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of Osijek
**FACULTY
OF EDUCATION**

42nd ATEE Annual Conference 2017

**Changing perspectives
and approaches
in contemporary teaching**

Conference proceedings

**23-25 October 2017
Dubrovnik, Croatia**

Edited by

Marija Sablić, Alma Škugor & Ivana Đurđević Babić



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PREFACE

The Faculty of Education of the University of Osijek was delighted to welcome and host the 42nd Annual Association for Teacher Education in Europe (ATEE) Conference 2017 in Dubrovnik, Croatia.

The 42nd Annual ATEE Conference *Changing perspectives and approaches in contemporary teaching* focused on rapid changes and increasing complexity of today's world bringing about new challenges and growing demands on education system committed to addressing all forms of disparities and inequalities in access, participation and learning outcomes, exclusion and marginalization. The central focus of this conference was the relevance of these changing perspectives and approaches in research and practice in teacher education and teaching.

The ATEE aims to enhance the quality of Teacher Education in Europe through active dialogue and international exchange of research and practice in initial and in-service teacher education. The 32 papers in these proceedings are linked to different RDCs: Education for Social Justice, Equity and Diversity, Professional Development of Teacher Education, Science and Mathematics Education, Teacher Education and Digital Technology, Primary and PrePrimary Education, English as a foreign Language, Inclusion and Special Needs and Technical and Vocational Education.

The papers also cover five subthemes of the conference: Migrations, equality and inclusion, Building networks in education, Enhancing the quality of teacher education, Sustainable changes in education, Gifted educators and Gifted Education.

One of the crucial conference themes was dedicated to migrations since nowadays in times of global changes many countries face the problem of migration – on the one hand, migrants arriving in a country, and on the other, brain drain. How should educators and institutions deal with migration taking into consideration diversity and promoting equality and inclusion at the same time?

The focus was also on networking in education which includes not only the use of networking technologies for teaching and learning purposes but also the interconnection and joint communication of different institutions and communities aimed at improving various aspects of education. How can teachers embrace networking and build it to improve education?

Furthermore, the conference discussed the quality of teacher education and different ways of enhancing it (e.g. through stimulating teaching or learning environment, by using new technologies, accessing adequate resources, having suitable facilities, having the opportunity and institutional support for professional development or for

conducting research, etc.). How can the quality of teacher education be improved and maintained? Which aspects of this process should be emphasized?

The process of changes in education takes place in complex social circumstances where external forces such as parents, local community, technology, corporations and state politics play an important role. Still, external forces should not be expected to offer solutions for reaching the quality of educational practice since that is primarily teachers' concern. It is only possible to introduce sustainable changes in education when teachers become change agents. These papers provide insight into teachers' experience regarding initiation, implementation and continuing significant and sustainable changes in education.

The conference also highlighted the importance of Gifted Education (GE). Highly able, committed and creative learners may choose, pursue, master and further develop basic and higher education as their giftedness performance area. Contemporary work of gifted educators is of importance to development of field of Gifted Education as well. How do we identify, support, educate and honour current and future gifted educators and their gifted students throughout their interactive developmental path? Does pre-service and in-service education offer relevant opportunities for development of gifted educators for their and lasting benefit of gifted students, and how can it be improved?

We hope that the papers in the conference proceedings answer all these questions and respond to challenges of contemporary education and the related issues.

The authors of the papers come from different countries (Austria, Belgium, Brazil, Croatia, Cyprus, Denmark, England, Finland, Germany, India, Ireland, Norway, Portugal, Serbia, Slovenia, Sweden, Turkey, the United Kingdom, the United States of America), so Changing perspectives and approaches in contemporary teaching provides insight into educational context around the world.

The organising and academic committee of the 42nd Annual Conference 2017 highly appreciate the participants' attempts to consider and discuss the quality of teacher education affected by constant changes.

We would like to thank everyone who was involved in supporting the conference – before, during and after October 2017. Everyone's participation and collaboration made the conference a great success academically and socially.

Editors

Marija Sablić, Alma Škugor and Ivana Đurđević Babić

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Mathematics and science teaching in the contemporary classroom: perceptions of teachers and suggestions for professional development

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Abstract:

In response to calls for integration of “21st Century” (21C) teaching and learning practices into classrooms, this paper examines some mathematics and science teachers’ perceptions of the predictors for, and barriers to, such integration in second-level schools (for students typically aged around 12 to 18). Data are provided by responses to a questionnaire from an Erasmus+ project, Teaching for Tomorrow (TfT), involving teachers in Ireland, Sweden, Estonia and Germany. The definition of 21C skills given by Ravitz, Hixson, English, and Mergendoller (2012), emphasising a project-based, collaborative, and student-led pedagogic approach, provides a framework for the study. The questionnaire was developed from those of Ravitz et al. (2012) and Euler and Maaß (2011), and elicited quantitative and qualitative data. Of the 145 respondents, 70 listed mathematics or science as one of their teaching subjects. Patterns of answering for the 70 respondents are similar across participating countries. System restrictions and resources are perceived as major barriers to integration of 21C practices; however, classroom management and teacher beliefs also impact on confidence with, and frequency of use of, these practices in the classroom. TfT is addressing these issues through targeted professional development and the creation of associated resources. The work is based on the model developed by Bridge21, an initiative undertaken by Trinity College Dublin to promote an innovative learning environment that is team-based, technology-mediated, project-based, and cross-curricular, in line with 21C teaching and learning.

Keywords: Teaching practices, 21st Century Learning, Mathematics Education, Science Education, Teachers’ Perceptions.

1. Introduction

The perceived importance of a “21st Century” (21C) approach to teaching and learning is well documented (Conneely, Girvan, Lawlor & Tangney, 2015; Dede, 2010a; Voogt & Pelgrum, 2005; Voogt & Roblin, 2012). Reasons cited include a shift in the global

economic focus away from traditional goods and services, towards a knowledge-based economy (Claxton, 2013). Dede (2010a) observes that in the modern workforce, 21C skills involving higher-order thinking and communication are increasingly required, not only in the labour force, but also for citizenship and self-actualisation in society (Dede, 2010b; Voogt & Pelgrum, 2005). A number of studies have been undertaken to analyse the integration of such practices in the classroom, as well as to identify potential barriers (Ertmer & Ottenbreit, 2010; Fullan & Langworthy, 2014). However, despite the fact that many countries identify the cultivation of 21C skills as a national objective (Voogt & Roblin, 2012), there are not many studies that investigate teachers' perceptions of such 21C practices in their own classrooms, particularly at a transnational level. The work reported here is intended to contribute to addressing the issue.

The authors' interest in the area stems from the engagement of their university (Trinity College Dublin, the University of Dublin) in initiatives to introduce 21C teaching and learning, especially through its Centre for Research in IT in Education – of which the authors are members – and its education programme “Bridge21,” which is described in section 2.3 below. The university is involved in an Erasmus+ project, Teaching for Tomorrow (TfT), which is investigating the integration of 21C practices in the classroom. TfT is a partnership between institutions in four countries (Ireland, Sweden, Estonia and Germany) that is working to develop a model of 21C teaching and learning across subject areas. In TfT, teachers' *current perceptions* are evaluated by examining their *confidence* in using and encouraging, and *frequency* of using, these practices. Initially, a questionnaire was designed to identify the barriers to, and facilitating factors for, 21C practices in the classroom as perceived by participating teachers. The analysis presented here documents the responses from the 70 mathematics and/or science teachers who volunteered to take part in this element of the project. It examines their reported perceptions, and explores the predictors for and barriers to confidence and frequency of usage of 21C practices in the classroom for these respondents. The research goal is, through identification of such predictors and barriers, to develop suggestions for professional development that may encourage teachers' meaningful integration of 21C practices in the classroom.

The paper first provides a literature review that clarifies what we mean by 21C teaching and learning, identifies the theoretical frameworks used in the research, and relates them to a specific initiative with regard to 21C teaching and learning (section 2). In section 3, the methodology is described. The results are introduced in section 4, while section 5 discusses these results in a broader context and consequently frames suggestions for professional development.

2. Literature review

The literature review addresses three areas. The first deals with 21C skills and frameworks in general; the second identifies some of the common barriers to the integration of such skills in the classroom; and the third examines Bridge21, the

initiative undertaken by Trinity College Dublin to implement a vision of education that addresses 21C skills.

2.1. 21C skills and frameworks

There is no unique, universally agreed definition of 21C skills or of the types of pedagogic approaches best suited for students' development of them. However, in their comparative analysis of international frameworks for 21C competences, Voogt and Roblin (2012) note a common recognition of the importance of skills relating to communication and collaboration, problem-solving, and creativity, as well as technological fluency. Many of these are classified as higher-order thinking and learning skills, and are seen as being transversal (not subject-specific) and multi-dimensional, impacting on attitudes and knowledge (Dede, 2010a; Voogt & Roblin, 2012). Existing frameworks for 21C skills that exemplify some or all of these characteristics include those provided by the Organisation for Economic Cooperation and Development (OECD) (Ananiadou & Claro, 2009), the European Commission (2007), the Partnership for 21st Century Learning (2015), and Ravitz, Hixson, English, and Mergendoller (2012).

In this research, the concept of 21C skills aligns with the work of Ravitz et al. (2012), which emphasises a project-based, collaborative, and student-led pedagogic approach in line with the model being developed by TfT. It presents a concise and comprehensive definition of 21C skills, and also provides a validated questionnaire measuring confidence with, and frequency of implementation of, eight specific skills identified as intrinsic to 21C teaching and learning. The eight skills, together with descriptions of their scope, are:

1. Critical Thinking – analysis of complex problems, investigation of questions for which there are no clear-cut answers, evaluation of different points of view or sources of information, and use of appropriate evidence to draw conclusions;
2. Collaboration – ability to work together to solve problems or answer questions, working effectively and respectfully in teams to accomplish a common goal, and assuming shared responsibility for the completion of a task;
3. Communication – ability to organise thoughts, data and findings and to share these effectively through a variety of media, including oral presentations and written reports;
4. Creativity & Innovation – generation of solutions to complex problems or tasks based on analysis and synthesis of available information, and combination or presentation of the results in new and original ways;
5. Self-direction – taking responsibility, both for one's own learning through the identification of topics to pursue and processes for learning, and for reviewing one's own work and responding to feedback;
6. Using Technology – management of learning and creation of products using appropriate information and communication technologies;

7. Global Connections – understanding global and geo-political issues including the history, politics, geography, culture, and literature from other countries;
8. Local Connections – application of what has been learned, within local contexts and communities.

One determinant of teachers' willingness to promote these 21C skills relates to their fundamental beliefs about teaching and learning. A useful classification, made for the OECD Teaching and Learning International Survey (OECD, 2010), distinguishes "Direct Transmission" beliefs (relating to traditional educational practices, such as teacher demonstrations, encouraging a quiet workspace, and delivery of facts) from "Constructivist" beliefs (reflecting a more creative and inquiry-based approach to teaching, in which the students' own construction of knowledge is facilitated).

Also relevant with regard to teachers' opinions and current levels of usage of, and perceived barriers to the implementation of, 21C learning practices is the Promoting Inquiry in Mathematics and Science Education across Europe (PRIMAS) report (Euler & Maaß, 2011). In the report, four factors were identified for *opinions* and *usage*: Teachers' orientation, relating to beliefs about 21C learning in the classroom; Knowledge dependent, reflecting a belief that the success of 21C learning is dependent on the prior levels of student knowledge; Motivation, referring to the belief that 21C learning is good for motivating students; and Routine usage, relating to regular usage of 21C learning in the classroom. The report also identified three factors relating to *barriers* to the integration of 21C learning practices: System restrictions, for example curriculum and assessment, time constraints, and class sizes; Inadequate resources, including continuing professional development (CPD) and Communities of Practice as well as physical resources; and Classroom management, referring to discipline and management of groups, assessment in the class, and confidence.

2.2. Barriers to 21C practices in the classroom

In relation to barriers that hinder the integration of 21C practices in schools, the three factors identified by Euler and Maaß (2011) and listed above – system restrictions, inadequate resources, and classroom management issues – are prefigured or echoed by other writers. The seminal work of Ertmer (1999) on technology integration classified barriers as first order (extrinsic, covering systemic features and lack of resources) and second order (more personal to the teacher and rooted in their underlying knowledge, skills and beliefs regarding teaching and learning – these being in some respects harder to address). With regard to first order barriers, it has been noted for example that traditional high-stakes examinations, which are a "primary driver of students' activity" (Hoyles & Lagrange, 2010, p. 84), do not generally assess key 21C skills (Fullan & Langworthy, 2014), and so are an impediment to integration. Second order barriers can be seen in teachers' reported difficulties in relation to classroom management and the changing role of the teacher in the 21C classroom. Such issues have been identified as potentially contributing to the gap between an intended curriculum, which generally recognises the importance of 21C skills, and that

which is actually implemented (Conneely, Murchan, Tangney, & Johnston, 2013; Euler & Maaß, 2011; Voogt & Roblin, 2012).

Teachers are expected not only to facilitate the acquisition of 21C skills amongst their students, but also to possess such skills themselves (Voogt & Roblin, 2012). In order to achieve this, a shift in the beliefs and practices of policy-makers and practitioners is needed (Dede, 2010b). This will require the provision of adequate support and CPD to educators in order to provide them with the necessary skills and teaching strategies (Conneely et al., 2015; Dede, 2010b; Voogt & Roblin, 2012). One such method of professional development is proposed in the next section.

2.3. Bridge21

Bridge21 (“Bridge to 21st Century teaching and learning”) is an education programme that has been developed in Trinity College Dublin. It offers a new pedagogic model, and supports an innovative learning environment within schools that is team-based, technology-mediated, project-based, and cross-curricular. Originally set up as “Bridge to College” to facilitate students in moving from school to university education, and in particular to provide an insight into what is involved in the study of computer science, it has developed into a more radical initiative to change school education. What is now called the “Bridge21 model” evolved over the years to provide a well-structured framework supporting the adoption of 21C practices in the classroom (Byrne, Fisher, & Tangney, 2015; Conneely et al., 2015; Lawlor, Conneely, Oldham, Marshall, & Tangney, 2018; Lawlor, Marshall, & Tangney, 2016). The model is based on the core elements of teamwork, inquiry-based learning, classroom partnership and a technology-mediated environment. Teachers act as facilitators and are often co-learners with the students. The learning space is arranged to support a collaborative setting and reflection is encouraged throughout the activities. Teamwork is structured to be inclusive and encourage peer-to-peer learning.

There is some evidence of the success of the model in achieving goals related to 21C teaching and learning – particularly those with regard to collaboration, communication and self-direction as listed in section 2.1 above. Using data collected from 425 secondary school students who participated in workshops in the university, Lawlor et al. (2016) found that participation had a direct positive impact on the students’ perceptions around their learning and on their intrinsic motivation to learn. In a further study involving 288 students, again in an out-of-school context, Lawlor et al. (2018) indicated that the model can be implemented and that there is evidence to suggest that, with this scaffolded approach, the teams and team members take responsibility for tasks and achievement for the team through combined personal contributions. These findings apply across the curriculum. However, work specifically related to the teaching and learning of mathematics has been shown to have a positive impact on students’ engagement with the subject as well as on their conceptual understanding (Bray, 2016; Bray & Tangney, 2016; Tangney, Bray, & Oldham, 2015). Indeed the activity design heuristics developed by Bray (2016), in conjunction with the Bridge21 approach, have been used as the foundation for a Professional Development

module on a postgraduate certificate course for mathematics and science teachers (Bridge21, 2014).

3. Methodology

As pointed out above, TfT is a partnership between institutions in four countries (Ireland, Sweden, Estonia and Germany) that is working to develop a model of 21C teaching and learning across subject areas. The aim of the empirical research carried out as one element of the project was *to identify the barriers to, and facilitating factors for, 21C practices in the classroom as perceived by participating teachers.*

The main teacher participants in TfT are 16 teachers, coming from 4 schools (one in each country). To obtain a wider view of the barriers and facilitating factors than would be given by these 16 individuals, it was decided to seek the opinions of other teachers in the four countries by means of a questionnaire. Its design, administration and analysis are described below.

3.1. Questionnaire design

The questionnaire was developed by the Irish partners (the first author is Project Manager), and was available online from November 2015 to January 2016. It involved 4 main sections, relating to background information, including number of years teaching and subjects taught; teachers' beliefs about the nature of teaching and learning; teachers' opinions of 21C teaching and learning and barriers to its integration; and confidence with and frequency of integration of 21C skills in practice. Apart from the background section, the items used a 5-point Likert-type scoring system to generate quantitative data. Details and sample items are provided for each of the constructs below:

1. *Teachers' beliefs about the nature of teaching and learning* (11 items, graded from 1- 'Strongly disagree' to 5- 'Strongly agree'), with items adapted from the OECD Teaching and Learning International Survey (OECD, 2010) to address two constructs:
 - Direct Transmission Beliefs, e.g., "a quiet classroom is generally needed for effective learning";
 - Constructivist Beliefs, e.g., "Students learn best by finding solutions to problems on their own."
2. *Opinions of 21C teaching and learning*, with items adapted from the PRIMAS report (Euler & Maaß, 2011):
 - a. For opinions and current usage (11 items, graded from 1- 'Strongly disagree' to 5- 'Strongly agree'):
 - Teachers' Orientation, e.g., "I would like to implement more 21CL practices in my lessons";

- Knowledge Dependent, e.g., “Successful 21CL requires students to have extensive content knowledge”;
 - Motivation, e.g., “21CL provides material for fun activities”; and
 - Routine Usage, e.g., “I already use 21CL a great deal.”
- b. For barriers (15 items, graded from 1- ‘Strongly disagree’ to 5- ‘Strongly agree’):
- System Restrictions, e.g., “There is not enough time in the curriculum”;
 - Inadequate Resources, e.g., “I don't have adequate teaching materials”; and
 - Classroom Management, e.g., “I worry about students' discipline being more difficult in 21CL lessons.”
3. *Confidence with and frequency of integration of 21C skills in practice*, with items adapted from the 8 subscales identified by Ravitz et al. (2012):
- a. For Confidence (30 items, graded from 1- ‘Not at all confident’ to 5- ‘Very confident’), teachers report on their levels of confidence to encourage students’:
- Critical Thinking, e.g., to “analyse competing arguments, perspectives or solutions to a problem”;
 - Collaboration, e.g., to “present their group work to the class, teacher or others”;
 - Communication, e.g., to “prepare and deliver an oral presentation to the teacher or others”;
 - Creativity & Innovation, e.g., to “generate their own ideas about how to confront a problem or question”; and
 - Self-direction, e.g., to “choose for themselves what examples to study or resources to use.”
- b. For Frequency (32 items, graded from 1- ‘Never’ to 5- ‘Every day’), teachers report on their frequency in encouraging:
- Collaboration, e.g., “How often do you let students give feedback to peers or assess other students' work?”
 - Communication, e.g., “How often do you let students answer questions in front of an audience?”
 - Creativity & Innovation, e.g., “How often do you let students test out different ideas or work to improve them?”
 - Using Technology, e.g., “How often have you asked students to use technology to keep track of their work on extended tasks or assignments?”

- Global Connections, e.g., “How often have you asked students to understand the life experiences of people in cultures besides their own?” and
- Local Connections, e.g., “How often have you asked students to talk to one or more members of the community about a class project or activity?”

In addition to the Likert-type items, there was one open-ended item in the Barriers section, “Please comment on the main difficulties that hinder the implementation of 21C learning in your lessons.” The questionnaire was made available online and was translated into the respondents’ native language where necessary.

3.2. Participants

Project administrators in each of the four participating countries were responsible for recruiting participants. A purposive sample was intended; colleagues were contacted in person, by email or through relevant groups, and were requested to complete the questionnaire. Appropriate ethical clearance was obtained and all of the 145 responses received were provided voluntarily.

Of the 70 mathematics/science teachers who responded to the questionnaire, 21 were Irish, 17 Estonian, 17 Swedish, and 15 German; their teaching experience ranged from less than 1 year to 40 years. In terms of the breakdown between male and female respondents (Figure 1), the results clearly represent a majority of female teachers; this is particularly marked in the Estonian cohort. Out of the responding teachers, Sweden has the closest match between male and female practitioners.

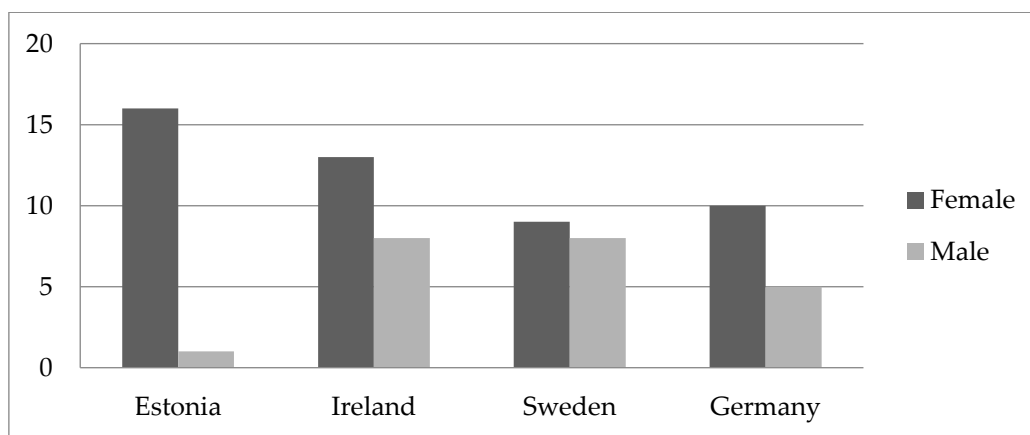


Figure 1. Participant numbers, classified by country and gender

3.3. Data analysis

For the quantitative data, multiple regressions were performed to identify whether the categories of *beliefs*, *opinions and usage*, and *barriers* had a significant bearing on teachers’ *confidence with, and frequency of, integration of 21C learning practices in the mathematics classroom*. Use was made of Wilcoxon signed rank tests and one-way ANOVAs to compare the mean ratings across the four participating countries on each of the factors, with Bonferroni tests identifying where any significant differences lay.

