and human-rights education, education in the global context of societies and on cultural heritage. This methodology involves a multidisciplinary approach and combines the acquisition of knowledge, skills and attitudes – particularly the capacity for reflection and the self-critical disposition necessary to solve sexual problems in culturally diverse societies.

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Teachers' Promotion System and Improving of School Work Quality

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Abstract

In the year 2000 – under educational system reform – new teachers' promotion system was introduced in Poland.. The basic goal of the new advancement system (four professional grades and raising salary scale to match them) was to create a stable professional career path leading to permanent improvement of teacher competences, motivating them to take activities developing school educational process, which should bring higher quality of school work. Reformers also wanted to raise the prestige and attractiveness of teacher profession. All the changes are to motivate teachers to follow planned, considered path of personal, professional development, permanent improvement and self-evaluation leading also to raising quality of school work.

After more than 10 years of functioning of the system of teachers' promotion it's worth answering several important questions: has the system reached its aims? Does the higher professional grades really mean more advanced professional development? Is improvement of teacher competences reflected in the quality of school work? It's not easy to answer these questions because reliable research monitoring the promotion system has not been conducted. That was the reason why our team has launched research project concerning these issues.

In the paper we are going to present the results of our research on various aspects of the teachers' promotion system conducted in 2009-2012 among teachers and school heads as well as local government authorities which run schools and superintendent offices.

Our presentation will focus on some results of this research, which have been obtained and analyzed. We will present the part, which shows teachers and school heads opinions on the reformed system of teachers' advancement. Special interest will be given to analyze these elements of reform, which are perceived by teachers as the most adequate to school needs and those, which they find to be only bureaucratic and mostly formal. The more important for us is to find out a connection between the system rules and procedures and teacher individual professional development and a quality of school work.

Keywords: teacher promotion, professional development

The education reform undertaken two decades ago in Poland was accompanied by many contradicting ideas and feelings both on the part of political decision makers and also teachers, who tended to be more the executors of those new regulations than their makers. The awareness of the reform seen as necessary did not necessarily mean that the new solutions would be accepted (Putkiewicz et al. 1999). Teachers wanted a new system of professional promotion seeing it as an opportunity of leveraging their professional prestige, gaining a better salary as a result of their higher competencies and quality of work. However, are they satisfied today with the formula adopted and with the professional promotion procedures? The system was being introduced with much haste just as was the case with many other solutions implemented as part of the education reform. Was the legislators' vision based on the ad-hoc needs to improve the work of schools (we do remember the common criticism of schools in the eighties) and meet salary postulates, or was a solid system being built for the teachers to pursue their professional development, so that the teachers could become co-creators of the modern education system under the new social order?

It seems that the need for quick action and a naive faith in the system's self-operation was the dominant feature. The revolutionary enthusiasm was an excuse for releasing the

reformers from the duty of preparing reliable and therefore time-consuming new solutions. Neither the experience of other countries in that respect nor numerous theoretical sources available on the professional development were used. There exists modern international and Polish literature which describes concepts and models of teachers' professional development which should become the basis for building advancement systems.

There is also Polish and foreign literature available on the conditions that need to be fulfilled for the school to operate, for teachers to work. One of the system factors presented in it is the vision of the teacher's role. When reflecting upon the teachers' professional promotion system, one should take into account the concept of the teachers' social role. The conditions of a teacher's professional development are associated with the concept of his/her social role and the concept of the school's tasks which are formulated on a number of levels – the state, the local environment, the individual school and its stakeholders. Many researchers have been pointing out to the conflicts of external and internal conditions (attributable to the teacher) both in Poland and abroad (Levinson, 1978, , Kelthmans 1993, Woods et al. 1997, 2001, Rubacha, 2001, Michalak 2007). Those works, so important for building the professional development system for teachers, remain however mainly known in academic circles; teachers have the chance to become familiar with them in the college, while officials make the common mistake of being arrogant and indolent and ignoring them.

It has also been worthwhile to analyse the experience of others. In many countries in Europe and outside Europe, in the USA and in Hong Kong, scientific and political debates are being held on the teachers' professional development system. Quite a few countries have gathered long-term experience based on monitoring their well-established professional promotion systems.

In Poland, the new advancement system was introduced as part of the amended Teacher's Charter in 2000. The objective of the reform was to establish a professional development system for teachers which would provide financial incentives and support continuous improvement of competencies as part of the professional development, induce action to enhance the teaching and education process and in consequence – a better quality of the school work. The legislators were also counting on raising the prestige and attractiveness of the teacher's profession.