For the qualitative data obtained from the open-ended question, directed content analysis was employed (Elo & Kyngäs, 2008; Krippendorff, 2004). This is a structured approach that allows for pre-existing theory to guide the analysis. The process begins with a theory or relevant research, leading to identification of key concepts and variables that are used as coding categories (Moretti et al., 2011). These categories direct the analysis of the data, with any passages that do not fit with the pre-determined codes assigned a new one (Hsieh & Shannon, 2005).

4. Results

The results are reported using three lenses: a general overview, an analysis of the relationships between the categories (predictors and barriers), and results obtained from the open-ended question.

4.1. Overview

This section presents findings for the whole group of 70 teachers and also for the four national subgroups. Statistically significant differences are noted where relevant.

1. *Teachers' beliefs about the nature of teaching and learning*: the mean reported values of constructivist beliefs are higher overall, and in all participating countries, than those of Direct Transmission Beliefs. Statistically significant differences were recorded overall ($p < 0.05$) (Figure 2). No significant differences were identified between countries.

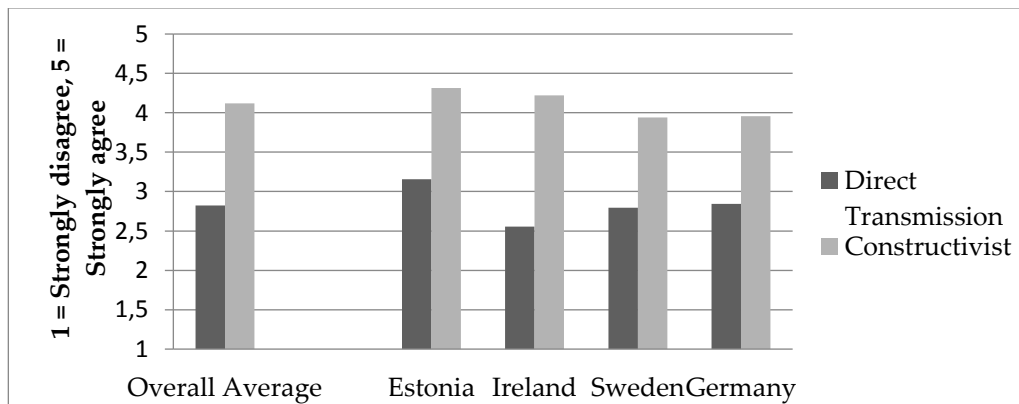


Figure 2. Average (mean) scores for teachers' beliefs about the nature of learning, classified by country

2. *Opinions of 21C teaching and learning*: the results for *opinions* indicate that respondents on average recognise the importance of 21C learning and would welcome an increase in the levels of support for such practices (Orientation). They also tend to agree that 21C practices have the potential to increase student levels of Motivation, although Estonian responses were significantly more in agreement than German ones. However, levels of Routine Usage of 21C practices did not fully reflect this (Table 1).

Table 1. Average (mean) scores for opinions of 21C teaching and learning (1= Strongly disagree, 5 = Strongly agree)

Average (mean)	Orientation	Motivation	Routine Usage
Overall	4.04	3.70	3.26
Estonia	4.41	4.10	3.21
Ireland	4.00	3.73	3.48
Sweden	4.04	3.61	3.38
Germany	3.69	3.29	2.90

For *barriers*, overall means for system and resource barriers were reported as close to ‘undecided’. Classroom management barriers were reported as having significantly less impact than system restrictions and inadequate resources ($p<0.05$) (Table 2). In relation to system barriers, statistically significant differences were noted between Ireland and Sweden, with Irish teachers reporting higher levels of system barriers to their usage of 21C practices in the classroom.

Table 2. Average (mean) scores for barriers to 21C teaching and learning (1 = Strongly disagree, 5 = Strongly agree)

Average (mean)	System Restrictions	Resources	Classroom Management
Overall	3.10	3.00	2.48
Estonia	3.06	2.96	2.55
Ireland	3.38	3.28	2.50
Sweden	2.71	2.74	2.35
Germany	3.17	2.95	2.52

3. *Measures of 21C teaching practices*: For *confidence* with integrating 21C practices, overall mean scores for each of the constructs were positive (between 3.5 and 4.5, Table 3). However, one-way ANOVA tests revealed significant national differences in the all of the scales. In particular, Bonferroni tests showed that the German teachers reported significantly lower levels of confidence than the Irish in all of the scales, and lower levels of confidence than the Estonian respondents in encouraging Collaborative and Self-direction practices, as well as significantly lower levels of confidence than the Swedish cohort in Self-direction practices.

Table 3. Average (mean) levels of confidence with integrating 21C practices (1 = Not at all confident, 5 = Very confident)

Average (mean)	Collaboration	Communication	Creativity & Innovation	Critical Thinking	Self-direction
Overall	4.03	3.89	3.88	3.82	3.59
Estonia	4.25	3.89	4.08	3.81	3.97
Ireland	4.26	4.10	4.11	4.08	3.79
Sweden	3.58	3.64	3.59	3.52	3.07
Germany	3.94	3.91	3.65	3.80	3.47

With regard to *frequency of use*, Local and Global Connections appear to be the least frequently used 21C learning practices across all the countries (overall means between 2 and 2.5, i.e. ‘2/3 times per year’), with mean scores for Communication, Collaboration, Creativity & Innovation, and Technology Usage reported as close

to 'Every month'. The analysis identified significant differences in the Technology and Communication scales: Bonferroni tests indicated that the teachers from Estonia report significantly lower levels of Technology usage than those from Ireland (Table 4), and teachers from Sweden report significantly lower levels of Communication than Irish teachers.

Table 4. Average (mean) scores for frequency of use of 21C practices (1 = Never, 5 = Every day)

Average (mean)	Collaboration	Communication	Creativity & Innovation	Global Connections	Local Connections	Technology
Overall	3.05	2.76	2.93	2.32	2.15	2.79
Estonia	3.22	2.91	2.91	2.21	2.20	2.45
Ireland	3.10	3.01	3.22	1.99	2.08	3.33
Sweden	2.67	2.36	2.67	2.40	1.95	2.59
Germany	3.22	2.68	2.80	2.78	2.43	2.66

4.2. Predictors for, and barriers to, 21C practices

This section seeks to identify whether the categories of *beliefs, opinions and usage, and barriers*, had a significant bearing on teachers' *confidence with, and frequency of, integration of 21C learning practices in the mathematics classroom*. Multiple regressions were performed to explore the relationships between these categories. An overview of these relationships is provided in Tables 5 and 7, with a detailed explanation of some of these results provided subsequently for illustrative purposes. Only statistically significant relationships have been referenced in these tables.

Table 5. Significant relationships between beliefs, usage and barriers, and confidence

		Confidence	
		<i>Positive</i>	<i>Negative</i>
Beliefs	Constructivist	<ul style="list-style-type: none"> • Critical Thinking • Collaboration • Communication • Creativity & Innovation • Self-direction 	
Opinions and Usage	Knowledge Dependent		<ul style="list-style-type: none"> • Collaboration • Communication
	Routine Usage	<ul style="list-style-type: none"> • Critical Thinking • Collaboration • Communication • Creativity and Innovation • Self-direction 	
Barriers	Classroom Management		<ul style="list-style-type: none"> • Critical Thinking • Collaboration • Communication

With regard to *confidence* (Table 5), the two scales of Direct Transmission Beliefs and Constructivist Beliefs significantly predicted teachers' levels of confidence with the five 21C constructs addressed in section 3a of the questionnaire. Results showed that the two-scale belief model was a significant predictor of teachers' levels of confidence to encourage Critical Thinking, Collaboration, Communication, Creativity and

Innovation, and Self-direction practices. Taking Critical Thinking as an example ($F(2,67) = 9.33, p = .000$), Constructivist Beliefs significantly predicted confidence in related practices: $b = 0.430, t(67) = 3.516, p = .001$ (Table 6). This indicates that higher Constructivist Beliefs can act as a predictor of confidence in relation to critical thinking, insofar as if the constructivist belief score goes up by 1, teachers' confidence to encourage the use of critical thinking increases by .43 on the critical thinking confidence scale.

Table 6. Multiple regression results (DTB = Direct Transmission Beliefs, CB = Constructivist Beliefs, CT = Critical Thinking)

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1. (Constant)	2.667	.654		4.077	.000	1.361	3.973
DTB	-.220	.118	-.205	-1.871	.066	-.455	.015
CB	.430	.122	.386	3.516	.001	.186	.657

a. Dependent Variable: CT (confidence)

Considering some of the other predictors of confidence with 21C practices, it appears that Routine Usage of 21C practices in the classroom is positively associated with confidence in 21C practices as defined in this research. Conversely, a belief that the success of 21C learning is dependent on the prior levels of knowledge of the students is a negative predictor of confidence in Collaboration and Communication practices. So also are concerns around classroom management, which also negatively predicts confidence in encouraging practices of Creativity & Innovation in classrooms. It is interesting to note that although the overview indicates that system restrictions and resources were perceived as having the most impact, classroom restrictions are statistically more closely related to teachers' confidence. This is considered in more detail in the discussion section.

Table 7. Significant relationships between beliefs, usage and barriers, and frequency

		Frequency	
		<i>Positive</i>	<i>Negative</i>
Beliefs	Direct Transmission		<ul style="list-style-type: none"> • Technology
Opinions and Usage	Knowledge Dependent		<ul style="list-style-type: none"> • Communication • Technology
	Routine Usage	<ul style="list-style-type: none"> • Communication • Collaboration • Creativity and Innovation • Global Connections • Local Connections • Technology 	

	Motivation	• Communication	
Barriers	Resources		• Local Connections
	Classroom Management		• Technology

Focusing on the predictors for and barriers to levels of *frequency* of 21C practices addressed in section 3b of the questionnaire (Table 7), results indicate that Classroom Management issues act as barriers to the frequency of use of Technology, with inadequate Resources negatively impacting on the frequency of Local Connections. Direct Transmission Beliefs are negative predictors of the integration of Technology, and a belief that the success of 21C practices is dependent on students' prior knowledge is negatively associated with the frequency of usage of Communication practices and Technology. The belief that 21C practices are motivating for students is positively associated with frequency of usage of Communication practices, and unsurprisingly, Routine Usage of 21C practices in the classroom is a significantly positive predictor of the frequency of all of the categories.

4.3. Analysis of open-ended responses

For the open-ended item, 41 of the 70 respondents supplied an answer. A process of directed content analysis was used to interpret the data.

The three constructs in the *barriers* section of the questionnaire – system restrictions, inadequate resources, and classroom management issues – were used as coding categories. Some of the text sections were coded at more than one category, meaning that the sum of the percentages displayed below does not equal one hundred (Figure 3). Analysis revealed that a majority of respondents found *system restrictions* to be the most serious hindrance to the integration of 21C teaching and learning in their practice, making up 60.5% of all of the coded sections. The system restrictions category was easily broken down into subcategories relating to time (SYS Time), Curriculum and Assessment (SYS Curric & Assess), and class size (SYS Class Size). Of these, time constraints were the most significant aspect, with curriculum and assessment, and class size constituting smaller percentages of codes. A lack of sufficient *resources* (both physical, and in terms of support), constituted 32.2% of the codes, and issues with *classroom management* made up 29.3%. A final section that did not fit within the predefined barriers was also identified; this related to the beliefs of teachers themselves (BEL Own), as well as those of parents, and other stakeholders (BEL Others), making up 17.8% of codes.

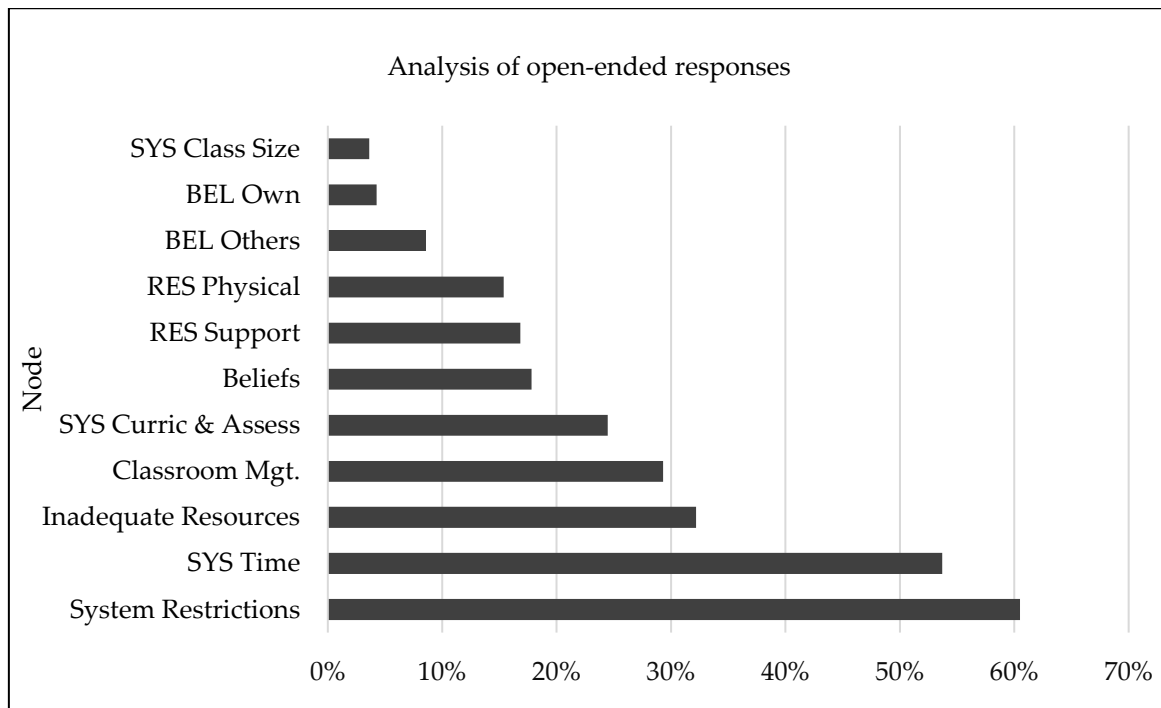


Figure 3. Barriers to 21C learning – percentage coding per node

5. Discussion and conclusion

5.1. Discussion of results

The analysis of teachers' responses offered an opportunity to examine various aspects of the respondents' views about 21C practices, providing data to answer the question: what are the predictors for and barriers to confidence and frequency of usage of 21C practices in the mathematics classroom? The analysis has given background information relating to beliefs and practices, and has permitted relationships to be established between some of these constructs.

Teachers' mean reported orientation towards 21C practices appears to be quite high; in fact, the respondents tend to agree that 21C teaching and learning has a positive impact on student motivation. However, mean levels of confidence are less positive, and mean self-reported frequency of usage is only at the low end of the 'monthly' interval (mean score of 2.7). According to the definition of readiness for the integration of 21C teaching and learning as involving *confidence* in using and encouraging, and *frequency* of using, associated practices, this group of teachers is yet not appropriately ready.

Possible reasons for this lack of readiness have also been explored in this study. A number of responses to the open-ended question identified beliefs associated with traditional educational practices as a barrier to the integration of 21C teaching and learning in the classroom; one respondent suggested "*teacher inertia and general reluctance to move from traditional methods*" as a significant issue. While the quantitative analysis reports lower mean levels of *Direct Transmission Beliefs* than *Constructivist Beliefs*, adherence to such traditional beliefs is identified as a significant barrier to

frequency of use of technology. This resonates with the suggestion that in order to achieve the effective integration of 21C skills in the classroom, a shift in the beliefs and practices of policy-makers and practitioners is required, and will be achieved only through the provision of adequate support and CPD (Conneely et al., 2013; Dede, 2010b; Voogt & Roblin, 2012). On a more optimistic note, the high mean levels of *Constructivist Beliefs*, evident in all of the participating countries, are positively associated with confidence in the 21C practices of Critical Thinking, Communication, Collaboration, Creativity and Self-direction.

Barriers at the systemic level clearly align with those identified in the literature review (Fullan & Langworthy, 2014; Hoyles & Lagrange, 2010), with those relating to time, and curriculum and assessment, appearing to be most significant. However, while the statistical analysis reflects an opinion that system restrictions and a lack of resources – first order barriers as classified by Ertmer (1999) – were the most significant regarding the integration of 21C practices in the mathematics classroom, the qualitative data also identify issues with classroom management as very relevant: *“Students are not used to 21C learning, because most of the time they do not have to do it, so at first it takes a lot of time.”* In addition, multiple regressions reflect that classroom management issues in particular act as barriers to teachers’ confidence with the 21C practices of Communication and Collaboration, and to the frequency of usage of Technology. Especially when this finding is taken together with the identification in the qualitative data of barriers related to teachers’ beliefs (not a focus in the “barriers” section of the questionnaire), the need also to consider Ertmer’s (1999) second order barriers is highlighted.

It should be noted that although the samples from each country are small and not representative, and that there were variations in the criteria for participant selection, the results across countries show surprising commonality. Further research would be needed in order to investigate if this would be the case also for representative samples from the four countries, and indeed from other countries: hence, whether or not the results reflect a transnational pattern.

5.2. Suggestions for professional development

In order to encourage teachers to integrate 21C practices in the classroom, it is essential to address some of the barriers identified in this paper. The TfT project is attempting to go some way to achieve this. Through the project, the partners are reviewing, adapting and refining the existing framework for 21C teaching and learning provided by Bridge21, incorporating transnational best practice in the areas of assessment, approaches to teaching and learning and the development of Communities of Practice.

This pedagogic approach offers the foundations for the evolution of a comprehensive and transnational standard for the development of basic and transversal skills in secondary schools. The evolving model of 21C teaching and learning (Conneely et al., 2015; Lawlor et al., 2018), and associated opportunities for professional development, will provide teachers with the structure, confidence and knowledge base that they

require to successfully impart these skills in a manner that is innovative, yet integrated in the school environment.

The TfT project has developed an online platform (tft-project.eu) providing resources such as Bridge21 introductory materials, how-to videos and lesson plans for teachers. These online resources – addressing first order barriers (Ertmer, 1999) – provide teachers with an opportunity to engage with 21C teaching and learning practices, without having to generate original material from scratch.

However, simply providing teachers with the new pedagogic method is not enough to ensure change in practice; as indicated above, second order barriers also need to be targeted. It is clear, from the qualitative data analysed in this research that teachers find it hard to integrate new methods of teaching and learning in an environment that can be resistant to change and is largely focused on the individual educator. Research has shown that Communities of Practice can have a positive impact in this regard, motivating teachers to work in a more collaborative and innovative way (Ingvarson, Meiers, & Beavis, 2005). The TfT project has placed significant emphasis on the development of such communities, both at local and international levels. In this way, the wide variety of skill sets among the teachers can be shared, promoting confidence and increased classroom implementation and hence addressing second order barriers. Tools such as Google Groups, Facebook, Edmodo and Schoology provide free and accessible platforms for teachers to share lesson plans and review and reflect on classroom experiences.

The features of the TfT model, outlined above, are intended to provide guidance for teachers and students, a structured approach to the development of 21C activities, and a vibrant Community of Practice. Ongoing research aims to assess the impact that these aspects have on the teachers' readiness to integrate 21C practices, as well as on the barriers identified in this work.

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Assessing metacognition and self-regulated learning in prospective mathematics teachers in Serbia

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Abstract:

Problem solving skills and mathematical reasoning take an important role in contemporary teaching of mathematics and science, but also in many social studies subjects and are considered as significant competences for the 21st century. Therefore, in order to enhance the quality of teachers' education it is important to explore and single out strategies which develop such/those skills. However, recent studies indicate that high level of cognitive skills, such as metacognition and self-regulated learning, enhance problem-solving skills and mathematical reasoning and by itself represents important competences which prospective teachers need in their future work.

We present findings from a study concerning level of metacognitive awareness and self-regulatory abilities, as well as motivation for learning mathematics in prospective mathematics teachers in Serbia. For the research we use an originally constructed questionnaire on motivation and self-regulated learning of mathematics, and a sample of prospective primary (lower and higher grades) and secondary mathematics teachers studying at different faculties in Serbia.

The results of statistical analysis show the level of motivation, metacognition and self-regulatory skills in prospective mathematics teachers in Serbia, correlation between specific components of self-regulation in prospective mathematics teachers, as well as dependence of these components on the faculty that a teacher attends.

Keywords: self-regulated learning, mathematics, metacognition, prospective mathematics teachers

1. Introduction

Mathematics, due to its complexity, is a difficult subject for many students in primary and secondary school, as well as for students at faculties where mathematics is not major subject (Fleischman, Hopstock, Peczar, & Shelly, 2010; Hanushek, Peterson, &

Woessmann, 2010). Importance of the subject forces all students to learn mathematics on different levels (Hanushek et al., 2010; Mevarech, 1999; Peterson, Woessman, Hanushek, & Lastra-Anadón, 2011). Modern curriculum imposes that students in the 21st century need to achieve particular level of knowledge of mathematical contents, but also to gain problem-solving skills in wider context. Through the process of learning mathematics, students develop problem-solving skills, logical thinking, critical thinking, analytical competences, deduction skills, and skills for using mathematical competences in everyday life situations (Barbacena & Sy, 2015; Schoenfeld, 1992).

Prospective teachers should be motivated for learning mathematics, and (only) then they can also motivate kids for learning mathematics. Their competence to control their own way of thinking and having the “know-how” to teach the same skills to their young pupils are today much needed characteristics for new teachers. Both motivation and control of metacognitive processes are parts of a wider construct called self-regulated learning. Self-regulated learning appears as a powerful construct in educational theories, such as Pintrich’s model (Pintrich, 1999). Self-regulated learning can be considered as a tool, as a strategy and when applied in education, helps in achieving better learning performances (Pintrich, 1999; Schunk, 2005; Zimmerman, 2013).

What is the level of motivation, metacognition, and self-regulatory skills in prospective mathematics teachers in Serbia? Are there any differences in specific components of self-regulation? Do those components depend on the faculty which a student attends? Do self-regulated strategies help students in learning mathematics? And if yes, which strategies are most efficient for prospective teachers? We are interested in methods which enhance performances of learning mathematics in prospective mathematics teachers in primary schools, but also those methods which would, in advance, develop students' knowledge of “how to teach self-regulated learning” in primary school pupils. Based on the theory (Pintrich, 1999; Schunk, 2005; Zimmerman, 2013) and previous findings (Lucangeli & Cornoldi, 1997; Meshack, 2013; Mevarech, 1999; Mevarech & Kramarski, 2003; Schoenfeld, 1992; Zimmerman & Schunk, 2011), we presumed that enhancing of metacognitive abilities and self-regulating skills will help students to do better in mathematics. Also, we supposed that specific components of self-regulation are inter-correlated (Pintrich, 1999; Zimmerman & Schunk, 1989; Zimmerman & Schunk, 2011).

2. Literature review

2.1. Metacognition

Metacognition is a concept introduced in psychology by Flavell (Flavell, 1979) to denote a “cognition about cognitive phenomena” or “thinking about thinking”. There are other definitions of metacognition, such as “higher order thinking that involves active control over a cognitive process engaged in learning” (Livingston, 2003, p. 2), “the knowledge and control children have over their own thinking and learning

activities" (Cross & Paris, 1988, p. 131). According to Schoenfeld, metacognition has multiple and almost disjoint meanings (for example, knowledge about one's thought processes, self-regulation during problem solving), which makes it difficult to use it as a concept (Schoenfeld, 1992).

Metacognition has two main components: knowledge about cognition (metacognitive knowledge) and regulation of cognition (metacognitive regulation) (Flavell, 1979). Metacognitive knowledge includes knowing which factors influence cognition, how different skills or strategies work and how they should be applied, as well as when to apply them (Cross & Paris, 1988). Metacognitive regulation refers to activities that help students control their learning, the most important of which include: planning - meaning selection of appropriate strategies, and monitoring - meaning allocating resources, using skills and strategies for more effective task performance, assessment of learning and using strategies, as well as removing errors that appear during learning and evaluation of achievements and strategy effectiveness (Zimmerman & Schunk, 2011).

Metacognition is a subject of numerous research studies in educational psychology. We single out several results which are in correlation to this research. Vrugt and Oort showed that metacognition positively affected the use of four study strategies (metacognitive, deep cognitive, surface cognitive and resource management strategies), and that the use of metacognitive and resource management strategies had a positive, while the use of surface cognitive strategies had a negative effect on exam scores (Vrugt & Oort, 2008). Biryukov (2004) concluded that metacognitive abilities are important for solving mathematical problems. Enhancing metacognition in students contributes to better general achievement, and in particular, achievement in mathematics (Meshack, 2013; Mevarech, 1999; Mevarech & Kramarski, 2003; Schoenfeld, 1992; Spruce & Bol, 2015).

In this research, we define metacognition as a knowledge about thought process and strategies in learning mathematics and self-regulation in the process of solving mathematical tasks. Metacognition refers to the awareness, knowledge, and control of cognition. We have focused on the control and self-regulation aspects of metacognition. In our work metacognition is considered as part of self-regulation.

2.2. Self-regulated learning

Self-regulated learning appears in education theories as an important construct that refers to self-regulation of learning process. Self-regulation is introduced by Zimmerman and Schunk (1989). They define self-regulated learning in terms of self-regulation which appears in education theories and refers to self-thoughts, feelings, and actions, which are systematically oriented towards attainment of students' own goals. Monique Boekaerts in her paper "Self-regulated learning: where we are today?" (Boekaerts, 1999, p. 446) notes that "the tidal wave called self-regulation swept educational psychology." Her research focuses on the ways in which primary school students use self-regulated learning strategies most effectively and gives a meta-analysis on self-regulation training programmes (Boekaerts, 1996). Self-regulation

ability includes goal setting, motivational promotion, learning strategies and self-monitoring (Cheng, 2011). The literature review on metacognition by Emily R. Lai showed there is a correlation between specific components of self-regulation as well as the dependence of those components on the educational factors (Lai, 2011). Metacognitive capacities include affective and motivational characteristics, effortful and inhibitory control, and these components are correlated (Lai, 2011; Spruce & Bol, 2015; Zimmerman, 2013).

Self-regulated learning skills are a set of competences concerning ability to control the activity of learning, monitor the process of learning, ask questions, memorize, concentrate on a subject, and follow particular steps in order to reach goals. These skills are considered as an important competence for prospective mathematics teachers. Processes of analyzing the problem, asking for information, developing a plan and monitoring progress include very important metacognitive factors for students' performance in mathematics tasks and mathematics problem-solving situations (Lucangeli & Cornoldi, 1997; Meshack, 2013; Mevarech, 1999). These processes are complex and intercorrelated (Mevarech & Kramarski, 2003; Schoenfeld, 1992; Spruce & Bol, 2015; Zimmerman & Schunk, 2011).

Self-regulated learning of mathematics is important for general competences, such as problem solving, mathematical reasoning, logical reasoning and academic achievements. Metacognition and self-regulation play an important role in general cognitive development, improving intellectual capacity, cognitive behavior modification and achieving educational goals in students (Azevedo, 2009; Dignath, Buettner, & Langfeldt, 2008; Ellis, Denton, & Bond, 2011; Mytkowicz, Goss, & Steinberg, 2014; Perels, Dignath, & Schmitz, 2009; Perels, Gutler, & Schmitz, 2005; Spruce & Bol, 2015; Young & Fry, 2008).

3. Methodology

3.1 The problem, objectives and hypothesis

In this particular research, we assess self-regulated learning of mathematics (denoted as SRLM) in prospective mathematics primary and secondary school teachers in Serbia. As the first objective of the research (O1) we aimed to assess SRLM in prospective mathematics primary and secondary school teachers, finding the mean value, extremes and variations. To address this question, we have constructed an instrument named SRLMq1 (explained below), which measures the level of one's self-regulation skill in learning mathematics. The second objective (O2) was to compare results on SRLMq1 (and some particular components of it) between different groups of prospective mathematics primary and secondary school teachers: *prospective teachers* (students from faculties of education and teachers' faculties, who later teach pupils ages 7 to 10, grades 1 through 4 in primary school), and *prospective teachers of mathematics* (students from faculties of science and mathematics, who later teach pupils ages 11 to 18, grades 5 through 8 in primary school and 1 through 4 in secondary school).

Results of this research will address the hypothesis (H1) that prospective teachers of mathematics, i.e. students from faculties of science and mathematics, have better metacognition, critical thinking, and self-regulated skills than prospective teachers, i.e. students from faculties of education and teachers' faculties.

3.2 Sample

The sample used in this research consists of 383 students: 294 prospective teachers, and 89 prospective teachers of mathematics from seven faculties from four universities in Serbia. From the University of Novi Sad, there are 78 prospective teachers from the Faculty of Education in Sombor (PF-SO), and 48 prospective teachers of mathematics, from the Faculty of Science and Mathematics (PMF-NS); from the University of Niš there are 52 prospective teachers from the Pedagogical Faculty in Vranje (PF-VR); from the University of Belgrade there are 76 prospective teachers from the Teachers' Faculty (PF-BG); and from the University of Kragujevac there are 43 prospective teachers from the Faculty of Pedagogy in Užice (PF-UE), 45 prospective teachers from Faculty of Pedagogy in Jagodina (PF-JA), and 41 prospective teachers of mathematics from Faculty of Science and Mathematics in Kragujevac (PMF-KG).

3.3. Instrument

In order to estimate self-regulated skills in learning mathematics a valid instrument is needed. Existing instruments for measuring metacognition and self-regulation are general and do not measure those characteristics in a defined context, such as mathematics (Niemivirta, 1996; Pintrich, Smith, Garcia, & McKeachie, 1991; Pintrich, 2000, 2004; Weinstein, Zimmerman, & Palmer, 1988; Wolters, 1999; Schraw & Sperling Dennison (1994).

The instrument SRLMq1 is a questionnaire developed for measuring self-regulation of learning mathematics for adult students ages 18 to 25. We have started from a well established instrument, MSLQ - Motivation and Self-regulation Learning Questionnaire, developed by Pintrich, which measures motivation and self-regulation of learning in a general class setting (Pintrich et al., 1991). The main modification in SRLMq1 concerns the translation of questions/statements from original English to Serbian language and adapting questions/statements for learning mathematics in particular. Some questions are self-provided. SRLMq1 consists of 50 statements. Responses are coded on Likert's type scale (1 - I don't agree at all; 2 - I don't agree; 3 - I am not sure, 4. - I agree; 5 - I agree completely). Cronbach's alpha for the questionnaire is 0.756.

The main topics of the MSLQ are "motivation/volition", "cognition and metacognition" and "resource management strategies". Similarly, the statements in SRLMq1 are divided into two main components: Motivation for Learning (consisting of sub-scales on Intrinsic motivation, Extrinsic motivation, Task value, Self-efficacy, and Test anxiety) and Learning Strategies (Organization, Critical thinking, and Metacognitive self-regulation). Reliability (Cronbach's alpha) was assessed for all scales. Only those with Cronbach's alpha greater than 0.6 were included in the analysis. Table 1 gives an overview of the scales with the examples and reliabilities.

Table 1. Scales of SRLMq1.

	Example	No of items	Reliability
Motivation		27	0.815
Intrinsic motivation	I like interesting mathematics exercise even if they are difficult.	3	0.735
Extrinsic motivation	Getting a good grade in mathematics is what motivates me the most.	5	0.712
Subject value	I think that it is important that I know and understand mathematics.	3	0.763
Self-efficacy	I expect to be successful in mathematics.	7	0.887
Test anxiety	I feel my heart beating faster at mathematics exam.	6	0.789
Learning strategies		23	0.707
Organization	When I study mathematics, I go over my class notes and make an outline of important concepts.	3	0.617
Critical thinking	Whenever I read or hear an assertion or conclusion during mathematics class I think about possible alternatives.	4	0.697
Metacognitive self-regulation	When I become confused about something during learning mathematics I go back and try to figure it out.	4	0.754
SRLMq1		50	0.852

4. Results and discussion

4.1. Assessing SRLM in prospective mathematics teachers

Main descriptives on SRLMq1 score are as follows: Mean value for all participants is $\text{MeanSRLMq1}=162.37$, with the standard deviation $\text{SD}=22.291$. The most frequent score is $\text{Mod}=163$, and median value $\text{Med}=164$. The minimum value is achieved by a student from the Teachers' Faculty in Belgrade (PF-BG) and it is $\text{MinSRLMq1}=96$, while a maximum value $\text{MaxSRLMq1}=228$ is achieved by a student from the Faculty of Pedagogy in Jagodina (PF-JA).

In Table 2, we give an overview of maximum and mean values, as well as confidence intervals for all scales of SRLMq1. For easier interpretation of the results we transformed mean values to a continuum scale from 1 to 5 and named it the level of SRLM and its components (Level of the scale column in the Table 2 below).

Table 2. Levels of SRLM and its components.

Scale	Max score: No.q x 5	Mean value	Confidence interval for mean value	Level of the scale Mean(1 to 5)
Intrinsic motivation	3x5=15	8.92	(8.59, 9.24)	2.97
Extrinsic motivation	5x5=25	12.14	(11.69, 12.59)	2.43
Subject value	3x5=15	11.68	(11.41, 11.95)	3.89
Self-efficacy	7x5=35	22.43	(21.81, 23.06)	3.20
Test anxiety	6x5=30	19.52	(18.91, 20.12)	3.25
Motivation	27x5=135	86.21	(84.78, 87.65)	3.19
Organization	3x5=15	12.10	(11.84, 12.35)	4.03
Critical thinking	4x5=20	12.16	(11.81, 12.51)	3.04
Metacognitive self-regulation	4x5=20	16.25	(15.92, 16.57)	4.06
Learning strategies	23x5=115	76.15	(75.09, 77.22)	3.31
SRLMq1	50x5=250	162.37	(160.13, 164.61)	3.25

This results show that self-regulation abilities are moderate in general and that students have highly developed metacognitive self-regulation and organization in particular. This reveals students' potential in those domains, and we expect that this potential might help students in learning mathematics and developing problem-solving skills (Lucangeli & Cornoldi, 1997; Meshack, 2013; Mevarech, 1999; Mevarech & Kramarski, 2003; Schoenfeld, 1992; Zimmerman & Schunk, 2011).

Alarming aspect is the finding that motivation aspects are on a rather moderate level and both intrinsic and extrinsic motivation are below average in particular. Since motivation is a significant factor in learning process (Cheng, 2011; Du Toit & Kotze, 2009; Meshack, 2013; Schoenfeld, 1992; Marić & Sakač, 2014), it is important to work on enhancing motivation for learning mathematics in prospective mathematics primary and secondary school teachers, especially developing intrinsic motivation, which provides a more profound and individual interest in learning. The motivational component which is developed to a satisfactory level is subject value and it should contribute to enhancing intrinsic motivation.

Mean values on SRLMq1 by faculties are presented in Figure 1. We tested mean differences and found that there are significant differences in a mean SRLMq1 score between students who study at different faculties.

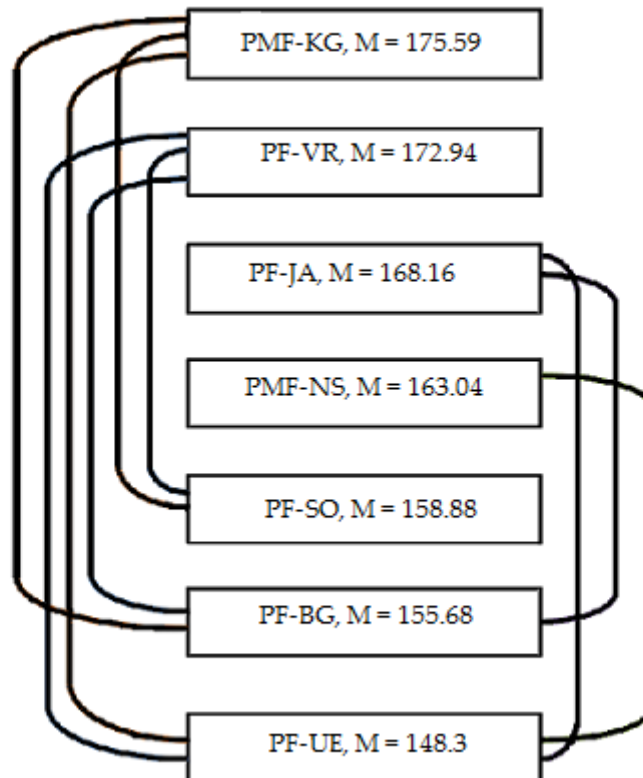


Figure 1: Mean values by faculties. Connecting lines stands for pairs for which there is significant (lines on the left $p < .01$, lines on the right $p < .05$) differences between mean values.

4.2. Comparison of results on SRLMq1: between different groups of students

We have explored the level of metacognitive awareness and self-regulated skills in two groups of students: *prospective teachers* (students from faculties of education and teachers' faculties, who later teach pupils ages 7 to 10, grades 1 through 4 in primary school), and *prospective teachers of mathematics* (students from faculties of science and mathematics, who later teach pupils ages 11 to 18, grades 5 through 8 in primary school and 1 through 4 in secondary school).

In Table 3. we present mean differences for these two groups of students.

Table 3. Mean differences for two groups of students: teachers and mathematics teachers

Scales	No. of items	Prospective Teachers (N=294)	Prospective Math Teachers (N=89)	t	p
Intrinsic motivation	3	8.43	10.52	-5.567	.000
Extrinsic motivation	5	12.28	11.7	1.069	.286
Subject value	3	11.3	12.94	-5.253	.000
Self-Efficacy	7	21.47	25.61	-5.713	.000
Test anxiety	6	19.67	19	.929	.354
Motivation	27	84.56	91.69	-4.204	.000
Organization	3	12.03	12.3	-0.868	.386

Critical Thinking	4	11.94	12.89	-2.249	.025
Metacognitive self-regulation	4	16.04	16.94	-2.318	.021
Learning strategies	23	75.86	89	-0.997	.319
SRLMQ	50	160.41	168.82	-3.153	.002

We see that there are significant differences in mean scores for these groups of students and that students from faculties of science and mathematics have higher scores on all scales of self-regulation of learning mathematics than students from faculties of education. Significant differences in expression of metacognition and self-regulation in these groups of students were confirmed. This is an expected result and it confirms that learning mathematics contributes to developing these skills (Barbacena & Sy, 2015; Du Toit & Kotze, 2009; Hanushek et al., 2010; Mevarech, 1999; Schoenfeld, 1992). Also, it is possible that students with developed metacognition and self-regulation choose mathematics as their major.

Prospective teachers of mathematics have higher motivation for learning mathematics, and have higher scores on SRLMQ1, as expected. Namely, students who choose to study mathematics have a higher motivation for learning mathematics. Those students who do not choose mathematics as their major, but have it in their curriculum, have lower motivation for learning mathematics. Intensive learning of mathematical subjects develops problem-solving skills, logical and critical thinking, analytical competences, and deduction skills in students (Barbacena & Sy, 2015; Du Toit & Kotze, 2009; Schoenfeld, 1992).

Intrinsic motivation is higher for prospective teachers of mathematics, as well as subject value and self-efficacy. This is another expected result, and it represents a consequence of students' individual preferences and choosing to study (or not to study) mathematics. Namely, those students that choose to study mathematics are motivated intrinsically, because they prefer and highly value the subject (Cheng, 2011; Du Toit & Kotze, 2009; Meshack, 2013; Schoenfeld, 1992). They also have higher self-efficacy in learning mathematics, because it is their preferred subject, so their efforts have positive effects and they feel successful (Cheng, 2011; DiFrancesca, Niefeld, & Cao, 2016; Linnenbrink & Pintrich, 2003; Meshack, 2013; Pajares & Schunk, 2001; Schoenfeld, 1992). Other students who do not choose mathematics as their major have other main goals and orientations, so they are not as highly intrinsically motivated. Therefore, they may more often have problems with the achievement of goals in this subject, so they do not value mathematics as highly and their self-efficacy is lower.

In extrinsic motivation and test anxiety there is no any significant difference between these two groups of students. Both groups have similar extrinsic motivation and test anxiety because these dimensions are not so related to preferences, such as intrinsic motivation and subject value. Test anxiety is a more universal category, and most students experience it at one point during their education (Cassady & Johnson, 2002; Soffer, 2008). Also, external motivational goals and external awards (e.g. evaluation

and social recognition) are common characteristics of all groups of students which do not sufficiently value the subject itself (Bempechat & Shernoff, 2012; Marić & Sakač, 2014).

The difference in learning strategies is not significant. Also there is no statistically significant difference in organization between mathematics and other students. Learning strategies and organization of learning are more universal categories, too, so they are not directly related to preferences and professional orientations of students (Azevedo, 2009; Mytkowicz et al., 2014; Young & Fry, 2008).

Hypothesis H1 is confirmed since prospective teachers of mathematics, i.e. students from faculties of science and mathematics, have better metacognitive self-regulation, critical thinking, and self-regulated skills than prospective teachers, i.e. students from faculties of education and teachers' faculties.

4.3. Comparison of results on SRLMQ1: different groups of PF students

Next, we compared results on SRLMQ1 and its components for different groups of students from different Pedagogical faculties in Serbia.