The Polish advancement system includes 4 main grades in the teaching career: Trainee teacher, Contract teacher, Appointed teacher and Chartered teacher. To achieve the grade teachers have to meet various requirements reflecting their school work and professional development. Granting an honorary title of education professor is also envisaged for chartered teachers with outstanding professional achievements.

The academic record and achievements of teachers were to be evaluated by external selection committees, which were to be composed of representatives of education establishments and experts on specific subjects as well as representatives of the education authorities. The purpose was to ensure the objectivity and comparability of the evaluation. The function of a work placement tutor was introduced to support beginning teachers, the school head's role in the process of teachers' promotion was reinforced. The changes (as opposed to the speciality degrees having been in force earlier) were to motivate teachers in their pursuit of a carefully planned and thought over career path, continuous development and creative self-evaluation. The promotion procedures also enabled the school

management authorities and the teaching supervising bodies to have a direct insight, so difficult to be exercised before, into the work of teachers and schools. In this way the opportunity to actively build local education strategies was to be provided.

One of the essential elements was that teachers who were beginning their working career were offered support of a mentor; this field had been much neglected in Poland so far.

The new promotion system was modified three times since its introduction (2002, 2004 and 2007), and this is undoubtedly revealing its weakness, although it can also be seen as the sign of the authorities having been positively ready to improve the adopted solutions. Some more detailed legal regulations were necessary along with changes in the working procedures of selection and examination committees (2002) as well as significant modification of the very procedures of obtaining further professional grades and especially of the requirements to be met when applying for the chartered teacher's grade (2004).

Is the current teachers' advancement system in Poland operating to meet the objectives it is supposed to achieve? Are the successive advancement steps really accompanied by development understood as qualifications improvement and a better professional knowledge combined with higher competencies of teachers? This is leading to another question – are higher competencies reflected in the quality of educational work in schools, and how? These questions are difficult to answer as there has been no reliable, independent research in Poland so far on the teachers' advancement system. It comes as a great astonishment that this important element of the education reform is not subject to even a cyclical (let alone permanent) monitoring. Although there are no results of any serious research on the introduced system, the promotion has been every now and then the subject-matter of certain diagnosis-seeking papers written by post-graduate teacher students (also because of the promotion needs). Those small works have displayed errors in the advancement system such as unnecessary formalities, artificiality, no relation between the procedures and the everyday school work requirements, the fact that some of the requirements were not translating into the increase in competencies, that there was no coherence between individual development plans and the school work and exclusion of the care employees. Those are the most common setbacks of the system which obstruct the goals set by the legislators.

When the advancement grade was treated as an independent variable in the research, it did not differentiate the dependent variables essential for the school operation, for instance in my studies described in the book *“Ocena kształcenia nauczycieli w Polsce”* (Evaluation of the teachers' education in Poland) the professional grade did not differentiate the way teachers were handling educational problems.

A similar discomfoting picture of a “promoted teacher” is being drawn by Kazimierowicz based on small local research conducted in Legnica. Although over 90% of teachers participate in different kinds of further education programmes in order to achieve the next step on their carrier ladder, their basic motivation is a higher salary (over 70% of persons starting their work placement to achieve the chartered teacher's grade). Only 20% of respondents said increased knowledge motivated them to pursue work placements. Ca. 7% of the respondents make the effort to be promoted in order to satisfy their own ambition. On the other hand many teachers see further education itself as an value-adding process which goes beyond the promotion. They appreciate the opportunity of enriching their professional

knowledge, introducing innovative solutions into the school work. The not always consistent views presented by teachers make it difficult to draw conclusions as regards their motives and scope of their development needs within the professional field. Are the pre-reform dilemmas still in place? Would teachers pursue in-service training programmes regularly if they were not required to meet the advancement requirements? Is continuous education when pursued according to the promotion system procedures serving the development of skills or the bureaucratic requirements?

Some answers to those questions can be found in the survey by NIK (Supreme Chamber of Control), which was conducted in 2008. Regretfully, the only government monitoring of this aspect of the education reform involved an official audit. The audit covered 50 establishments including the Ministry of National Education, seven local education authority offices in the Silesian, Lubelskie, Warmińsko-Mazurskie, Lodzkie, Wielkopolskie, Mazovian and Lower Silesian voivodships, 14 local government units and 28 public schools in the above listed voivodships. The survey covered the school years 2003-2004 and 2006-2007. The audit identified a number of irregularities in implementing the statutory promotion system, although the general evaluation of the achieved objectives was a positive one.