Table 4. Mean differences for prospective teachers

Scales	No. of items	PF-SO (N= 78)	PF-UE (N=43)	PF-VR (N= 52)	PF-JA (N= 45)	PF-BG (N= 76)	All PF (N= 294)	F	p
Intrinsic motivation	3	7.91	7.37	10	9.18	8.05	8.43	5.95	.000
Extrinsic motivation	5	11.63	13.07	14.79	12.56	10.61	12.28	8.33	.000
Subject value	3	11.09	10.05	11.87	12	11.41	11.3	3.94	.004
Self-efficacy	7	20.65	19.77	23.6	23.04	20.89	21.47	3.52	.008
Test anxiety	6	20.45	18.35	20.4	21.02	18.33	19.67	2.63	.035
Motivation	27	82.9	78.91	92.08	89.53	81.37	84.56	8.2	.000
Organization	3	11.87	11.05	12.83	12.31	12.05	12.03	3.24	.013
Critical Thinking	4	11.95	11.19	13.77	12.44	10.82	11.94	7.12	.000
Metacognitive self-regulation	4	16.1	13.81	16.65	16.44	16.78	16.04	6.84	.000
Learning strategies	23	75.99	69.4	80.87	78.62	74.32	75.86	8.95	.000
SRLMQ	50	158.88	148.3	172.94	168.16	155.68	160.41	10.11	.000

Results presented in Table 4 show that there is a statistically significant difference between students from different pedagogical faculties in all observed scales, less in anxiety and organization. Tukey HSD post hoc analysis explain these results to a greater detail. Here we mention only those differences which are significant on the level $p < .01$.

Related to motivation components we have the following: students from PF-VR have a higher score on intrinsic motivation than their colleagues from other PF-SO, PF-UE

and PF-BG and higher extrinsic motivation than students from PF-SO and PF-BG; students from PF-UE have lower scores on subject value than students from PF-VR and PF-JA. Overall motivation is higher for students from PF-VR than for students from PF-SO, PF-UE and PF-BG, and students from PF-JA have higher overall motivation than students from PF-UE.

Students from PF-VR have higher scores on organization scale than students from PF-JA, and higher scores on critical thinking scale than students from PF-SO, PF-JA and PF BG. Students from PF-UE have lower scores on metacognitive learning strategies scale than students from other faculties. Concerning overall learning strategies the findings are following: students from PF-UE have lower scores than students from PF-SO, PF-JA and PF-VR, and students from PF-VR have higher scores than students from PF-SO and PF-BG.

The analysis of these results shows that significant differences among students from faculties for education appeared. This is a relatively unexpected result. We expected that groups of students with the same educational and professional orientation would also have similar SRLM characteristics (DiFrancesca et al., 2016; Dorrebacher & Perels, 2016; Peeters, Backer, Kindekens, Triquet, & Lombaerts, 2016). There are no significant differences between students from faculties of education in components anxiety and organization, which suggest that these are universal characteristics for all students (Cassady & Johnson, 2002; Soffer, 2008; Spruce & Bol, 2015; Young & Fry, 2008). We note that there are two faculties of education PF-VR and PF-JA which are better in all scales than their colleagues from PF-SO, PF-BG and PF-UE.

4.4. Correlation between specific components of SRLM

Correlation between specific components of SRLM is obtained by using Pearson correlation testing.

Table 5. Pearson Correlation of SRLMQ scales

	2	3	4	5	6	7	8	9	10	11
1	.218**	.466**	.694**	-.110*	.685**	.248**	.557**	.354**	.476**	.666**
2		.038	.246**	.204**	.570**	.052	.278**	-.087	.165**	.445**
3			.561**	-.070	.595**	.441**	.376**	.593**	.550**	.643**
4				-.201**	.751**	.372**	.458**	.443**	.517**	.728**
5					.350**	.016	.106*	-.007	.135**	.289**
6						.368**	.550**	.421**	.593**	.924**
7							.286**	.510**	.684**	.562**
8								.285**	.666**	.669**
9									.691**	.599**
10										.856**

1 – Intrinsic motivation, 2 – Extrinsic motivation, 3 – Subject value, 4 – Self-efficacy, 5 – Test anxiety, 6 – Motivation, 7 – Organization, 8 – Critical thinking, 9 – Metacognitive self-regulation, 10 – Learning strategies, 11 – SRLMQ

* - $p < .05$, ** - $p < .01$

We have found that all factors in motivation scale are correlated, except subject value to extrinsic motivation and test anxiety. Fact that most of motivational components are intercorrelated is an expected result. Subject value and intrinsic motivation are related concepts in theory and research findings (Cheng, 2011; Marić & Sakač, 2014) and higher value of subject is in the basis of intrinsic motivation. Test anxiety is in a negative relation to intrinsic motivation, subject value and self-efficacy and in positive correlation to extrinsic motivation. Intrinsic motivation and self-efficacy contribute to commitment and self-confidence of students so their worries and fears tend to be lower (Soffer, 2008; Spruce & Bol, 2015). Extrinsic motivation brings fear of social evaluation, penalties, and other negative consequences of failing the subject. Other motivational components are in positive correlation, but correlations between subject value and extrinsic motivation and subject value and test anxiety are not significant. Subject value is not related to test anxiety because anxiety is a wider concept and students can worry about a subject they do not value highly (Cassady & Johnson, 2002; Spruce & Bol, 2015; Young & Fry, 2008). Of all motivation components, self-efficacy has the highest influence on motivation (overall).

All components of learning strategies are intercorrelated in a positive direction, so we can confirm that learning strategies form one wider and unique concept (Mevarech & Kramarski, 2003; Schoenfeld, 1992; Zimmerman & Schunk, 2011).

In regard to the relation of motivational components to learning strategies components, intrinsic motivation, subject value and self-efficacy are positively correlated to organization, critical thinking, and metacognition. This is an expected result, which tells us about the importance of intrinsic motivation, subject value, and self-efficacy in using metacognitive strategies, organization of learning activities, and critical thinking (Azevedo, 2009; Dignath et al., 2008; Ellis et al., 2011; Mytkowicz et al., 2014). Extrinsic motivation and anxiety are positively related to critical thinking and this is not an entirely expected result. It seems that anxiety enhances critical thinking, analytical reasoning, and reconsideration, and we suppose that test anxiety's adaptive function sometimes may help students use their capacities more efficiently (Cassady and Johnson, 2002; Spruce & Bol, 2015; Young & Fry, 2008). Also, perfectionism and analytical tendency can represent consequences of tension, uncertainty, and fear (Spruce & Bol, 2015; Young & Fry, 2008). Extrinsic motivation is positively related to critical thinking. Therefore, both intrinsic and extrinsic motivation could have positive implications on the learning process, and in the absence of the intrinsic motivation, extrinsic motivation is a desirable factor (Barbacena & Sy, 2015; Du Toit & Kotze, 2009; Schoenfeld, 1992).

5. Conclusions and implications

This research analyzes the level of self-regulation of learning mathematics in prospective primary and secondary school teachers. It shows that the level of motivation, metacognition, and self-regulatory skills in prospective mathematics teachers in Serbia are moderate, that there are differences in specific components of self-regulation, and that it depends on the faculty which a student attends. The hypothesis that prospective teachers of mathematics, i.e. students from faculties of science and mathematics, have better metacognition, critical thinking, and self-regulated skills than prospective teachers, i.e. students from faculties of education and teachers' faculties, is confirmed. In addition to the aforementioned, we would also like to use scores on different scales on SRLMq1 to identify weaknesses in self-regulation within the process of learning, and to explore, single out, and develop strategies which would enhance SRLM in prospective mathematics teachers.

The results of this research strengthen our belief that metacognition, motivation and self-regulation in prospective mathematics teachers are in positive correlation with their problem solving skills, mathematical reasoning, and academic achievements (in mathematics, science and other subjects), so that our future research will address the investigation of these correlations. It would imply that in order to achieve high quality of mathematics education, SRLM competences in prospective mathematics teachers should be developed and enhanced.

Concerning the limitations of the research, we would like to note two issues. First, the sample could be more representative. Future research should include more students from different mathematical faculties. The second is the fact that some scales in the questionnaire have not been validated on this sample. Therefore, future research should include validation of these sub-scales. Also, some other scales of self-regulation had not been considered at all, such as "goal-settings", "handling errors", and "monitoring", and future research should include them.

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Quality development in pre-service teacher education through reflection

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Abstract:

This article addresses two important themes in teacher education and its further development: 'reflection' and 'quality assurance and development'. These two dimensions will be illustrated by the concrete example of a reform project in a higher education context called 'Leibniz-Prinzip'. The project aims to improve pre-service teacher education by introducing diverse modes of reflection into the university programme for pre-service teachers. Within the project, several different conceptions of reflection and approaches to integrating and initiating reflection among students can be found. The quality development approach is based on fostering reflection. It can be described as reflection on reflection. The central question is how to deal with project's diversity regarding conceptions of reflection, not to unify or evaluate, but to take this diversity as an impulse for quality development.

As part of this approach, these conceptions of reflection were brought into a systemic logical order. This resulted in a scheme that distinguishes between *types of reflection* and *purposes of reflection*. The different types of reflection present in the project can be subsumed under the subcategories self-reflection, reflection of structures and peer reflection. The purposes of reflection can be subsumed under the subcategories self-improvement and development, deeper understanding and situation-oriented interaction.

Keywords: reflection, quality development, pre-service teachers

1. Introduction

The term 'reflection' is ubiquitous in the literature on teacher development and teacher education. The promotion of this concept seeks to foster the professional development of pre-service teachers and it is hoped that it could serve to enhance teacher education. Just as there are plenty of different recommendations for how reflection could be systematically employed in the training of future teachers (e.g. Roters, 2012, Hatton & Smith, 1995, Zeichner & Liston 2014), there are plenty of different ideas on the nature of reflection (e.g. Bengtsson, 1995) and how it can be utilized for various topics in

teacher education (e.g. Abels, 2011). Reflection also can be seen as a connecting element between different topics in teacher education (e.g. Helmerich, 2013). Indeed, there is a potential to further develop teacher education by using the concept of reflection. However, it is a daunting challenge to 'find one's way through the jungle' of the diversity of different conceptions of and approaches to teacher reflection. It seems even more ambitious to attempt to reflect on reflection as a measure of quality development - particularly in the setting of a third party funded project.

Especially in reform projects, the field of quality assurance and development has grown in importance. Thus it is often a mandatory aspect of the project's design in order to receive funding (Harvey & Newton, 2007). How quality assurance and development is conceived, its conceptual foundations and developmental goals and its integration into the project's design are manifold.

Therefore, designing and implementing a quality development that is based on reflection is hardly a straightforward endeavour and could follow many different paths. One approach is to focus on the academic staff.

In this article, we will present a possible approach to utilise reflection for quality development. It will be illustrated by the project *Leibniz-Prinzip*, in which we currently work as quality developers. As the academic staff requires students to reflect, we invite the academic staff to reflect on their work. The idea behind this approach can be summarised as reflection on reflection.

The central question is how to deal with a project's diversity regarding conceptions of reflection, not to unify or evaluate, but to take this diversity as an impulse for quality development. Thus the focus of our work is to give a structured overview of the diversity of different understandings of the conception reflection in the project.

In the following, we will first give further insights into the project structure of the *Leibniz-Prinzip*. Then we relate our approach to the literature on reflection and quality development, before describing our methodology and concrete procedures of quality development. Here the focus lies within the description of the concrete setting of an academic colloquium because it was our main data source for the various conceptions of reflection operative within our specific context. Subsequently, we visualise our findings with examples from each sub-projects. We close with relating our findings to previous approaches of categorizing reflection in educational practices and locate our stance towards quality assurance and development within the field.

1.1. Leibniz-Prinzip

The reform project *Leibniz-Prinzip* funded by the German Federal Ministry of Education and Research aims to improve pre-service teacher education by introducing diverse modes of reflection with the idea of promoting a *capacity to reflective action* [*Reflektierte Handlungsfähigkeit*] among pre-service teachers. The *capacity to reflective action* refers to different theoretical approaches regarding the professional development of teachers and their education: Competency theory (e.g. Baumert & Kunter, 2006), structure theory (e.g. Helsper, 1996) and theories about teachers'

occupational-biographical development (Terhart, 2011). The development of a *capacity to reflective action* is seen to be a long-term process, which is initiated at the university.

The project is structured into four sub-projects with different content-related focal points:

- **Teacher identity and reflexivity:** This sub-project aims at students' early identification with the teaching profession from the beginning of their degree onwards. Students are encouraged to plan their further professional development and acquire a beneficial mindset towards the teaching profession through, e.g. a peer-mentoring-programme which includes biographical reflection and self-assessment of personal competences.
- **Sensitivity for diversity in inclusive learning environments:** This sub-project aims at fostering students' understanding and appreciation of diversity (social, cultural, linguistic, gender, special needs), e.g. by reflecting on the role of language in school settings, and their personal attitude towards diversity.
- **Deeper cooperation between subject disciplines and didactics in the field of teacher education:** This sub-projects aims at giving students a deeper understanding of their subjects' specific content through highlighting the significance of content knowledge in the teacher education curriculum and structural knowledge of the subject matter. Lecturers of the subject disciplines and lecturers of the didactics of these disciplines develop in cooperation teaching-learning-designs connecting both fields in teacher education (e.g. flipped classroom, integrated reflections of learning strategies or content).
- **Enhancing teacher education through e-learning and video-based reflection:** This sub-project aims at fostering understanding for classroom interactions and seeks to help students to develop alternative ways of linking theory and practise. By using video impulses of authentic classroom interaction or simulated classroom interaction reflection processes are initiated.

Despite the differences regarding the content and diverse backgrounds of theoretical approaches, the four sub-projects share a focus on reflection as a central element in pre-service teacher education.

Therefore, the analysis of the different understandings regarding the concept of reflection in the project is one crucial part of our work in quality development.

2. Setting the scene

Two different aspects can be considered as essential to developing a better understanding of the chosen approach in the project and are highlighted in the following; first, the framing of reflection (2.1.), second the theoretical background of the quality development (2.2.).

2.1 Reflection

In the literature on teacher development (e.g. Schön, 1987; Zeichner, 2008) it is commonly argued that teachers should reflect on their own experiences in order to

understand and improve their own professional teaching practice. Despite its prominent role, what is understood by the term 'reflection' varies. Jan Bengtsson (1995) identifies three different ideas concerning the nature of reflection, which lead to different implications of how a professional teaching practice is conceptualised. He states, that the term 'reflection' can be understood to be ' (1) [...] something that occurs in action, (2) [...] separated from action and is of another kind, viz. a cognitive activity (3) [...] itself an action, but of another kind than teaching action, viz. a kind of self-research' (Bengtsson, 1995, p.25).

The way in which the relation between teacher development in general and teacher education is conceived yet further diversifies ideas about reflection and its role.

One possibility in linking teacher development and teacher education is to look at the process of knowledge acquisition and knowledge consolidation. In this line of thought, teacher education can be seen as the initial phase of the ongoing professional development. Lee A. Shulman and Alice Y. Kolb together with David A. Kolb further specify the function of reflection for the formation and further development of a professional knowledge base:

Lee A. Shulman (1986, 1987) describes components of a knowledge base possessed by teachers. He distinguishes between seven categories: content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts, and knowledge of educational ends, purposes and values and their philosophical and historical grounds. This knowledge base is the foundation of the process of pedagogical reasoning and action, in which reflection is seen as a crucial aspect of development. By the reconstruction of events or the recapturing of emotions in a specific process, reflection can lead to new comprehension of the professional situation and thus further professional development.

Alice Y. Kolb and David A. Kolb (2005) include reflective observations in the experiential learning cycle. These reflective observations follow concrete experiences. Within this model, the process of reflection leads to the building up and actualising of abstract concepts and generalisation. Therefore, reflection can be seen as a crucial aspect for the formation of a knowledge base.

Reflection thus builds on a knowledge base and is also part of the creation of a knowledge base for teaching.

Another possibility to take into consideration is the role of reflection for practice. With the conceptualisation of the teacher as reflective practitioner, Donald A. Schön differentiates between two different roles of reflection: reflection-in-action and reflection-on-action (Schön, 1983). While Donald A. Schön describes reflection-in-action as ' thinking on your feet' (Schön, 1983, p.54) in situations where the practitioner thinks about why he or she does something, reflection-on-action refers to retrospective contemplation on one's own practice with an eye to analyse and interpret one's courses of action and consider possible alternatives.

The goal of preparing future teachers for reflective practice is widely shared and serves as an ideal within our project. Given the fact that the project takes place within a university setting, it primarily addresses in its design and implementation reflection-on-action. Introducing reflective practice in pre-service teacher education from the beginning of the degree on is perceived, however, to be a starting point for a long-term further development of a reflective practice.

The notion of reflection is unavoidably connected with certain orientations regarding the aims of reflection and corresponding conceptions of self and society.

As a conceptual framework, Bud Wellington and Patricia Austin (1996) offer five orientations to reflective practice in the field of education: the immediate, the technical, the deliberative, the dialectic and the transpersonal. As one crucial aspect, the authors distinguish between the underlying belief that education should be either 'domesticating' or 'liberating'. From a 'domesticating' perspective structures are accepted and not perceived to be in question for change. This counts for both the technical and the deliberative orientation. From a 'liberating' perspective education has the potential of a transformative impact on either a cultural or personal level. The dialectic and the transpersonal orientation are part of this perspective. Another differentiation the authors suggest regarding reflective practice is whether the practitioner's orientation tends to be people-oriented or systems-oriented. Whether people-oriented practitioners focus primarily on human concerns, personal meaning and relevance, systems-oriented practitioners stress the importance of organisational structures and systematic ways of doing things.

As outlined, one can find in literature manifold orientations towards and understandings of reflection, its importance and its role in a certain setting and for attaining certain goals. The outlined paradigmatic diversity is also an aspect to consider for the chosen approach to quality development.

2.2 Quality development

One important and often mandatory part of reform projects in teacher education is the assurance of quality of the intervention. The goals of this part are twofold: On the one hand, it should evaluate the intervention, on the other hand, it should enhance the intervention process (Stockmann, 2007).

The form of quality assurance and development and its underlying rationales differ. Basically, it can be distinguished between a summative and a formative approach to a project's evaluation. The focus within a summative approach lies on the results of the intervention. A formative approach, conversely, takes the process into consideration. A formative approach takes into account the project's environment and its dynamics and acknowledges that the process of implementation always contains an unpredictable side (Stockmann, 2007). The project Leibniz-Prinzip follows a formative-reflexive quality development approach. The addition '-reflexive' highlights the procedure of quality development that is based on collaborative reflection and communication. Thus in the following, we shortly sketch the theoretical basis behind this approach.

The frame of action of quality assurance can be located in the tension field between scientific orientation and its utility for reaching the project's objectives (Stockmann, 2007). The chosen approach is grounded on the idea of a theory-driven evaluation (Chen, 2004, 2006, Thumser-Dauth, 2007). By taking into account scientific principles and also pragmatic considerations in its procedures, it seeks to act in the intermediary between the two poles of tension. The quality development is built upon the formulation of so-called programme theories. A programme theory is

'a specification of what must be done to achieve the desirable goals, what other important impacts may also be anticipated, and how these goals and impacts would be generated' (Chen, 1990, p. 43).

The idea of this approach is to unfold the implicit assumptions and rationales of how the programme is supposed to work and thus to make those accessible for discussion. These assumptions can be both prescriptive (action model) and descriptive (change model). Taken together, both models outline the specific programme theory. The basis for the theory can be both scientific theories, but also implicit theories that rest upon personal experience and practical knowledge. The quality development does not seek to test the validity of the program theory, but to give impulses for reflecting on one's own assumptions and rationales in order to critically question the implementation in process. By doing so, the quality development deliberately interferes with the project dynamics and forms one part of the project's implementation as well.

The role the quality development plays in the project can be described as 'evaluator[s] as moderator' (see Guba, & Lincoln, 1989). The moderation takes place through two different areas of focus: It is grounded, on the one hand, on a document analysis, and on the other hand, on providing opportunities for reflection. These reflective practices are documented and analysed. The chosen approach for quality development in the project responds to the emphasis on the importance of a supportive academic culture, and collegial cooperation stated in the project outline (LUH, 2014).

As described in the following, the measures taken for quality development focus on teacher educators (academic staff members at university) and the project dynamics.

3. Methodology

The process of quality development and its data gathering for the document analysis are intertwined. Hence in the following, the concrete procedure of quality development within the project is described, and the data sources that emerged during the process are named. Then the process of data analysis is outlined.

3.1. Quality development and data gathering

The process of quality development is built around different settings that seek to foster the reflection of the work-in-progress by the academic staff members who are in charge of conceptualising and implementing the project. Our role in the project's implementation is to provide space for discussion and reflection.

The first setting was realised in the form of workshops offered to the four different sub-projects to reflect and discuss their specific aims for the improvement of teacher education and its implications for the design of the intervention. The products of the workshops - in the form of conceptual maps - were documented and the discussion audiotaped. The first cycle of data analysis resulted in individually sketching the action models of the program theories for each of the four sub-projects. The sketched action models were reported back to the sub-projects with additional feedback that sought to offer a broader view and a link between the different sub-projects focusing on practical considerations of the implementation at its outset.

A setting that specifically addresses the scientific development was an academic colloquium. Considering the central role of reflection in the project, the development objective can be described as fostering a mutual understanding of 'reflection' in taking into consideration the diverse theoretical foregrounds. The rationale for choosing the form of a colloquium was to initiate a dialogue and promote an exchange of different perspectives, which might be beneficial for both pragmatic but also research-related issues in the project. The documents that resulted from the colloquium discussions were conceptual maps, power point slides and notes taken during the discussion. In the first phase of the colloquium, seminal works on reflection in the context of teaching and teacher education were discussed. In particular theories about the professional development of (pre-service) teachers and their notion of reflection were considered.

Here it might be important to state that our approach is based on the assumption that there is a link between the academic development in the project and the focus on deeper conceptual knowledge by discussing the underlying theories in the project.

In the second phase, the colloquium focused more closely on the concept of *capacity to reflective action*. First, the participants were asked to write down their own working-definition of the concept related to their specific professional context (these written working-definitions were part of the document analysis, too); then the concept was further developed in a collaborative discussion.

In the third phase, intermediate results regarding a further differentiated formulation of the concept were related in discussion to the sub-projects work-in-progress at a project related conference. The discussions were structured by guiding questions, and interim results and ideas were captured on a visual display. Furthermore, the discussions were audiotaped.

Finally, the concept 'capacity to reflective action' was modified with respect to the feedback of the conference participants, and the impulses regarding the sub-projects work-in-progress were taken into consideration for further adjustment.

Academic staff from different disciplines and the different sub-projects participated in the colloquium. Due to the diverse backgrounds in this interdisciplinary project, it is important to note that (1) a shared academic language could not be assumed and (2) the participants might frame the concept of reflection and related concepts differently according to the disciplinary background.

From our perspective, questioning one's own rationale for action and practice vis-a-vis those of other project collaborators in such an interdisciplinary setting provides opportunities and gives impulses for the further development of quality. However, it should be noted that our approach did not harmonise the various understandings of reflection operative among project participants, and shared standardised terms or definitions were not obtained. Still, we consider a display of the diversity of the project as very important both for a mutual understanding and for the collaboration in the project.

We used the findings obtained by the different above-mentioned sources to give impulses for a discussion in the academic colloquium.

3.2. Data analysis

The documents we analysed were either in the form of texts or results of discussions visualised in conceptual maps. The analysis seeks to identify the line of thought in arguments presented in certain text documents or transcribed discussions. It should be mentioned that most documents that were analysed are collaboratively created products. Therefore the analysis does not focus on the assumptions of an individual academic staff member, but on different themes that emerged in discussion or were used in the written text.

Implicit assumptions on which the argumentations are rooted were reconstructed. The data analysis was based on the following steps, starting with tracing the presuppositions about the (a) target group of the intervention and (b) the specifics of contextual factors that are thought to be important. It further seeks to unravel assumptions about the underlying processes of the intervention. These were differentiated as to whether they were advanced on the basis of practical experience, theoretical assumptions, and specific contextual factors or not further substantiated.

In a second step, the use of the term 'reflection' in participants' argumentation was further assessed. For this purpose, the argumentation was categorized by the following elements: sequences that dealt with the (i) aim that was specified to be reached by reflection, (ii) prerequisites for reflection, (iii) contents that were supposed to be reflected, (iv) methods used to initiate or to structure the reflection process and (v) reflective statements that consider the notion of reflection.

In a third step, the themes that were organised by these elements were interrogated in respect to their similarities and differences. Using the technique of constant comparison (Miles, Huberman, & Saldana, 2013) a set of categories was identified. The categories are disjunctive only on an analytical level. In a concrete theme mostly a composition of different categories can be found.

4. Results

Our data analysis resulted in a scheme. In the following, we will present the scheme, before illuminating it by concrete examples from the four sub-projects.

4.1. The scheme

Our scheme works with a satellite metaphor. We chose this metaphor to visualise our intention to open up an external perspective on the project regarding the manifold understandings of reflection. With categories that can be combined in diverse ways, the unique characteristics of each sub-project and each participant can be highlighted and visualised. This also offers the opportunity to discover unexpected similarities which might be a starting point for enhancing communication and cooperation in the project.

We distinguished between two categories: **type of reflection** and **purpose of reflection** with the following subcategories. As different **types of reflection** we identified:

- **Self-reflection:** this type of reflection is oriented according to the self's own thoughts, actions and role in a specific context. An important reference within our project's theoretical foundation is competency theory and theories of biographical development.
- **Reflection of structures:** this type of reflection analyses the influence and impact of structures in a specific context. The term 'structure' refers to visible structures as e.g. the structures of a specific school system but also includes discourse structures. It is the main focal point of structure theory.
- **Peer reflection:** in this type of reflection individuals get impulses for reflection of their own action and role through the feedback of others. It offers in contrast to self-reflection the perspectives of others on one's own position in the specific context.

The **purposes of reflection** can be described as:

- **Self-improvement and development:** this purpose of reflection contains two different aspects; an orientation towards the individual learner and his/her individual growth or professional progress, but also the aim to improve the structural setting or content dimension, e.g. the further development of didactics.
- **Deeper understanding:** here reflection ought to lead to growth in knowledge, both in a qualitative and a quantitative manner.
- **Situation-oriented interaction:** interactions ought to be suitable for the specific context of action, especially in the context of teaching. For a situation-oriented interaction, it is essential to consider self-reflection and the reflection of structures in relation to each other.

It is necessary to take into account that the categories in the theme are analytical categories. In our project combinations and mixed forms can be discerned according to the individual focus.

In the following, a concrete example from each of the four sub-projects is provided, in order to illustrate the categories of the scheme.

4.2. Sub-project I

The first sub-project deals with teacher identity and reflexivity. One concrete intervention is the implementation of a peer-mentoring-programme. The purposes of this programme are to foster students' early identification with the teaching profession from the beginning of their degree on and to encourage them to plan their further professional development. Important elements of the peer-mentoring-programme are self-reflections on biography and personal background and a self-assessment focusing on personal competences as an initial analysis from the beginning of the teaching degree onwards. The idea behind this intervention is to introduce the tool of self-reflection to (future) teachers to enable them to advance their own professional development for a long-term perspective.

The main purpose of reflection in this sub-project is thus self-improvement and development, which in this specific intervention focuses on individuals. The type of reflection that is fostered in this sub-project is self-reflection, which is conducted in a pre-structured way.

4.3. Sub-project II

The second sub-project addresses sensitivity for diversity in inclusive learning environments introducing this focal point into pre-service teacher education. The project aims at fostering students' understanding and appreciation of diversity. One concrete intervention is the implementation of seminars that emphasise different aspects of diversity, e.g. social, cultural, linguistic, gender and special needs. In this context, both a reflection of structures (e.g. role of language in school settings) and a self-reflection (e.g. personal attitude towards diversity) are fostered. The purposes of reflection are to gain a deeper understanding of diversity but also to foster a situation-orientated interaction in the context of teaching and learning.

4.4. Sub-project III

The third sub-project has a focus on a deeper cooperation between subject disciplines and didactics in the field of teacher education. The projects aim to highlight the significance of content knowledge in the teacher degree curriculum through structural knowledge and reflection on subject matters. One concrete intervention is the implementation of a tandem structure between lecturers from the subject disciplines and lecturers from the subjects' didactics who develop in cooperation teaching-learning designs connecting both fields in teacher education. This holistic approach intends to open up new perspectives on integrated reflections of content issues and learning strategies. It includes different types of reflection. The focus on learning strategies, for example, integrates both self-reflection and a reflection of structures. While the self-reflection addresses the students' learning strategies (which learning strategies do I apply and why?), the reflection of strategies focuses on learning strategies that are specific for the subject discipline and its knowledge-structure (which learning strategies are appropriate for the given knowledge-structure in a certain subject?). The purposes of reflection are primarily a deeper understanding – in this case, a deeper understanding of the content in the pre-service teacher education

curriculum but also the purpose of (further) development regarding the linkage between content knowledge and pedagogical content knowledge – two central components of the knowledge base of teachers that Lee A. Shulman (see above) suggests - in teacher education.

4.5. Sub-project IV

The fourth sub-project aims to enhance teacher education through e-learning and video-based reflection and seeks to help students to develop alternative ways of linking theory and practise. One intervention is the implementation of reflective seminars on classroom interaction. By using video impulses of authentic classroom interaction or simulated classroom interaction, reflection processes are initiated. The purpose of reflection can be seen as self-improvement (e.g. the student's way to interact in the classroom) and the development of skills for their profession, whereas the types of reflection that we found are self-reflection but also peer reflection, especially with the integration of the video-taped classroom interaction.

5. Discussion

The approach that has been described in this article can be seen as one attempt to find a way through the jungle of different conceptions of and ideas about reflection that are present in our specific context.

The idea to focus on the different conceptions behind the term 'reflection' is not unique to our endeavour, and several attempts to do so can be found in the literature (as described in the introductory section). Both corroborations and differences to our results can be found.

Jan Bengtsson's (1995) three different ideas on the nature of reflection can also be found in our context. The notion of reflection as '*something that occurs in action*' (Bengtsson, 1995, p.25) is addressed in the ideal formulated in the project. The guiding principle of promoting a *capacity to reflective action* carries the vision of future teachers capable of reflection-in-action. Nevertheless, the process of initiating this in a university setting is conceived differently, by focusing on the cognitive activity of reflection-on-action.

While Jan Bengtsson sought in his article to illuminate the properties of 'reflection' in contrary to the ones attributed to it in the literature, our approach seeks to shed light on the different notions of 'reflection' in a work-in-progress project and its discussion. Here, we do not seek to judge whether the different ideas that were argued for fit to the term 'reflection', but to make them explicit, to foster discussion on different perceptions of the characteristics of reflection and their consequences.

The different types of reflection in our scheme mirror the two different objects of reflection Jan Bengtsson identified: Reflection '*can be (1) one's own activity, but it can in principle be (2) any other kind of object.*' (p. 27). These resemble to some extent the following types of reflection in our scheme: (1) self-reflection and (2) reflection of structures. The idea of (3) peer-reflection is different from these two ideas. It does not

focus on the object of reflection, but focuses more on the process and seeks to utilise the self-distancing and educational function of dialogue at eye level.

Our approach to quality development seeks to utilise the self-distancing function of reflection. By making the different conceptions of reflection visible, we seek to offer the project collaborators an explicit framework to categorise and question their own concepts which offers the possibility for a new discourse in the project.

We hope that this will open up opportunities for the further development of the quality of the project by opening up spaces for self-critique.

Certainly, our approach of bringing different notions of reflection into order has similarities with the project of Bud Wellington and Patricia Austin (1996), who developed a framework for different ideas behind reflective practice. The most striking difference to our approach is that they attempted to make orientations to reflective practice of researchers, teacher educators and practitioners visible who are already involved in the professional practice on which they are reflecting. The context of our project though is different because the focus lies on building the capacity of a (future) reflective practice among teacher students. While Bud Wellington and Patricia Austin describe the purposes of engaging into reflection as being based on either a domesticating or liberating ideal of education and further differentiate these ideals into either people-oriented or systems-oriented, the subcategories of different purposes of reflection that emerged in our scheme focus on the educational function reflection is supposed to have. All three subcategories in our scheme could be thought of in a people- or systems-oriented way – depending on the context in which they are introduced, of course. The subcategory (3) situation-oriented interaction explicitly requires us to consider both people-oriented and system-oriented arguments. Surely a domesticating perspective on education that works within the given structures plays an important role in building arguments on what counts as a ‘good’ situation-oriented interaction, but a liberating perspective is not excluded in principle.

Finally, we want to locate our approach to quality development within its tension field. The first goal of evaluating the intervention is difficult to reach with our approach, because it remains in conflict with valuing the diversity of ideas about reflection in the project. In order to be able to judge an approach in comparison to others, a uniform standard has to be implemented. Setting specific standards in an interdisciplinary field of action always comes with the potential pitfall of valuing one disciplinary approach over another and ignoring disciplinary specific issues. Reflection always is related to the object that is reflected and can therefore not be seen independently of its content. Therefore, we did not seek to evaluate the different approaches of our project by one-size-fits-all standard nor to bring the different notions into a hierarchical order.

Our approach aligns more with the second goal of seeking to enhance the intervention process. We perceive our scheme offers a tool for reflecting on practice, which can be utilised by our participants – the academic staff members - according to their specific needs. The idea of providing a scheme as a tool for self-critique can be seen as part of

the scientific orientation that the quality development process follows. Whether this scheme is of practical utility, we deliberately leave to our participants.

6. Acknowledgements

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Teachers and student teachers co-creating: relatedness, agency in supporting inclusion, and meaningful participation in research

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Abstract:

In research, co-creation across sectorial borders is emphasised as beneficial for both teacher education and schools. This paper presents two case studies examining the meaning-making of teachers and pedagogues (professional practitioners: PPs) and student teachers (STs) in co-creation projects facilitated by college professors. The STs subsequently used material from their participation in these extracurricular projects as data for their bachelor projects. A research design was applied incorporating multiple qualitative data sources including repeated interviews. Data analysis was performed as a thematic analysis. Findings across cases show the positive experience for both PPs and STs of developing personal-professional competence and agency, i.e. to support social inclusion. A major theme is the experience of relatedness across groups with respect for and appreciation of each other. Additionally, STs refer to meaningful learning focused on mastering. Nevertheless, some autonomy in choosing an inquiry focus for the bachelor project also seems important. In particular, the PPs refer to the importance of bottom-up work with local everyday challenges. Furthermore, they reflect on a changed understanding of what research can be, e.g. co-creation and action research allowing their voices to be heard.

Keywords: co-creation, teacher education, social inclusion, agency.

1. Introduction

Building networks that underpin the interconnections of various institutions and communities with a view to improving education is one of the major themes of contemporary educational research and development. Networking is about how teachers can improve education collaboratively, but certainly also about cross-sectorial collaboration. Scholars as well as the policy level request more knowledge about how the various stakeholders in teacher education, professors, student teachers (STs) and in-service teachers can collaborate for mutual professional beneficence and to boost school students' learning (Zeichner, 2010). The present study addresses this gap by discussing collaborative initiatives involving STs, colleagues from our university college and professional practitioners (PPs) from the surrounding communities.

2. Literature review

2.1. Co-creation and teacher learning

The research interest in co-creation processes is based on a sociocultural epistemological understanding; seeing teachers and student teachers' learning as active cooperative growth processes that are situated, mediated and distributed, rather than just as training done by others to them (Clarke & Hollingsworth, 2002; Edwards, 2001). Figure 1 below presents the specific focus of this study on co-creation that embraces two teacher education arenas, i.e. the campus arena at the university (college) and the professional arena at the schools.

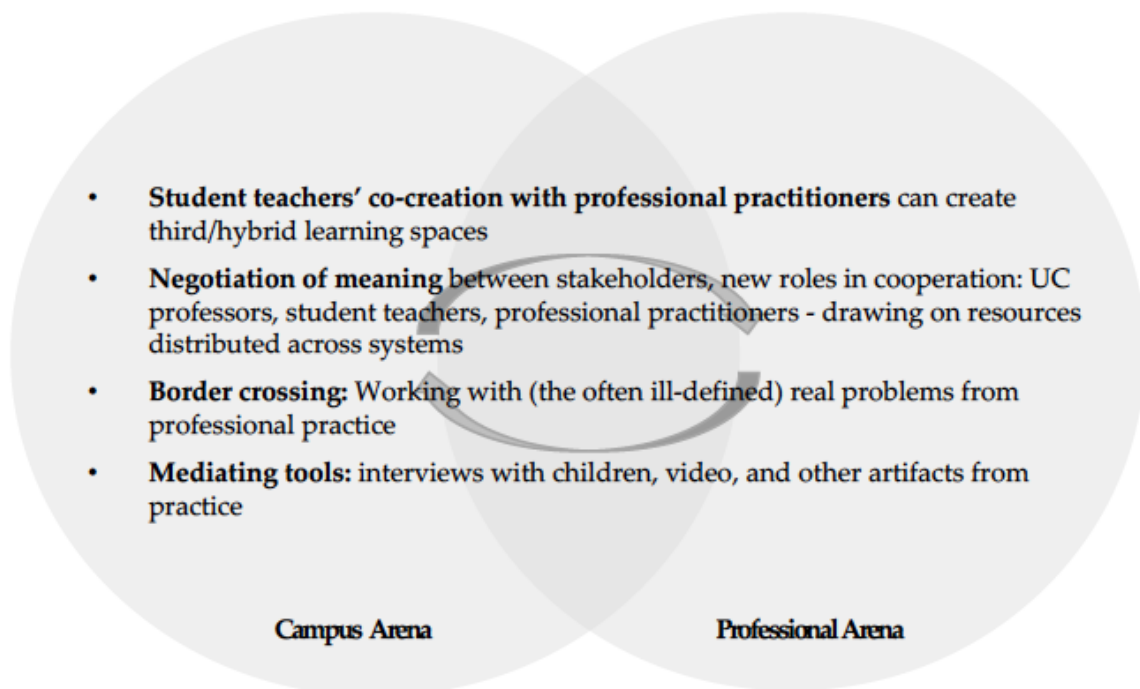


Figure 1. Co-creation involving university college (UC) professors, professional practitioners and student teachers: Some keywords from the theoretical backdrop.

The concept of co-creation is used widely in various areas of contemporary research and development to describe initiatives that bring together stakeholders in order to jointly produce a mutually valued outcome. It is, however, problematized both in Danish and international research that terms like co-creation and social innovation are in some contexts used to describe bottom-up collaboration with an empowerment perspective, and in others to describe more top-down governance initiatives, e.g. social service cut-backs achieved by delegating responsibility (Hulgaard, Juul-Olsen, & Nielsen, 2016; Mouleart, MacCallum, Mehmood, & Hamdouch, 2013). In the present study, the concept of co-creation is used to describe cooperative bottom-up innovation projects that count participants from various sectors, i.e. student teachers, teachers and university college professors, referring also to the international use of the term to describe action research with these groups of stakeholders (De Vries, Beijaard, & Buitink, 2007). De Vries et al. emphasise that co-creation of educational practices in the

form of action research can be beneficial for both teacher education and schools by professionalising student teachers while stimulating the experienced teachers. Following De Vries et al. (2007: 14), it is important that the research questions really do emerge from the interests and concerns of the involved teachers, that they have time in their weekly schedules to be deeply involved, and that support and facilitation are offered, e.g. by the university.

2.2. Partnerships and hybrid learning spaces

Other branches of teacher education research also describe close cross-sectorial cooperation, e.g. research exploring partnerships between schools and teacher education units. At the so-called professional development schools, experienced teachers are invited into the campus arena (Figure 1) and the university is involved in staff development in the professional arena at the schools with the overall aim of improving school students' learning (Mule, 2006; Teitel, 2003; Tsui & Law, 2009). In the teacher education research society, a growing consensus exists that much of what a teacher needs to learn must be learned in and from practice (Hammerness, Darling-Hammond, & Bransford, 2005). But there are disagreements about how to design educative practice learning experiences for STs, also bearing in mind the trend towards de-professionalization seen when political decisions are made that mainly/only contemplate school-based teacher education. This may be a reason to focus on close partnerships instead (Zeichner, 2010). Such collaborations are part of a movement towards democratisation of knowledge by merging traditional university teacher education with practice-based collaborations and mediated field experience in schools and communities (Zeichner, Payne, & Brayko, 2012).

Some of the research exploring professional learning in the context of collaboration employs the terms of third or hybrid spaces, illustrating that academic and practitioner knowledge come together in less hierarchical ways than normally experienced between university programs and sites for school placements (Tsui & Law, 2009: 1290; Zeichner, 2010; Zeichner et al., 2012). The idea of third spaces originated from hybridity theory emphasising that individuals draw on multiple discourses to make meaning from experiences (Zeicher, 2010: 92).

So, the democratisation approach is acknowledged at a meta-level, both when arguing for analysing bottom-up growth processes in research looking into teachers' professional learning (Clarke & Hollingsworth, 2002), and in arguments about hybrid learning in cross-sectorial collaborations (Zeichner et al., 2012). This democratisation perspective is furthermore referred to in the context of concrete action research initiatives focusing on social rights, for example when different stakeholders work collaboratively to support students with special needs due to their social or cultural backgrounds, e.g. migrant status (Gutiérrez, 2008; Gutiérrez, Baquedano-López, & Tejada, 1999; Kozleski, 2011).

2.3. Agency, meaning and motivation

Evidently, the so-called grand social challenges related to poverty, demographic change and migration as well as climate change and resource depletion place new

demands on teachers' active contribution to shape their work and its conditions. Many contemporary scholars refer to the idea that individuals (here teachers) make choices, take initiatives and act proactively by using the term agency (Bandura, 1997; Biesta, Priestly, Robinson, 2015; Edwards, 2001; 2005; 2009; Goller, 2017). Human agency is emphasised as a central element in learning processes, in particular learning at and for work (Goller, 2017). Referring also to other scholars, Bandura (1997) states that this means thinking about teachers' professional learning in terms of doing not undergoing. Bandura's position is here in line with the epistemological understanding described above (section 2.1). He continues to discuss how group achievements and social change are rooted in self-efficacy, referring to both individual and collective agency (Bandura, 1997). Therefore, rather than seeing agency as residing in the individual teacher, agency might better be understood as an emergent phenomenon of actor-situation transaction (Biesta et al., 2015). Edwards (2005; 2009) uses the expression relational agency, defined as the capacity to work with other practitioners drawing on resources that are distributed across systems to support one's actions. Relational agency is highly needed by in-service teachers but can also be seen as an overall intended learning outcome for prospective teachers.