In the NIK's opinion, the teachers' advancement system fulfils the most important objectives, that is raising qualifications (master's degree studies, post-graduate courses for teachers), leveraging the teachers' professional status – during the operation of the promotion system almost 80% of teachers obtained a new grade (a chartered teacher's grade- 39.2% or an appointed teacher's grade – 38.7%) as well as the salary increase. It should be emphasized, however, that it is largely an administrative success which results directly from the regulations - often without any active participation of teachers themselves. Although the teachers' advancement system assumes achieving successive advancement steps, this rule was abandoned at the very beginning. In 2000 ca. 75% of teachers employed on the appointment basis were granted the appointed teacher's grade (*stopień nauczyciela mianowanego*) by virtue of law - to obtain the chartered teacher's grade (*stopień nauczyciela dyplomowanego*) shortly thereafter. Appointed teachers had the possibility to do a shorter work placement term in order to achieve the chartered teacher's degree i.e. 9 months (additional qualifications) or 1 year and 9 months (the number of certified teachers went up quickly).

NIK also pointed out to a number of irregularities. The major ones involve errors in the procedures applied by evaluation committees, in 72% audited establishments, a non-observance of the administrative procedure being applied in the teachers' promotion degree awarding process in the Ministry of National Education, in 37% of the awarding procedure cases no experts were appointed who would represent the speciality field of the teacher (applicant), and in 2004 the teachers' academic record would often be evaluated using the point score system based on outdated legal regulations on the advancement grades.

The evaluation committees were often doing a "bulk job" or worked on the "piece work basis", too many teachers were being evaluated during the meetings and too little time was envisaged for analyzing hundreds of pages of documents – 30, 40 minutes on average per a set of documents (it took the NIK experts minimum four hours to analyse documents submitted by appointed teachers who were applying for the chartered teacher's grade). The

committees therefore could not possibly have analysed and evaluated the academic record of teachers in a reliable way in such short time.

In half of the examined schools the heads failed to define the responsibilities of work placement mentors and the method of documenting and accounting for those responsibilities. It should be emphasized that the function-related allowances of mentors were relatively low and they did not adequately motivate them to provide a reliable assistance to the beginning teachers; sometimes they were not paid at all.

Moreover, the Minister of National Education and the heads of local education authorities did not ensure reliable supervision over the teachers' advancement awarding proceedings as they limited the mandatory audits in the local education authority offices, failed to follow up the post-audit recommendations and also failed to pursue the planned tasks as part of the promotion system monitoring. On the other hand, the local education authority inspectors did not participate in a half of the meetings as committees members.

It was detrimental for teachers that the money envisaged for their in-service training programmes in 93% of the audited local government authorities was used in an incorrect way, and teacher trainees did not receive the average monthly salaries. In over 60% of the schools no organisation of the teacher in-service training was established.

In addition, in many schools the participation of appointed teachers who were applying for the chartered teacher's grade in continuous education and development programmes was not correlated with enhancing the quality of the school work.

NIK pointed out, similarly as the researchers of the education policy and the school work did, that the Ministry failed to implement monitoring and evaluation of the professional promotion system which would allow for the assessment of the effectiveness of the professional promotion system at each management level – the school head,, the managing authority and the head of the local education authority. In 2004 and 2005 some monitoring programmes were developed, and the Ministry's financial plans included money for that purpose, however, that money was used for different purposes.

Paradoxically, the controlling body expressed its strongest anxiety with respect to the effectiveness of the system; during its operation, almost 80% of teachers obtained their grade. There is a concern that the teachers who achieved the highest grade can lose their motivation to pursue further professional development.

The strong points observed by the NIK experts in the teachers' advancement system included among others the sustaining of the awareness of it being necessary to expand the education and the skills of teachers, leveraging the teacher's prestige in the eyes of parents and other teachers, a more open approach of teachers to the cooperation with parents and the local community, although the latter issues were not really included in the report. Introducing the placement mentor's role was emphasized, too as being a positive aspect and an important one as well since Poland had practically not offered any efficient on-the job qualifications raising acquiring stage at the place of work (school) as many other countries do.

The weaknesses of the teachers' professional development system include predominantly the incorrect and imprecise way of regulating certain rules of obtaining individual advancement grade, a gap between the advancement grade and the personnel needs of individual schools and education establishments, releasing many categories of applicants from the work placement obligation and shortening the placement duration for other categories, cases of unreliable evaluation of teachers' academic record, no adequately trained experts in some speciality fields represented by the teachers, unreliable, incompetent committees, no adequate supervision over the committee's work, lack of adequate support of the local education authorities, too little interest in professional promotion from the managing bodies (also in employing chartered and appointed teachers due to higher salaries). What was also emphasized was the fact that there were no mechanisms which would motivate chartered teachers to pursue further development. The lack of reliable analysis on the impact of the teachers' advancement grades on the quality of the school work and teaching was much regretted, too. The latter is not easy to diagnose even in a situation where so many different studies are being conducted.

The results of research: Evaluation of Polish Teachers' Advancement System

The results, presented in the article are a part of study *"Evaluation of Polish Teachers' Advancement System"* which was conducted in the years 2010-2012 in Poland, by the authors of this article, among school heads, teachers, educational leaders, representatives of communes which run the schools. 93 school heads and 500 teachers were interviewed. A general evaluation of the Teachers' Advancement System on the basis of the opinions of the two above mentioned groups is presented in the article. We used some responses from differentiated questionnaires earmarked for teachers and school heads.

Various methods of research both qualitative and quantitative were used, among them, national sample survey on randomly chosen schools. We examined:

- a head and 6 teachers with different grades of professional advancement from every chosen school.
- we identified 4 focus groups They were formed by in-service training teachers – volunteers, the students of Post –graduate course : *The Organization and Management in Education*, for future heads of school.

In accordance with the results of this national sample research the heads and teachers were asked about the relationship between requirements of the advancement system and improvement of quality of their work.

TABLE 1 Do the teachers' advancement system requirements and achieving the professional grades improve a quality of your work?

	Teachers % of responses	Heads of school % of responses
Yes	78.3	88.2
No	22.7	11.8

We can state that vast majority of both school heads and teachers positively evaluate the new system. Only approximately one in ten school heads and many more teachers asses this influence as negative one.

What was chosen by those who can see the improvement in the quality of their work?

TABLE 2. Fields of improvement due to teachers' advancement system.

Fields of improvement	% of responses	
	Teachers	Heads of school
1 Allow to improve teaching	55.7	73.1
2. Allow to cope better with behavior problems	36.1	51.6
5Allow to improve the cooperation among teachers	25.7	48.4
3. Allow to improve student-teacher relations	8.8	22.6
4. Allow to improve the cooperation with parents	4.6	16.1

We can observe that in the opinion of the majority of the respondents advancement system allows to improve didactic and education aspects of teachers work. It's worth mentioning that school heads evaluated the results of advancement system for school work much higher (about 20% higher) than teachers. Maybe we can call it identification with system and bureaucratic enthusiasm.

Both, teachers and heads evaluated improvement in students-teacher relation significantly lower and cooperation with parents, as a result of new system, even worse.

TABLE 3. Does achieving the teachers' advancement system grades generally cause an improvement in school work quality?

Teachers' advancement system generally improves school work quality	School heads % of responses
definitely yes	9.7
rather yes	54.8
rather not	31.2
definitely not	4.3

In the opinion of the majority of school heads achieving the teachers advancement system grades improves school work quality (64% of all respondents) but more than 1/3 of school heads presented the opposite opinion.

TABLE 4. To what extent does the teachers' advancement system develop teacher's competencies to cope with the following tasks and problems?

THE OPINIONS OF SCHOOL HEADS

Tasks and problems	Mean	Standard deviation
1. Self-preparation of didactic materials	3.83	0.8
2. Cooperation with other teachers	3.81	0.8

3. Applying active methods in learning-teaching process	3.74	0.7
4. Creating school documents such as moral development program internal assessment system	3.50	0.9
5. Creating school subject program	3.49	0.8
6. Creating school culture	3.40	0.7
7. Encouraging parents involvement	3.0	0.8
8. Students' dislike to learning	2.89	0.9
9. Coping with stress in place of work	2.86	0.9
10. Emotional students problems	2.83	0.8
11 Students' peer violence	2.71	0.9
12. Students' arrogance toward teachers	2.64	0.9

According to the views of school heads, the advancement system tasks mainly contribute to didactic process and producing school documentation. The least often they perceive the link between advancement system tasks and educational challenges connected with school work and emotional pressure. We can sum up that in the opinion of heads requirements of advancement system help to raise didactic and formal competencies of teachers but to lower extent support the development of intra-personal competencies of teachers strengthening them when facing behavioral and emotional problem of students.