The concept of meaning is closely connected to agency. Krauss (2005: 763) defines meaning as the underlying motivation behind thoughts, actions and even the interpretation and application of knowledge. Meaning is hereby also connected to human motivation, i.e. the basic need for feeling competence, relatedness and autonomy (Ryan & Deci, 2017). So, learners' meaning-making - their experience and interpretation of experience (Edwards, 2001) – is an important focus, when designing and researching activities for professional learning and can in the present context be the key to gain new insight into the collaboration between various stakeholders in teacher education. This leads to the research questions.

2.4. Research questions

With the aim of condensing key aspects of student teachers' (STs) and professional practitioners' (PPs) meaning-making from participation in co-creation initiatives, the research questions are:

- How do STs and PPs interpret their experiences from specific co-creation initiatives?
- What possibilities and challenges can be identified in relation to co-creation as an element in developing professional practice and teacher education based on their perceived outcomes and how they draw on the shared findings and interpretations?

3. Methodology

This study was designed to include qualitative data from multiple cases and initiatives with co-creation across educational and professional arenas, i.e. co-creation as an element of pre-service teacher education. Before describing in more details, the data collection and analysis, the context for these educational innovation initiatives will be

described.

3.1. The local context

The participants in the local initiatives are STs from the 4-year integrated professional bachelor programmes at our university college, in-service professional practitioners, and university college (UC) professors. The STs complete several official placement periods during their studies, but there have also been initiatives offering participation in extra-curricular cooperation, for example between teacher education units and schools, as in the cases presented below, but also in the programmes for education of pre/after-school pedagogues and social workers. A range of such co-creation initiatives have been followed in our research, within both teacher and social worker education. Initiatives with close cooperation that span all 4 years of training, and shorter projects. The two cases presented here concerned teacher education, and both were co-creation initiatives running over the two final semesters during which the STs work on their bachelor project, among others. The discussion below will refer briefly to published research about other initiatives.

Figure 2 illustrates the “normal” framing of STs’ work on the bachelor thesis compared with the time flow when the thesis is framed by a co-creation initiative.

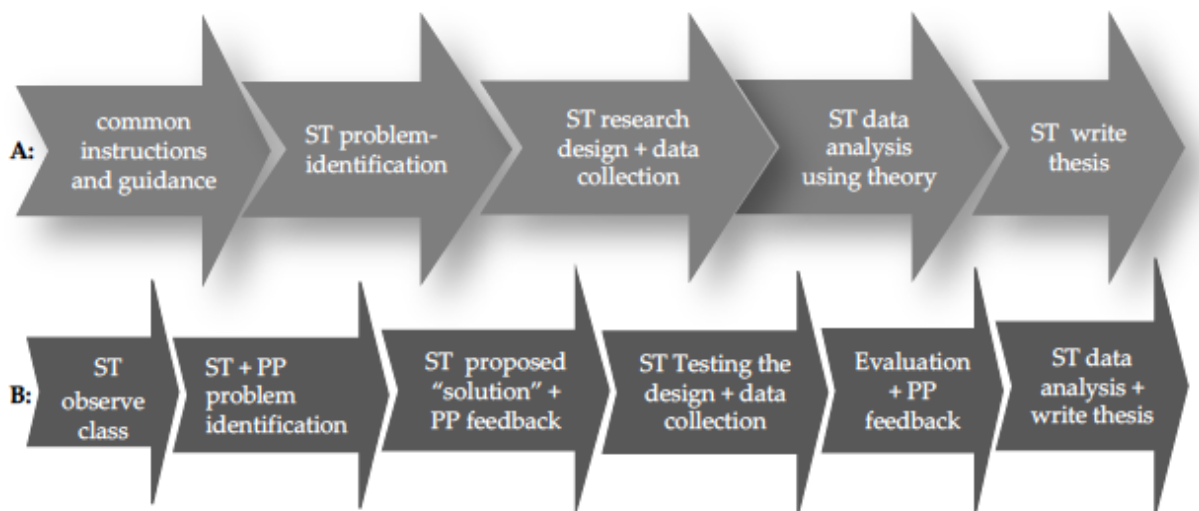


Figure 2. Framing of the student teachers’ (STs) work with their bachelor thesis during the 7th and 8th semesters at the integrated professional bachelor programme: A) The normal process, B) The process in which professional practitioners (PP) participate in a co-creation initiative.

The main difference, illustrated in Figure 2, is that the PPs (in-service teachers) are more involved in the bachelor process in the co-creation initiatives than is normally the case. An example hereof is that the problems worked with are identified at the schools in collaboration with the teachers. The illustration in Figure 2 is seen from the perspective of teacher education; however, as will be illustrated below, particularly in case 2, the initiatives are also framed as action learning/social innovation projects where the PPs are facilitated in identifying and working on problems from their everyday practice.

Both cases presented are about STs working on a bachelor thesis referring to the overarching theme of school students with special needs. However, the bachelor project in this integrated teacher education programme could also be about, e.g. subject didactics. All the STs choose an overarching theme before starting their 7th semester, and they are all offered supervision from UC professors. Some STs additionally, volunteered to participate in the co-creation initiatives as an extra-curricular activity (Figure 2). We, the three researchers, asked for permission to observe at meetings and workshops, and to interview the participants. We were not part of the co-creation process ourselves.

The two initiatives described below were sampled because they are comparable in many ways, e.g. with respect to the overarching theme, the time frame, and because they involve STs doing their bachelor thesis. Nevertheless, there are also differences between the cases, for example, Case 2 involved the UC professors as formal facilitators of a range of workshops at the school, whereas Case 1 did not.

3.2. The two cases

In Case 1, two STs were first invited to participate on a specific project at a school for students with special needs where teachers had decided to work on developing the physical environment/interior decoration to better support the vulnerable school students. The UC professors arranged the contact and the STs joined the teachers to participate on the project. However, the STs decided to pursue another project with teachers they had met during an earlier school placement period. This contact was initiated by themselves, and they ended up working together with these teachers in the process illustrated in Figure 2. Their research question for the bachelor project was “How can students with reading difficulties be encouraged to make use of digital devices when reading, without feeling exposed in class?” The STs examined the problem (empirically and theoretically) and prepared and tested an innovative solution in collaboration with the teachers. These actions and the “data” generated testing the design constituted the basis for their bachelor project.

In Case 2, four STs were invited to participate in a process facilitated by two UC professors where PPs from a school, both teachers and pedagogues from an after-school club, worked on new initiatives to support social relations among school students with a particular focus on socially vulnerable school students. Thus, the involved PPs worked at the same school with the same school students, but they did not normally cooperate. It is quite frequently seen in Denmark that the same premises are used for teaching and for after-school club activities, but the two groups of professionals do not necessarily co-operate.

The 7-month action-research process followed a model where the PPs attended five consecutive workshops where they were facilitated in identifying local challenges, choosing a focus, taking specific actions with the school students and interviewing the involved school students afterwards, etc. The STs were invited to participate in all workshops, but the choice of specific focus in the action research was made by the PPs who decided in the first workshop to work on initiatives for boys in a particular 5th

grade class with challenging social relations. They decided, among others, to include role-playing activities in teaching led by one of the club-pedagogues who was not normally responsible for the teaching, but who knew the school students from the after-school club. One of the STs used data from the co-creation initiative in her bachelor project focusing on how teachers and pedagogues may cooperate to support socially vulnerable children.

3.3. Data collection and data analysis

The main data source was repeated interviews with STs and PPs. Additional data included observation notes, and in Case 2 video recordings from meetings and workshops, along with the “data” collected by the STs and PPs as part of the process, e.g. interviews with school students from the 5th grade in Case 2.

Interviews with STs were arranged as semi-structured individual interviews (Kvale & Brinkmann, 2009). The interviews followed an interview-guide with questions about the STs description of the specific actions; their perceived professional outcomes; the possibilities and challenges as they saw them in the project and in relation to their bachelor inquiries; what they perceived as meaningful, important and motivating; and finally, their recommendations for professional practice and for teacher education. Interviews with PPs were also arranged as semi-structured group interviews (Kvale & Brinkmann, 2009) following a similar interview-guide with questions about their description of the specific actions, perceived professional outcomes, possibilities and challenges, etc.

The data analysis was conducted as an inductive thematic analysis. Thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data (Braun & Clarke, 2006). This approach is suited for reporting experiences, meanings and “the reality” as perceived by participants (Braun & Clarke, 2006: 81).

3.4. Quality assurance

The findings from this study can be seen as highly context-specific as they are based on rich qualitative data from case studies, but some general issues will be discussed based on the case studies.

In general, case studies are characterised by closeness to real-life situations and its multiple wealth of details (Flyvbjerg, 2006). Flyvbjerg (2006) states that case studies are well-suited for producing specific, context-dependent knowledge, and may serve to elucidate the nature of agents’ knowledgeability and their reasons for action across contexts. The present analysis served to identify such more general motives and interpretations from the participating PPs and STs. Throughout the analytical process, themes were identified in an iterative approach in the team of researchers by reading through the data corpus, marking quotes and meeting to discuss the suggested themes until agreement was reached. For transparency purposes, themes are presented below with examples of quotes from the informants.

As described, the STs and PPs volunteered to participate in the project. This needs to be taken into consideration by being cautious when drawing conclusions and also when considering the implications of a potential up-scaling of the initiatives.

4. Results and discussion

Findings from each case are presented below. They refer mainly to the first research question. The presentation of the findings gradually moves into a discussion of each case, followed by a cross-case discussion referring also to the second research question.

4.1. Findings and initial discussion of Case 1

As described above, the STs in this case participated in a meeting about the first project for which contact had been established by their UC professors, but then opted out of that project. Because of this development, the results reported here are focused on how the STs interpret the experiences. In contrast hereto, the findings from Case 2 are based on data from both the STs and the PPs.

First of all, it must be emphasised that the physical environment and rethinking the use of classroom facilities, which was the suggested focus at the first school, certainly can be a reasonable focus where the aim is to support school students with special needs. Nevertheless, the STs left the first meeting at the school feeling that this was a somewhat trivial interior decoration project. They were, however, not discouraged from working with co-creation and therefore moved on and established a project at another school. Two major themes were formulated based on the analysis of the data from this cooperation. The headline of theme 1 is that the authentic, unique issues located in the professional field seem to readily commit student teachers in contrast to more “traditional” projects. When talking about traditional projects, they compare their experiences to former projects at their teacher education unit and to the bachelor projects on which their peers have worked and which were initiated on the basis of a somewhat imaginary academic problem identification (Figure 2). So, practice-oriented issues experienced by and shared with in-service teachers seem to motivate the STs more than theoretically inspired problems, as illustrated by these two quotes:

“.. it makes sense, rather than in the traditional bachelor project, then you try to think about or seek a problem, whereas, in this case, we are given a real problem, they [PPs] see as a challenge in their everyday work.”

“.. it is interesting to connect to people facing real problems, because ... teacher education, that is where theory comes from...”

The STs, however, find that it is essential that the “real problems” are also intellectually and professionally challenging. The headline of theme 2 is that student teachers are motivated by the opportunity to become involved in professional practice. But at the same time, a certain space for self-determination is essential. It is desirable for STs that their role in co-creation projects allows them to contribute with something they see as valuable, while their work is also conditioned by the relation in which they are

involved. When preparing the research design for the bachelor project, the STs need to step back and make independent decisions, as illustrated by these quotes:

".. motivation emerged when you felt you could make a difference and contribute in a way that would make sense to those you were facing..."

".. it's simply a way to connect theory with practice, we [STs] contribute with a theoretical viewpoint and they [PPs] contribute with practical viewpoint, and we cooperate in connecting these two perspectives..."

".. working with the problem, it was essential to us that we had the freedom to investigate it in a way we found interesting. Teachers seems to discover a problem and immediately look for a solution to it..."

It seems to be very important for the STs that they can actually "make a difference". Rather than having the role of the spectator, they become more involved when they have a chance to contribute with different perspectives than those dominant in the professional arena. They consider themselves more theoretically minded than the in-service teachers. However, teachers possess practical knowledge. Considering co-working, this experienced difference seems to be productive. Realistic perspectives add to theoretical and empirical research results, raising the question of how an idea can work in the classroom.

The case illustrates the subtle balance and interconnected nature of the two headlines of autonomy and relatedness that are emphasised in self-determination theory (Ryan & Deci, 2017). The STs acknowledge and feel motivated to involve themselves in professional problems as formulated by the in-service teachers. The issues raised by the teachers are more authentic as seen from the point of view of the STs, contrary to what is experienced as a more academic starting point when formulating professional challenges at the campus arena. Furthermore, the STs refer positively to the relations with the teachers. However, they also refer to a need for professional autonomy. Part of the reason why the STs chose not to engage in a project with the teachers at the first school was that they found the problem was too un-theoretical to be the starting point of a bachelor project. They evidently find that it is meaningful to master cooperating closely with practitioners, drawing on resources distributed across systems (relational agency: Edwards 2009). But might they also take a strategic approach wanting to perform and get a good grade in a project finally evaluated by UC professors? One of the intended learning outcomes related to the bachelor project is that the STs can *"analyse central and actual problems regarding schools and teaching and cooperation with external stakeholders"*. But discussions informed by theory and research are also referred to in the curriculum, and may traditionally weigh more in exams, at least according to the STs typical perception (Nielsen, 2015). The STs involved in Case 1 do, however, not refer to performance goals; they refer to personal professional mastery goals (to be further discussed in the cross-case discussion).

Summing up, according to the STs, in-service teachers see a problem and then immediately look for its solutions. Whereas STs see problems as an opportunity to investigate the school learning environment in general, i.e., the circumstances of the

problem. They aim to understand *why* a solution would be likely to work. Furthermore, they wish to master being a professional in an authentic setting; but they also wish to contribute to developing the profession by thoroughly engaging in theoretical discussions of the issue and contributing with knowledge of how changes can be achieved. In the specific case, the STs examined the problem and its context by observing and interviewing school students. A solution, in the form of a different organisation of reading activities in class, was tested in collaboration with the in-service teachers. These actions - observing, testing, giving feedback and analysing and discussing data - represented the basis for their bachelor project.

Before discussing in more details, the STs perceived outcomes and how they interpreted the experiences from the co-creation initiatives, we report on Case 2, starting with the professional practitioners' meaning-making.

4.2. Findings and initial discussion of Case 2

Six themes were condensed from the interviews focusing on the pedagogues and teachers' (PPs) experiences of opportunities, challenges and perceived outcomes from their participation in the project. Specifically, themes were condensed from the five consecutive workshops held in the course of 7 months with STs and UC professors, and not least from the actions in their classes between workshops. Some of these issues are quite context and project-specific, while others may be seen as having a more generic character: 1) the PPs refer to new ways of seeing and acting on locally identified challenges; 2) they emphasise that this new formal room for cooperation also strengthens informal, everyday cooperation; 3) nevertheless, some basic local challenges in the cooperation between teachers and pedagogues might remain, we named this theme: "differences creating undesirable boundaries"; 4) when talking about their own perceived outcomes, the school students were very much in focus; 5) they refer to new possibilities for professional learning across groups and emphasise the STs' more theoretically informed thinking; and 6) the project seems to be boosting the PPs' professional identity. To take an example, they positively emphasise the experience that their points of view counted in a research project.

In relation to the shared work on what might be called small-scale challenges in everyday practice (theme 1), the following examples illustrate how the PPs reflect on the project:

"It does not need to be difficult, maybe just small changes, to create something like this ..."

"I thought about it as something bigger when we started, but yes, then we did something [...] and maybe it was simple [...] but we succeeded..."

They themselves identified some focused challenges that they had experienced with specific children; and through the planned actions, i.e. collaboratively working with role plays with the 5th graders, they saw changes that they valued. Thus, as reported in other studies internationally (De Vries et al., 2007), the focus on everyday "small grain-size" challenges seem to be a determining factor for the perceived outcomes for the PPs.

As mentioned, the PPs did not normally cooperate even though they were working with the same children at the same premises. Nevertheless, after being part of this structured process facilitated by outsiders (the UC professors), they emphasize new possibilities, even for informal day-to-day cooperation (theme 2):

" .. I am sure it [the project] has contributed to opening up something [...] in the course of the process it has developed [...] now when we meet each other in the hallway we chat: "Can we make a new appointment, oh yes we will figure out when it makes sense that I answer you about this, etc."

Observing the project workshops over time, it has become clear that cooperation between teachers and pedagogues at this school is definitely not without challenges. The reason for naming theme 3 "differences creating undesirable boundaries" was that we wanted to emphasise that that some issues remain unsolved. The following utterances illustrate, however, an emerging awareness of the undesirable boundaries. The PPs, for example, say:

"We work with the same students, and we have two different educational backgrounds and professions, so it has in some way been necessary to create differences to justify the two educational backgrounds..."

"We are shifting between total prejudice in relation to the other profession and total accept of how we can use each other..."

Discussing cooperation between the two groups of professionals per se is beyond the scope of this paper, but in the context of the present study it is relevant to understand that the STs also observed and reflected on these undesirable boundaries, as will become evident below.

We find that the fourth theme about the child perspective is more generic in character than the local cooperative challenges described above. When the PPs describe their own perceived outcomes, the school students are very much in focus. Observing the workshops, there seemed to be a positive turning point in the appreciation of each other and the project at the fourth workshop when the PPs shared interviews they had made with the fifth graders about the project activities with role-plays, etc. The school students reported quite positively about the new initiatives and how they experienced that they affected the social relations in the class, as in this quote from one of the boys:

"I want us to play together all of us [...] whether you are a football-boy or a fantasy-boy [...] I have more friends after this [...] we had to work together on a task .. help each other .. it made a difference .. the role-play ..there are no real conflicts anymore."

This and other quotes from the school students were shared and discussed at the workshop, leading to, e.g., this reflection from one of the PPs:

"I think it is almost emotionally touching what happened with the kids... what we heard [in the interview] it was really cool to hear that it had this effect..."

It is known from research into teachers' professional learning that salient outcomes at the student level, outcomes that are appreciated by the teacher when trying new

approaches in class, can be determinants of the teacher's choice of continuing to develop the teaching in that direction (Clarke & Hollingsworth, 2002). The same seems to be the case here, both in relation to the specific experiment with role-plays and also at a meta-level in relation to making a personal effort to develop a collaborative culture despite the local challenges.

This new appreciation of the cross-group relations, theme 5, was owed, among others, to the experience that relatedness creates salient outcomes at the student level. Interestingly, the appreciation also applied to professional learning across the two groups of PPs and STs. As mentioned, a tendency has been observed for the PPs at this particular site to focus on the local co-operation challenges, sometimes leaving the STs somewhat side-lined, but when interviewed in retrospective, the PPs readily acknowledged the contribution from the STs, stating that the two groups can gain from each other's perspectives, as also discussed above:

"It is rewarding... we can learn from each other"

"Yes, they absolutely contributed with something"

"One of the positive things, they did not think about constraints ... is there time?... is there money?[...] they just shared their ideas..."

In general, it seems that participation in a project like this focusing on the everyday challenges as perceived by the PPs boost their professional identity and awareness of their worth as professionals (theme 6). They refer to this in different ways, among others by referring to the initiative as a research project, but opposite to what they might think about research in general, one that is specific and closely related to practice. They experienced that their contributions and the practice-based knowledge from their everyday professional life had been acknowledged.

"This is about being part of a research-project ... it has not been like ... we did not have to read some complex theory or [...] it is about recording in class and having dialogues with the students [...] it is very concrete."

Now we will move on to the STs from the same case. Many of the issues emphasised were of a similar nature as the themes from the STs in Case 1, so therefore the presentation here will be rather short. Ownership to the problems worked on was perceived as important. As in Case 1, the STs here refer positively to the authentic character of the professional problems as the focus of co-creation, and state that the problems are worked on in co-operation with professional practitioners. Like the PPs, they found that it was motivating to play a role in a research project. However, in the process, they have also experienced some frustration. To take an example, they refer to the development process as being "rather slow", e.g. when the PPs had to use time to negotiate meaning between the two professions from the school as described above. According to the STs, the vulnerable children and how they can benefit must be the focus of co-creation in particular and the work of a teacher in general – not incongruence between the various professionals.

Thus, the relatedness with PPs through collaboration about something specific and meaningful is emphasised by the STs, but the case was not simply characterised by smooth networking, there were also elements of what have been called “knotworking” (De Vries et al., 2007). This term describes that the stakeholders have to work on the “knots”, the challenges that inevitably appear in cross-sector cooperation. One of the STs actually ended up refocusing her bachelor project from a main focus on children with special needs to how teachers and pedagogues can cooperate to support children with special needs. For this ST, the experiences from the co-creation process ended up being the data used in the bachelor project, but not only the content in the co-creation, also the experiences from the knotworking that formed part of the process.

Conflicting perspectives and dilemmas are also described in research longitudinally following close partnerships between schools and teacher education. However, in many cases, the participants refer to the explicit work with such dilemmas as challenging but rewarding (Miller, McDiarmid & Luttrell-Montes, 2006; Mule, 2006). The different logics at the campus arena and the professional arena, respectively, can be about tacit understanding of the purpose of schooling, learning, etc.; but the clash of logics can also be about specific planning. For example, the STs involved in this case experienced that they could not participate in all workshops at the school because of conflicting arrangements at the college in which they were required to participate. Looking forward, they recommend that co-creation projects be included as a continuous part of teacher education and emphasise that logistics and facilitation from the college arena are crucial factors.

5. Discussion across cases and conclusion

The analysis of the two cases has revealed both possibilities and challenges in relation to co-creation as an element in developing professional practice, and pre-service teacher education. The overall finding is that both PPs and STs experienced that they benefit professionally from close co-operation. They referred to various strengths. The two groups initially had different aims and incentives for participating in the projects. Nevertheless, both groups valued the relatedness across groups and referred positively to the experience, despite of having to do some “knotworking”. So, they experienced developing personal-professional competence and agency, i.e. in relation to specific approaches to support social inclusion of vulnerable school students. The STs’ perceived outcomes are very much about mastering, feeling competent in working with “real” professional challenges, i.e., with all the complexity involved in such problems (Figure 3).

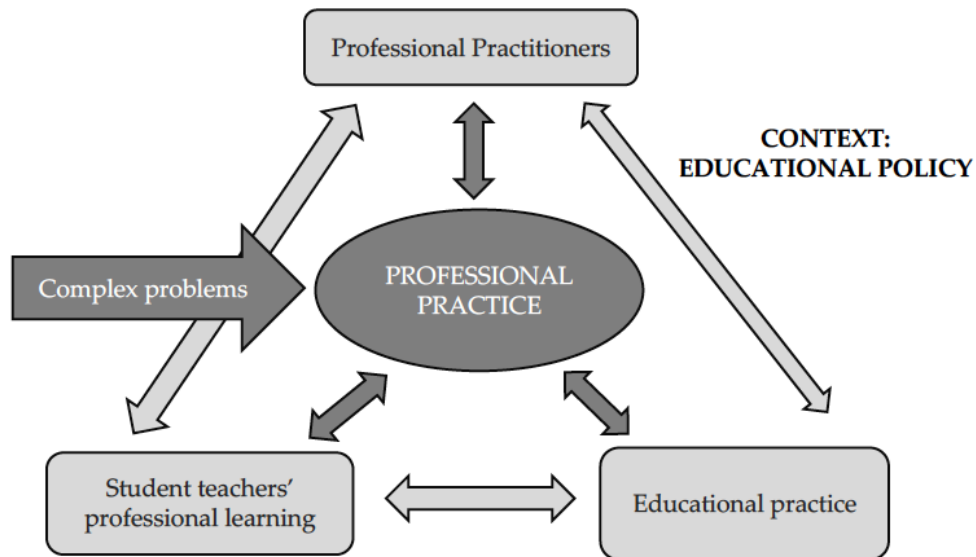


Figure 3. Relations in co-creation as professional learning for both student teachers and professional practitioner: A sociocultural inspired model.

Importantly, the STs need some level of autonomy in choosing an inquiry focus for the bachelor, illustrating the subtle interplay between the three elements of human motivation: competence, autonomy and relatedness (Ryan & Deci, 2017). They refer to themselves as taking a more theoretical approach than the teachers, and this is actually confirmed by the teachers. In line with the STs in the study by De Vries et al. (2007), the STs' outcomes from these examples of co-creation go beyond teaching and classroom management, which are often in focus for STs in the school placement periods. It is also about developing competence and confidence as actors in research-informed school development. The topic of bachelor students involved in co-creation projects emphasising mastery goals as compared to performance goals is also raised above. We cannot make definitive conclusions about this finding based on the two case studies at hand. Some of these issues are more thoroughly discussed in research following the bachelor education for social workers and in an evaluation of a project where student teachers were involved in a longitudinal 4-year co-creation project focusing on relational competencies (Nielsen, 2017).

The PPs mainly refer to bottom-up work with local challenges. They seem so have developed a new confidence and feeling of competence, particularly supported by the positive outcomes at the student level. This is, among others, about a changed understanding of what research can be and how research can be useful. Nevertheless, as exemplified, the logic of education can clash with the logic of professional practice pointing to the professional learning in a co-creation project as a kind of crossing of boundaries (Tsui & Law, 2007), making the professional outcomes from negotiating meaning a learning process in itself (Figure 1). Thus, project outcomes are both about collaborative and relational competence, and about outcomes at the student level.

Looking forward, the promising findings do raise some perspectives in relation to the potential for developing both professional education and professional practice. The context constituted by the policy level is included in Figure 3. In this setting, we mean

policy at the macro level and also at the micro level in the individual teacher education institutions where the challenge is to frame the education, among others to reduce the logistic restraints impeding STs' participation in co-creation projects while they follow the courses at their campus arena. Furthermore, the college has an important role to play in facilitating and stimulating bottom-up professional learning for both pre-service and in-service professionals.

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Education of political migrants: Theory and practice: The case of Croatia

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Abstract:

In the last couple of years, Europe has been facing a sudden and great wave of migrants from the Middle East countries (especially from Syria and Afghanistan). The challenges that have been put before receiving countries demand a high level of political, economic, and educational functioning that has been recognized as one of the key components of successful refugee integration into society. The Republic of Croatia is one of the countries that found itself in the way of a migrant wave and it has played a significant role in the transition, and the reception of migrants and refugees. This paper represents a case study of Croatian educational system in crisis situation as stated above. In the context of migrant and refugee education, the analysis of Croatian educational system has been conducted with the aid of 4A Katarina Tomaševski scheme, and a special focus on system adaptability. For the purpose of this research interviews were conducted with teachers from schools that have accepted the largest number of refugee and migrant children that are in the process of seeking asylum in the Republic of Croatia. The interview questions referred to specific educational situations that teachers encounter with migrant children. In the final part of the paper recommendations for improvement of adaptability of educational system are proposed.

Keywords: education, refugees, primary school, political migrants, educational system adaptability

1. Introduction

The word migration comes from the Latin word migration *migratio*, *migrare*, meaning *to move from place to place*. The term migration assumes further movement to be inhabited or resided somewhere else "(Mesić, 2002, p. 242). According to Bara and Lajić (2009) politically induced migrations are migrations associated with wartime actions and colonisation. For the purposes of this paper the classification of contemporary international migrants that was proposed by Thomas Reginald Appleyard (stated in Mesić, 2002) will be used:

- *the permanent (settlers);*

- *temporary workers on contract,*
- *temporary professional migrants,*
- *the undercover or illegal workers,*
- *asylum seekers,*
- *the refugees.*

The *Law on asylum* (Narodne Novine 79/2007) of the Republic of Croatia among others defines the concepts of *the person seeking asylum* and *refugees*. The term *asylum seeker*¹ involves a person that applies for asylum and the final decision about the possibility of acquiring of asylum has not been reached, while the concept of *refugees* applies to a foreigner who is not located in the country of their nationality and is in fear of persecution because of their race, religion, nationality, belonging to a particular social group or political opinion. He/she cannot, or because of the fear does not want to be put under the protection of the country. A refugee can be defined as a person without citizenship, which is located outside of the country the usual residence, and that cannot be or doesn't want to get back into that country due to fear. Despite the fact that throughout the whole of human history migration occurred, modern international migration occurred with the emergence of the modern powerful States in the 15th century. At that time large global discoveries were made and as one of the consequences was population migration all over the world. According to Rystad (1992) period migration started 80-ies of 20. century, are primarily characterised by significant increase of political migration from the countries of the Middle East, can be considered as the fifth phase of migration. In the last decade there has been a strong increase in migration from the Middle East countries (Syria, Iraq, etc.) and Afghanistan due to political developments in these countries. "Civil war in Syria began in March 2011. and grew into a brutal civil war between the Assad regime and opposition forces. Between March 2011. and September 2013. two million refugees fled to neighbouring countries" (O'Rourke, 2015, p. 711). By the end of the year 2016. the number of refugees not only doubled but it exceeded the figure of four million. According to the latest data from the UNHCR, there are currently 4 900 741 registered refugees, almost half of them (47.6%) are children. "The Endless number of migrants and asylum-seekers travelled by the sea towards European shores in 2015... and this can be seen as refugee crisis (Human Rights Watch, 2015).

Children are born with the fundamental rights and freedoms that belong to all human beings. It is necessary to respect all of children's rights under the various international documents for the children to be able to develop in a healthy and functional adult, in the process of migration. These rights are described to the fullest extent by the Convention on the rights of the child¹. One of the rights prescribed by the Convention is the right to education. "States Parties recognize the right of the child to education..."

¹ the right of a political fugitive to a place of refuge in a foreign country (Anić, Goldstein, 2005, p. 50); protection that is achieved a constitutional provision on the provision of refuge to a stranger in the Republic of Croatia on the basis of the resolution of the Ministry of the Interior jobs about pleasing the requires for asylum (Asylum Act, Narodne Novine. 79/2007)

(Convention on the rights of the child, 1989, article 28). Education is particularly brought to question in the current migration crisis that faces almost the whole of Europe, and thus the Republic of Croatia. In the period from 2011 until the end of the year 2016 there were a total of 5,988 persons requesting asylum in the Republic of Croatia. A significant number of asylum requests were sent by migrants from the countries of the Middle East affected by the refugee crisis. "In 2016 2,233 asylum seekers asking for international protection were registered in the Republic of Croatia. Most people name: Afghanistan (695), Iraq (341), Syria (339), Iran (144), Pakistan (167), Algeria (129), and Turkey (106) as their country of origin" (Ministry of the Interior, 2017, p. 17). Ministry of the Interior reports that in 2016 in a 385 asylum seekers located in the town of Kutina and Zagreb were children. Croatia has undertaken specific measures with the aim of efficient acceptance of migrants from the beginning of the migration crisis. One of the aims was better inclusion of refugee children in the context of education and in the system of regular schooling. The Law on education in primary and secondary school, the Law on foreigners and on asylum seekers, adopted a series of regulations² which helped the Croatian immigrants from abroad, children of foreigners and asylum seekers, foreigners under temporary protection and to foreigners under the protection of the subsidiary protection, to be included in the system of education in the Republic of Croatia, enabling the learning of Croatian language and culture in schools "(Šutalo, 2016, 7). It is recognised that in the entire process of the integration of children of migrants in the educational system of the Republic of Croatia, teachers have one of the key roles. "Moreover, the school plays a significant role in the integration of refugee children. Integration implies a reduction in the level of disagreement and discord between the individual and the environment of which he is a part, while at the same time the individual is developing new attitudes as a result of the acculturation process, which is a two-way process of change: a newcomer and a society that it receives "(Seker, Sirkeci, 2015, p. 123). After the children are approved school attendance, teachers are the ones who are with them, spending a few hours a day in direct communication. Therefore, the level of success of integration of refugees and asylum seekers into the school system is often dependent on teacher competencies. The question is whether teachers in the Republic of Croatia have the

² The following regulations are adopted: Ordinance on the manner of implementing the programme and tests of knowledge of asylum seekers, asylees, foreigners under temporary protection and foreigners under subsidiary protection, for the purpose of joining the education system of the Republic of Croatia (Narodne Novine 89/08), a Decision on the Programme of Croatian language, history and culture for asylum seekers and asylees (Narodne Novine 129/09), a Program of the Croatian language for preparatory classes for students of primary and secondary schools who do not know or insufficiently know the Croatian language (Narodne Novine 151/11), Decision on the Programme of Croatian language, history and culture for asylees and foreigners under subsidiary protection for inclusion into Croatian Society (Narodne Novine, 154/2014) Decision on the programme of Croatian language for asylum seekers and asylees and aliens under subsidiary protection who are over 15 years of age for the purpose of joining the secondary-school education system and the adult education system (Narodne Novine 100/12).

necessary competences for the successful integration of these children in the schools and classes, or whether they were provided assistance for the development of the same competencies.

The Republic of Croatia is not alone in its attempts to ensure that migrants and refugees the legal regulation and concrete activities that will ensure the right to education of children of migrants. Different countries attempt to provide education for the children of refugees in the context of a Syrian refugee crisis. However, the difficulties and advantages of education systems differ with respect to their geopolitical position, economic and social context. The recipient countries from the region of North Africa and Asia most often recognise difficulties in: the absence of teachers, insufficient number of schools, and the distance to the school and language barriers. European countries in turn placed emphasis on the need for more competent teachers.

2. 4 A scheme

Katarina Tomaševski designed a 4A scheme, or a theoretical framework by which the right to education is defined through the four dimensions: *availability, accessibility, acceptability and adaptability*. By analysing a particular country through the four aforementioned dimensions, a description of the educational system is obtained, or it can be used to understand is the right to education respected in a particular country.

Availability: the first of the four dimensions refers to the provision of free and compulsory education for all children. "The right to education as a civil and political right requires the Government to allow the establishment of educational institutions by non-governmental actors, while the right to education as a social and economic right requires the Government to establish them, or fund their work, or use a combination of these and other resources as to ensure that education is available" (Tomaševski, 2001, p. 13). Such education should find support in teachers and teachers with developed the appropriate competencies and safe school environment. Children should provide required teaching material that enables them to participate actively in the teaching process, as well as adequate transportation to the school you are attending.

Accessibility: in this context implies education that is deprived of any form of discrimination, particularly when speaking of marginalized groups of children. "The Government is obliged to provide access to education for all children who attend primary education, but not for secondary and higher education" (Tomaševski, 2001, 13). It is necessary to take appropriate measures to ensure that all children are integrated into the teaching, such as measures aimed toward native and gender equality, the equality of children with disabilities, equality with regard to religion, race, and social and economic status.

Eligibility: education that provides individual country must meet certain criteria in terms of their quality. "The minimum standards of health and safety, or professional

requirements for teachers, must be set up and implemented by the Government" (Tomaševski, 2001, p. 13). Content that teacher teach must be non-discriminatory, culturally appropriate and of good quality, i.e. it must be relevant. Thus, teaching staff must be professional and objective. School institutions must meet minimum health and safety standards.

Flexibility: the education system should be adapted to the needs of each individual child, which is especially notable in the context of children with any forms of difficulties and the children of other marginalized groups (national minorities, refugees, etc.). "Another result of the consideration of education through the perspective of human rights is to make sure school systems must adapt to the different needs of individual students, rather than to expect the child to fit into the prescribed syllabi" (Tomaševski, 2004, p. 403).

3. Methodology

The goal of this case study was to analyse the functioning of the educational system in the context of education of political migrants in the Republic of Croatia. For the purposes of this case studies interviews with class teachers in primary education were carried out (N = 1) and subject teachers (N = 3) in four schools that the children of refugees and the children in the asylum process attend. The interviews were conducted during March and April 2017. The interview was constructed of six questions. Parts of the questions used in the interview were taken from an interview which was used in the study of Bačáková (2009) and from the interviews that were conducted in the research of Seker and Sirkeci (2015). For the purpose of better understanding, analysis of the Croatian educational system was carried out with the help of the 4A scheme by Katarina Tomaševski (2004), with special emphasis on its adaptability.

4. Results and discussion

All respondents were persons of female gender. In the class of each of the subjects there is one child at least in the process of seeking asylum. The classes the students attend are the first, third, fourth and seventh grade of primary school.

4.1. The availability, accessibility and acceptability of the Croatian educational system

Katarina Tomaševska implies that education in a particular country must be free and compulsory for all children (the availability of). The Republic of Croatia partially meets this dimension which can be verified by examining the *Law on education in primary and secondary schools* (Narodne Novine, 87/2008). Article 43. and 45. of the same law specifies how the schools are obliged to provide special assistance to children citizens of the Republic of Croatia who are returning from abroad and continuing their education in Croatia and to the children of nations of Member States of the European Union due to insufficient knowledge of Croatian language. The students have a right

to primary and secondary education under the same conditions as Croatian citizens. For the current refugee crisis the most relevant article is 46. that confirms that the provisions of the previously mentioned two articles applies to asylum seekers, foreigners under subsidiary protection and foreigners under temporary protection.

Republic of Croatia has adopted Universal Declaration of human rights (Narodne Novine, 12/2009), which affirms that every child has the right to education and that it shall be free, at least on a basic level. On the other hand, Croatian educational system legislation does not allow the integration of pupils who do not have the necessary documentation.

The second dimension (accessibility) requires that education is free of any form of discrimination. In the Republic of Croatia accessibility is regulated by the *Law on combating discrimination* (Narodne Novine, 85/2008) article 8. specifies how this legislation applies to education. Focused on the efforts of reducing discrimination and successful integration of refugee children the collaboration with the Mešihatom of the Islamic community in Croatia was developed. There is no discrimination in Croatia when enrolling school in the context of the national minorities, according to a survey conducted by Bagić, Burić, Dobrotić, Potočnik & Zrinščak (2014), and according to which there are no statistically significant differences in attendance for primary school between Roma and non-roma in Croatia.

Dimension of *acceptability* of education directs attention to the satisfactory level of criteria in terms of quality of content, but also in terms of health and safety standards. The *State Pedagogical standard of the primary level of the education system Act* (Narodne Novine 63/2008) regulates the minimum infrastructure, human resources and financial terms. Criteria that apply to all primary schools in Croatia are regulated by State pedagogical standard. Some of the scales prescribed by standard are: criteria for establishment of primary schools as public institutions, benchmarks for the number of classes as well as the number of students in each class and other.

4.2. Adaptability of the Croatian educational system

The arrival of refugee children, originating from the countries of the Middle East, presents a great challenge for the Croatian educational system. Besides providing for adequate accommodation and care, it was necessary to organize and continued education for the children that arrived to Croatia. The Ministry of Education and Science described the process of inclusion of children and students under international and temporary protection in the educational system of the Republic of Croatia specified in the memo (class: 602-01/17/01/00034, URBROJ: 533-26-17-0001 of 26 January 2017.) that is sent to the principals of primary and secondary schools:

1. Ministry of the Interior:
 - a) establishes and assigns the status of persons under international protection (those seeking international protection, asylum seekers, foreigners under the protection of the subsidiary and strangers under interim protection)

- b) notifies of the Ministry of science and education (MZO) and the Office of the State administration/City Office about the need for the involvement of children in primary and secondary schools in their area
2. The Office of the city administration/City Office (URC/GU)
 - a. Determines and chooses a school for preparatory classes and a school in which the student will be enrolled, if necessary in cooperation with the service for the professional orientation of the Croatian Employment Service (may be the same school, but the student can be enrolled in a one-room schoolhouse, and in the other to attend preparatory classes)
 3. School role:
 - a. registration of the student and/or the organisation of the preparatory teaching of the Croatian language, and notifying the MEP-and
 - b. Expert Committee checks the knowledge of the Croatian language and/or checks the level of knowledge and on the basis of the results determines the grade in which the student will be enrolled
 - c. informs the URC/GU about the necessity of organizing the preparatory classes
 - d. on the basis of decisions of the URC/GU asks the MZO-for consent for hours of preparatory classes and provides the data about the student
 - e. makes a decision about the possibility of the partial integration in teaching
 - f. After the implementation of the preparatory teaching professional Commission checks the knowledge of the Croatian language and decide whether the student should repeat the prep classes
 - g. inclusion of students in regular classes
 - h. monitoring, and evaluation

To start the process of integration into the educational system every child must have the following documents: the certificate of the Ministry of Interior about the status and certificate of residence in the Republic of Croatia, of the identity document and a document about a previous schooling. If the child has no documents about the previous schooling, parents or guardians are obliged to make a statement to a public notary and then to present the expert service of the school. The students that attends the preparatory teaching of the Croatian language, are usually also partly integrated in regular classes, but are not evaluated by regular evaluation (is monitored and tracked in terms of socialization and learning languages). After the completion of preparatory classes and full inclusion in regular classes, the student is being monitored and evaluated, as well as all other students. There is a possibility of organizing supplementary classes for pupils. In addition to the above mentioned, and with the aim of determining more accurate as the extent to which the Croatian educational system satisfies the fourth dimension of Katarina Tomaševski (2004) the interviews with the teachers were conducted.

4.2.1. Informing teachers

The first question of the interview asked for information on whom and when informed the teacher/class about the integration of refugee children in their classes and what were their expectations.

The other question obtained relevant information about the new pupils, and whether there was organized additional training for school staff.

The results show that all the teachers were informed **in time** about the integration of refugee children in their class and mostly by the principal or pedagogical service of the school of which he is a part of. Also, teachers received relevant information about new the students (the approximate age of the students, prior knowledge in mathematical skills). The results obtained in this study partially coincide with the results in his research concluded by Bačáková (2009), and according to which the school received only a short report on the ability of the child to study and recommendations for accommodation in the appropriate class. The respondents in this interview say that at the beginning they mostly did not have organized workshops that would help them develop the necessary competencies to work with new students. However, two teachers state that the workshops were subsequently organized, but only after a certain time has passed since the beginning of the school year and the integration of refugee children in their classes. The absence of organized educational workshops to help teachers develop the competencies required for the work in the teaching process in which refugee children are integrated is a problem that can be found in countries such as Sweden and Slovenia (Bourgonje (2010), Vižintin (2013)). Both these countries singled out as a problem and an insufficient number of teachers who teach their native language as a secondary language.