We also asked about suggested changes to the system

TABLE 5. What changes to the teachers' advancement system should be introduce?

Changes	% of responses
1. To reduce bureaucracy	83.6
2. To leave more freedom for teachers in choosing the promotion tasks	40.1
3. To simplify the promotion requirements	36.5
4. To make salaries more dependent from work quality	33.7
5. To link the promotion's requirements with school needs	31.7
6. To adjust promotion's requirements to type of school	27.1
7. To link component of professional development courses with teacher professional needs	22.8
8. To adjust promotion's requirements to teacher specialization	19.2
9. To lay more stress on students' behavior control abilities	15.4

The vast majority of the examined (more that four fifths) opts for reducing bureaucracy. All others proposals received significantly lower support. The link between advancement requirements and school needs was placed as low as the fifth one. The least frequently mentioned aspects of teachers work are: adjusting advancement requirements to teacher specialization and laying more stress on students' behavior control abilities.

Some results of focus groups research

Promotion system and school work quality

Positive correlation

No correlation

Inadequacy of

Negligence of school work

In response to one of the questions the participants indicated some consequences of advancement system, both for school work and for individual development of teachers. During the interviews the group members exchanged the views and presented their opinions concerning advantages and disadvantages of this career path. Qualitative analysis allowed to identify correlation and no correlation between some results of this advancement system and the work of school.

Certificate-oriented training

Harnessing teachers' interests and hobbies

Too many extra tasks

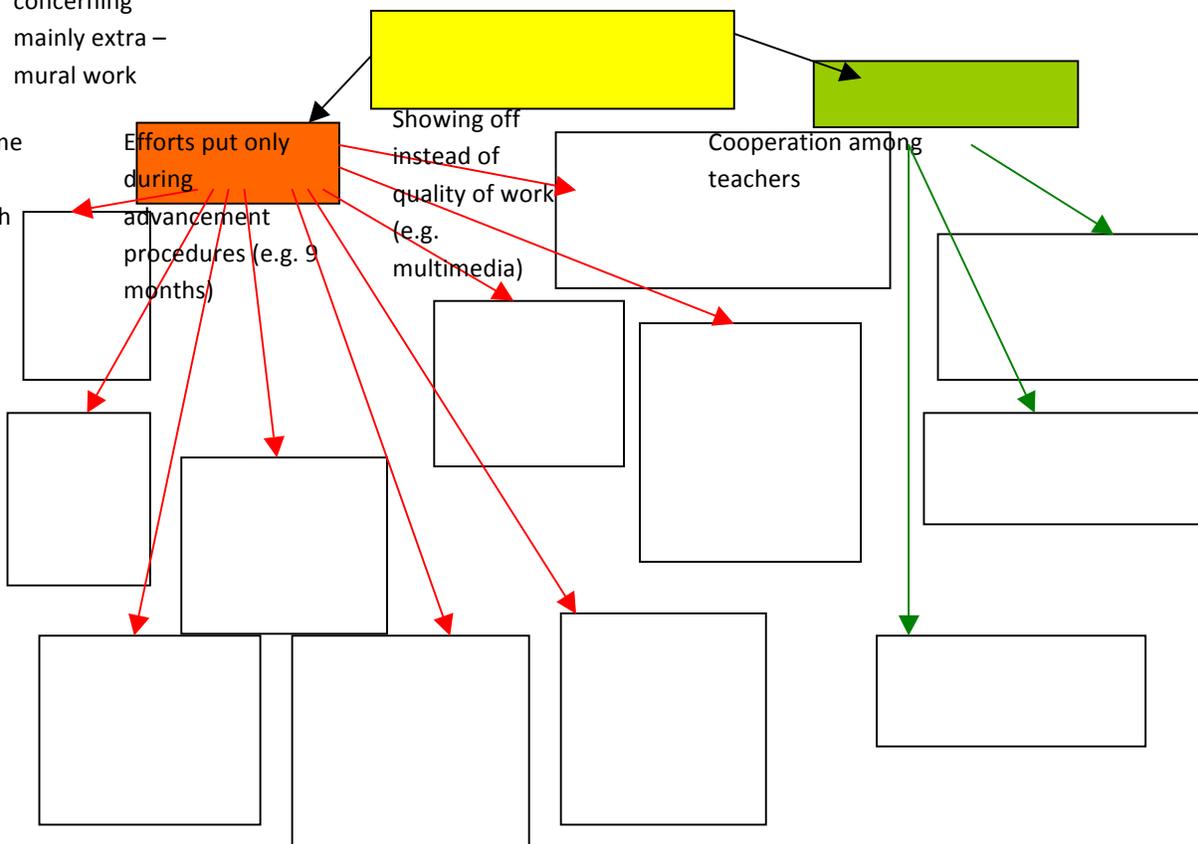
Diagram. Advancement system and work school quality

Requirements concerning mainly extra – mural work

insignificant for school only for advancement procedures

New activities initiated by teachers

Waste of time instead of working with students



We have found no correlation between school work quality and the following factors which are the results of advancement system: too many extra tasks, requirements concerning mainly extra –mural work, efforts put only during advancement procedures, waste of time instead of working with students, certificate –oriented training courses, showing off instead of quality of work. All these, mostly negative aspects do not correlate with quality of school work. Of course, they can be negative from point of view of individual teacher but, in opinion of those interviewed not for school and effects of its work.

We can observe positive correlation between some aspects of advancement procedures and quality of school work, such as: cooperation among teachers, new activities initiated by teachers, harnessing teachers' interests and hobbies.

They are only partial results of some fragment of research but we have the initial draft of functioning, advantages and disadvantages of teachers' advancement system. For the researchers it is some very interesting result that there are differences in the results obtained from national sample research and focus group research. Those who filled in the questionnaire evaluated the system better than those who discussed freely in focus groups. Maybe these teachers felt more comfortable than the teachers who did official tasks for research program. This observation can allow us to understand the differences (about 20%; we could see it in table 2) in positive approach to the new advancement system among heads and teachers. We can observe that heads were less critical about the examined system. Maybe they treated themselves as a part of this system and presented more bureaucratic point of view.

Conclusions and recommendations

Qualitative and quantitative analysis of the research has not been completed yet. Although after initial evaluation of outputs one can formulate some conclusions.

1. Substantial part of both teachers and school heads expresses critical opinions on the advancement system. However, there is visible gap between teachers and school heads concerning assessment of the advancement system treated as a whole as well as its particular solutions. It is worth mentioning that in Polish educational system in primary schools and junior high schools (gimnazjum) vast majority of school heads are also teachers and they are subject to advancement procedures. It might suggest stronger bureaucratic identification of school heads with the system and lower criticism towards reform's solutions than presented by the teachers.
2. Despite higher evaluation voiced by school heads 35% of them find the requirements of the advancement system not improving school work quality. The result is far from satisfactory and it evokes the necessity of the profound analysis of these requirements and correcting the system.
3. Those who positively evaluated the requirements of the system indicated its significance to improve the teaching methods and less often coping with students behavior problems at school. Only a quarter of teachers polled indicated improvement in the quality of cooperation among teachers. The research shows that the requirements of the advancement system do not support better relations with pupils and cooperation with their parents. Shaping a teacher who would be the organizer school community life, open to cooperation with parents and flexible to the needs of the local community was one of the goals of the reform, which has not been achieved.
4. The results of some research conducted in Poland, the public debates and experts' discussions show that the major problem of Polish teachers is lack of competencies to cope with behavior problems and class management (in particular in junior high school) as well as coping with work under stress and emotional problems. We can observe that the requirements of the advancement system enable to upgrade the quality of teaching and preparing school documents but they do not encourage teachers to raise these competencies which they lack mostly and which are necessary for modern school work.

5. The most important changes which ought to be introduced to the system are slashing red tape and bureaucracy, streamlining the requirements and granting more discretionary power to teachers in choosing advancement tasks. The above presented postulates of teachers indicate the basic disadvantages of the advancement system.

Basing on still incomplete research results we can formulate the following recommendations:

1. To simplify and to do away with the bureaucratization of the procedures, to limit the formal requirements of the system and to refer them to the teacher's specialization, type of school, level of education.
2. To transfer – to some extent – teachers' promotion to school so that the effort of teachers striving to be promoted can be compatible with school needs, served the students and was noticeable in their everyday school work.
3. To focus the efforts, in particular for appointed and chartered teachers (who are skilled in teaching and preparing school documents) on improving their interpersonal competencies as well as competencies of coping with students behavior problems.
4. To extend monitoring fulfilling the tasks during advancement procedures, not only to evaluate the results after full length of the advancement period (2 years 9 months) but to introduce partial assessment which would be more helpful to facilitate and encourage to amend individual development plans in order to satisfy a teacher and contribute to improve the school work.
5. To establish closer cooperation among universities, other higher education institutions and schools and introduce incentives supporting such cooperation as a part of structural solution.

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