4.2.2. The integration of refugee children in school

The third question from the interview researched the integration of refugee children in the class, i.e. which are the most common educational problems faced after arriving in school (how students communicate with teachers).

All four of the respondents said that the refugee children were extremely well received by the children in the class. Teachers specified how the children care for newcomers and help them in communicating with teachers.

The fourth question concerned the engagement of an interpreter for the purpose of communication with new students and their parents.

The interview results show that English language is the median language with which the respondents achieved communication with refugees. To a lesser extent teachers used German. Three respondents state that the biggest educational problem is the language barrier and cultural differences, while one respondent states that the problems accrue from the diversity of education systems in which the child was enrolled, or ways of teaching in those systems. It is interesting to highlight how the problems of linguistic diversities are also found and in Iraq, even though the children of refugees and Iraqi children have a similar Kurdish ancestry. Countries such as Lebanon and Greece also report about the presence of language barriers in teaching. The same result in terms of the problem of linguistic diversity has been stated by Palladino (2008) who has spent the empirical research about migrants from Sudan, and Bačáková (2009), who investigated the possibilities of access to the education of refugee children in the Czech Republic. The results obtained here are partly in line

with the results which of the research by Seker and Sirkeci (2015) interviewing teachers teaching refugees in Turkey, and according to which the language barrier also stands out as a key problem in communication.

Seker and Sirkeci (2015) report that students were not friendly to new students and have them called names. On the contrary, this research shows that new students within the Croatian school system were extremely well accepted by the students in the classes in which they were integrated. The similar results were found by Shallow and Whittington (2014). Shallow and Whittington also cite the difficulties in creating emotional connections with the family of new students due to language barriers, which partially coincides with the results of this research.

The teachers in this research communicate with parents mostly through intermediaries, i.e., principal, pedagogical services to schools, social workers, volunteers, and persons in the hotel *Porin* who are responsible for the care of the children refugees. Only one of the subjects has a direct communication with the student's mother and communicates in English language. The results show that there are no translators engaged in the classroom who facilitate communication. Only one of the respondents, has a translator, but the translator is not constantly present in the classroom

4.2.3. Teacher point of view

The fifth question inquired about the teacher/class teacher methodical / didactical solutions used and how they personally prepared to work with the children.

In the sixth question, respondents answered the question on how to improve functioning of the system of acceptance of refugee children and what would still be helpful when working with these children.

The results of this study show that the respondents engaged in the preparation and adaptation of teaching the new students. They specified how curricular content and didactical material was adapted and translated in English language. Teachers used the forms and tests for verification of the Croatian language in refugee students. One of the respondents looked for information about the culture of the new students for the purpose of preparing their class for the arrival of a new student. According to the results of this survey respondents recognize the linguistic support crucial for successful implementation of teaching children refugees. One of the respondents said it would be useful to organize the language lessons for teachers, so that they could at least partly understand the new pupils and thus communicate.

Respondents considered that materials and manuals for teaching as well as the textbooks that would serve the students would be of help to them. The results obtained in a lesser extent correspond to the results of research conducted by Taylor (2008), and according to which teachers feel that attention should focus on their professional development.

5. Conclusion

The start of the year 2011 was marked by a civil war in Syria, which resulted in the mass migration of refugees and asylum seekers towards the countries of the European Union (EU). As one of the EU Member States, Croatia found itself facing the challenge of the transfer, but also the challenge of accepting a certain number of political migrants. With the arrival of refugee children, a need for their integration into the school system emerged. In an effort to obtain information on experiences of teaching staff in the newly created situations a research interview was carried out. The research sought to determine the **adaptability** of Croatian school system, i.e. the extent to which the system and everyday pedagogical practice adjusts to the needs of the refugee children and with which difficulties teachers are faced in the integration process. The results of this case study sought to describe the dimension of *adaptability* according to which the entire educational system should adapt to the needs of the child, in particular in the context of children of marginalized groups (national minorities, refugees, etc.).

The results of this research show that the biggest difficulty that teachers encounter when working with children refugees, is language barrier. This confirmed research in other countries (Seker and Sirkeci (2015), O'Rourke (2015)). Measures taken to organize the preparatory teaching of the Croatian language are similar to the measures taken in other European recipient countries.

All recipient countries are trying to organize some form of additional classes for the refugee children students such as language acquisition and in this way they try to prepare a more successful integration into the school system. As the initial problem, teachers state the arrival of refugee children into the school, due to the previously specified language barrier. The research has shown that teachers have problems at the individual level, preparing additional materials for each instructional hour, which are needed to enable children greater engagement and understanding of the teaching content. On the basis of results shown here we can conclude that the dimension of *the adaptability* is partially fulfilled. Although there are measures at the state level that enable the integration of refugee children in the educational system, the success of the ultimate integration of refugee children depends on the individual teacher preparation. It is therefore necessary to provide methodical support to teachers, and to make significant changes at the level of the overall school system. It is proposed to ensure better training of teachers with the aim of acquiring the knowledge and develop skills and competences necessary for successful teaching process in which refugee children are integrated. It is highly recommended to ensure the presence of a translator to eliminate language barriers, at least in the initial period of teaching, when there is no medial language with which communication between student and teacher, but also between students can be achieved. It became obvious that there is a need for teacher education in the field of teaching Croatian language as a second language. For the purpose of easier and more beneficial process of integration it is proposed to prepare bilingual teaching textbook where the instructional content would be in Croatian language and in the native language of the child refugees, which would allow the

student to develop necessary knowledge and competences. All of these measures are proposed with the aim of raising the quality of the entire school system, and its adaptability in the time when it is of most importance.

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The comparative analysis of preservation of cultural heritage in the Croatian and Slovenian educational systems

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Abstract:

Cultural heritage is the legacy of every nation. Its domain, in a pedagogical sense, is very useful and beneficial for both the methodological approaches of integration and correlation in teaching and students' involvement in active learning and research. Schools are the places where students raise awareness of the importance of cultural heritage but also learn about the significance of traditional culture while creating their own social identity. The paper presents the results of comparative studies in the fields of identification, preservation and presentation of cultural heritage in the Slovenian and Croatian educational systems. Relying on the existing curricula at the elementary level of basic education, the purpose of this research was to analyze the representation of cultural heritage, identify attitudes of teachers towards teaching it, and determine and assess different teaching approaches regarding cultural heritage contents. Research should stimulate the creativity in planning the joint activities on cultural heritage in order to be acquainted with the habits, traditions, and culture of other nations. Moreover, recommendations and proposals to reduce the gap between preservation and evaluation of cultural heritage in the Slovenian and Croatian elementary school education will be presented as well.

Keywords: cultural heritage, intercultural competence, study programs for primary school teachers, Slovenia, Croatia

1. Introduction

Cultural heritage, along with the natural and economic features of the homeland, are an important basis for acquainting, evaluating and preserving the heritage of the entire country, but also our place in the world (Ivon & Kruščević, 2013). Traditional culture was held in places where people kept their consciousness of their common past, of their homeland as a source of their values, social and custom norms by which communities are mutually different, thus creating their identity (Gonza & Hus, 2016). Cultural heritage is a heritage of every nation and it is important that students during the schooling gradually become acquainted with cultural heritage (Ott & Pozzi, 2011). So, in this paper the focus is on the representation of cultural heritage content in the

elementary school education. Firstly, theoretical background on teaching cultural heritage contents on the elementary level of primary school – in Croatia first 4 grades and in Slovenia first 5 grades is presented, followed by methodology of the empirical research and results. Finally, in a discussion, the results are interpreted and analyzed in more details and recommendations for teaching cultural heritage contents are suggested that hopefully will be endorsed in teaching.

2. Theoretical background

Children of the earliest age need to understand the meaning of cultural heritage, but also the connection with the contemporary and responsible role of each individual in the nurturing and preservation of cultural heritage (Kostović-Vranješ, 2015). A contemporary school needs a teacher with highly developed intercultural competence. The role of the school and the teacher is to encourage students to get to know different cultures, worldviews and religions while preserving their national identity, their culture, social, moral, and spiritual heritage. In learning and acquainting cultural heritage it always ranges from the student's personal proximity, enabling the student to learn and experience cultural heritage more easily (Čukelj, 2009). Cultural heritage education teaches students thoroughly in learning the original reality, so teachers need to provide different sources and apply different learning methods, which opens space for new forms of pedagogical teaching, learning and knowledge in relation to cultural heritage (Ocal, 2016).

How to teach cultural heritage content is an important question that each teacher needs to ask himself/herself. It is important that teachers have a wide range of didactic and teaching strategies from which they can choose the most appropriate one. In *Guidebook for Educators of ISSA's Principles of Quality Pedagogy* (Tankersley, D., Brajković, S., Handžar, S., Rimkiene, R., Sabaliauskiene, R., Trikiž, Z., & Vonta, T., 2013) it is suggested that with an appropriate choice of didactic strategies the teacher can provide the best possible support for each child to achieve personal development and learning objectives defined by the curriculum. The methods, approaches and strategies that are to be used in lessons must be suitably combined with regard to the students' ages, characteristics, goals of the lessons, and circumstances. The common denominator of modern didactic approaches is an "open class". Accordingly, the teachers from Slovenia and Croatia who participated in the research were offered to rank the below-presented didactic/teaching strategies which are taken from the article by Ivanuš Grmek and Hus (2006) and the monograph *Didactics* by Blažič, M., Ivanuš Grmek, M., Kramar, M., & Strmčnik, F. (2003):

- Experiential learning in which a key element is a student and that the knowledge is a result of being personally involved in this pedagogical approach (Wurdinger, Carlson, 2010).
- Research-based learning, which introduces elements of scientific work into classes and enables students to learn the content and the process itself at the same time (Blažič et al., 2003).

- Project-based learning, which involves students learning to tackle realistic problems as they would be solved in the real world and increased student control over his or her learning and teachers serving as facilitators of inquiry and reflection (Barron, Darling-Hammond, 2008).

- Classical frontal teaching, what was added in addition to modern strategies since it was expected that some teachers still teach frontally. Some of the reasons for that are, as Kramar (2009) explains, that in most classrooms didactic tools are adapted to frontal teaching which is apparently also more economical as one teacher works with a large number of pupils, there are less didactic resources required, and students can, within the prescribed time process, acquire a particular subject matter.

Apart from how to teach it, another important question is which school subject can we teach cultural heritage content in? Since cultural heritage is a wide concept, it can be divided into material and immaterial. Material heritage covers everything that is physically sensitive – buildings, monuments, paintings, objects. Immaterial heritage includes intangible activities such as music, dance, literature, religious rituals, etc. (Pukl, 2012; Delak Koželj, 2015; Rabeeh, B., Zuraini, Z., Aswati, H., & Nor Hashimah, H., 2017). Due to such diversity, cultural heritage can be directly and indirectly taught within the majority of school subjects. In National curriculums for teaching Nature and society in Croatia and National curriculums for teaching Environmental studies and Social studies in Slovenia, gaining knowledge about cultural heritage is one of the educational goals. The school subjects mentioned earlier, Nature and society and Environmental studies, cover spontaneous exploration of the children's world and the discovery of interdependence and intertwining in processes and phenomena in the natural and social environment. In class, pre-knowledge from immediate experience in the environment or media is deepening and expanding. Specific school subjects combine processes and contents with which students gain holistic knowledge of nature and society (Kolar, M., Krnel, D. & Velkavrh, A., 2011; Budnar, M., Kerin, M., Umek, M., Raztresen, M., & Mirt, G., 2011; NOK, 2010).

In Croatia, Borić & Škugor (2015) carried out the research aimed to test the students' knowledge on cultural heritage, but also to identify the teachers' attitudes towards cultural heritage teaching in Nature and society school subject. The survey was conducted with 308 fourth-grade students and 193 teachers in two counties of Lower Normandy. The results have shown that teachers are aware of the importance and necessity of learning cultural heritage contents through native topics in Nature and society teaching.

3. Methodology

3.1. Purpose of the study

The purpose of the study was to conduct a comparative research on identification, preservation and presentation of cultural heritage in the Slovenian and Croatian educational system. Relying on the existing curricula at the elementary level of basic

education, representation of cultural heritage content at the elementary level of primary education was examined and analyzed.

The focus was to determine:

- representation of cultural heritage content in regard to school subject - to determine in which of all school subjects in teachers' opinions the cultural heritage can be integrated;
- attitudes of teachers towards teaching cultural heritage contents;
- didactic strategies of teaching cultural heritage contents;
- teachers' self-assessment of the ability to teach cultural heritage contents.

Furthermore, the objective was also to identify statistically significant differences between teachers participated in the research with regard to their years of service, the grade they are teaching in, and the teaching environment (an urban or rural primary school).

3.2. Basic research method

The study was based on a descriptive and non-experimental method of empirical research.

3.3. Sample

A total number of primary school teachers who participated in the research was 750, 395 from the Republic of Slovenia and 345 teachers from the Republic of Croatia. Participating teachers taught in the school year 2016/2017 in Slovenia in the 1st, 2nd, 3rd, 4th and 5th grade and in Croatia in the 1st, 2nd, 3rd and 4th grade. A sample of 395 teachers from Slovenia included 14.1 % of teachers who have been teaching 0 – 10 years, 30.1 % of teachers who have been teaching 11 – 20 years, 26.3 % of teachers who have been teaching 21 – 30 years, 29.1 % of teachers who have been teaching for more than 31 years. On the other hand, the sample of 345 teachers from Croatia included 23.5 % of teachers who have been teaching 0 – 10 years, 29.9% of teachers who have been teaching 11 – 20 years, 34.2 % of teachers who have been teaching 21 – 30 years, and 12.5 % of teachers who have been teaching for more than 31 years.

In regard to the school district location where teachers are employed, there were 39.5 % of teachers who teach at the town schools and 60.5 % of teachers who teach in the countryside in Slovenia whereas in Croatia 51.6 % of teachers participated in the research teach at the town schools and 48.4 % of teachers at the schools in rural environment.

3.4. Instrument

Data for all variables were collected by a questionnaire. Questionnaire was constructed for this research and was filled by teachers who have taught at the elementary level of primary schools in the school year 2016/2017. The questionnaire used featured verified metric characteristics for collecting data, i.e. validity, reliability, and objectivity. Firstly, the validity of the questionnaire was ensured by reviewing it and pre-testing it. Secondly, reliability was controlled from the start, i.e. from the phase of creating

questions, by being very careful in providing detailed instructions and asking unambiguous specific questions. In addition, reliability was also monitored when processing data, since we compared the answers to the content related questions. Thirdly, objectivity was controlled by the selection of closed questions which could not be interfered with the subjective assessments of information. The objectivity of the instrument was based on answering the questions individually without the presence of an assessor. The questionnaire consisted of various types of 21 questions – dichotomous, closed, and Likert scale types of questions.

3.5. Data collection

E-mails with a link to the online questionnaire survey were sent to the e-mail addresses of all primary schools' head teachers in Slovenia and Croatia. They were asked to forward the link of the online survey to teachers at their schools who have been teaching at the elementary level. At the end of the data collection, there were a total of 750 filled questionnaires, 395 obtained from the teachers in Slovenia and 345 obtained from the teachers in Croatia.

3.6. Data analysis

The data obtained from the questionnaire survey were analyzed by using the SPSS (version 21) statistics program. The processing of data was done by using basic descriptive statistics, frequency distribution, and a non-parametrical Chi-Square test for independence. Also, during the analysis of results, one of the aims were to determine if there were statistically relevant differences between teachers participating in the research with regard to their years of service, the grade they are teaching in, and their teaching environment (urban or rural primary schools). The difference between the groups was considered statistically significant if the degree of risk for the validity of the null hypothesis was less than 5 % ($p < 0.05$). The level at which the null hypothesis is rejected is usually set as 5 or fewer times out of 100. The 0.05 probability level was historically an arbitrary choice which led to a trend to report test statistics as being significant at the $p < 0.05$ and is acceptable as a reasonable choice in most social studies researches nowadays (Cramer & Howitt, 2004; Field, 2013).

4. Results

4.1. Teachers' attitudes towards teaching cultural heritage contents

We asked teachers from Slovenia and Croatia about their attitudes towards teaching the content of cultural heritage. The level at which participating teachers like to teach cultural heritage contents had to be ranked on a Likert scale from 1 to 5 – the lowest category 1 meant that they do not like to teach cultural heritage content whereas the highest category 5 meant that they really like to teach cultural heritage content. The results of data subjects by country they teach in are presented in Table 1.

Table 1. Frequencies (f) and structural percentage (f %) of the level at which participants like to teach the contents of cultural heritage

Level	Country	
	Croatia f / f %	Slovenia f / f %
1	1 / 0.3 %	0 / 0.0 %
2	4 / 1.2 %	4 / 1.0 %
3	29 / 8.4 %	40 / 10.1 %
4	102 / 29.6 %	133 / 33.7 %
5	209 / 60.6 %	218 / 55.2 %
Total	345 / 100.0 %	395 / 100.0 %

The results from Table 1 show that the majority of teachers from both Croatia and Slovenia like to teach the contents of cultural heritage. The results of Kruskal-Wallis and Mann-Whitney test have shown that there are no significant differences in the sample of participating teachers from Croatia and participating teachers from Slovenia concerning the grade teachers have been teaching in and their teaching environment (urban or rural primary school). However, in both data subjects' groups there are statistical differences in regard to the teachers' years of service. In the group of participating teachers from Croatia the results of the Kruskal-Wallis test ($p = 0.000$) have shown that teachers with more years of service prefer teaching cultural heritage contents more than their colleagues with less years of service at schools. In Slovene group of participating teachers, the results of Kruskal-Wallis test ($p=0.000$) also showed that there is a statistical significant difference between teachers with more years of service who statistically prefer to teach cultural heritage content in comparison to their colleagues with minor teaching years.

4.2. Representation of the content of cultural heritage in regards to a school subject

Cultural heritage contents can be integrated in a wide range of school subjects in both Croatian and Slovene curriculums. Analyzing curriculums for elementary level school subjects we concluded that almost in all of them some specific elements of cultural heritage contents can be find. In our research participating teachers needed to determine in which of all school subjects in their opinion cultural heritage is integrated and represented most. The answers to this question were gathered through two forms of a one questions on questionnaire. While Slovene teachers were asked to choose all the subjects where cultural heritage contents are introduced, teachers from Croatia were asked to rank them. Therefore we can't compare the answers, but we can only interpret each group answers.

Figure 1 presents answers by Slovene group of teachers participated in the research. Slovene teachers were asked to choose all the subjects where cultural heritage contents

are introduced. As seen from Figure 1, the majority of Slovene teachers integrate cultural heritage content when teaching Slovene language, Environmental studies (e.g. Nature and social studies in the first Cycle), and Music and Art culture.

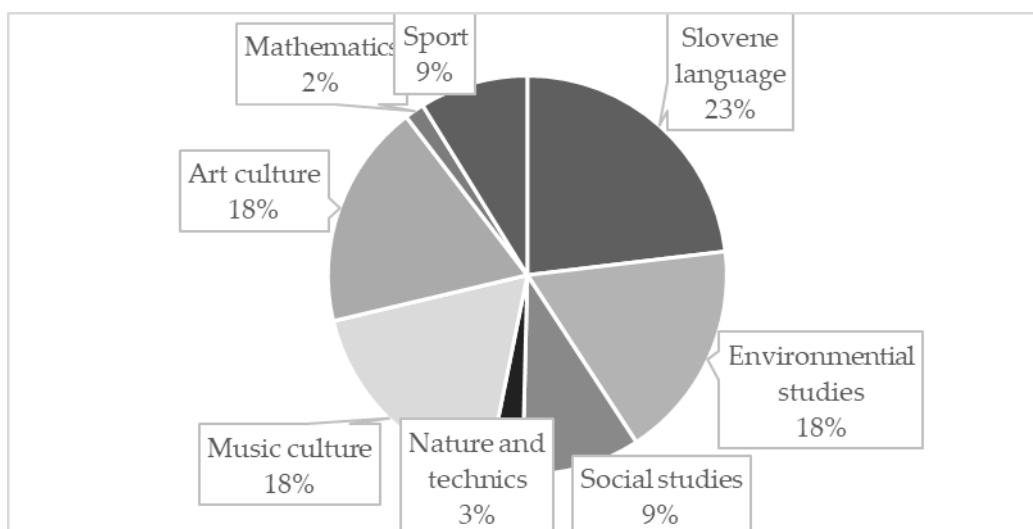


Figure 1. Graphic structure of frequency percentage (f %) of the representation of cultural heritage content in regard to a specific school subject in Slovenia

On the other hand, the group of teachers from Croatia had to rank the school subjects from 1 to 7. Subject that they rank in number 1 meant that this is the school subject in which they mostly teach about cultural heritage. And number 7 is the rank of school subject in which they most commonly do not teach about cultural heritage. Answers are presented in figure 2 and showed that Croatian participants mostly teach cultural heritage within Nature and society school subject, then Croatian language and Art and also Music culture.

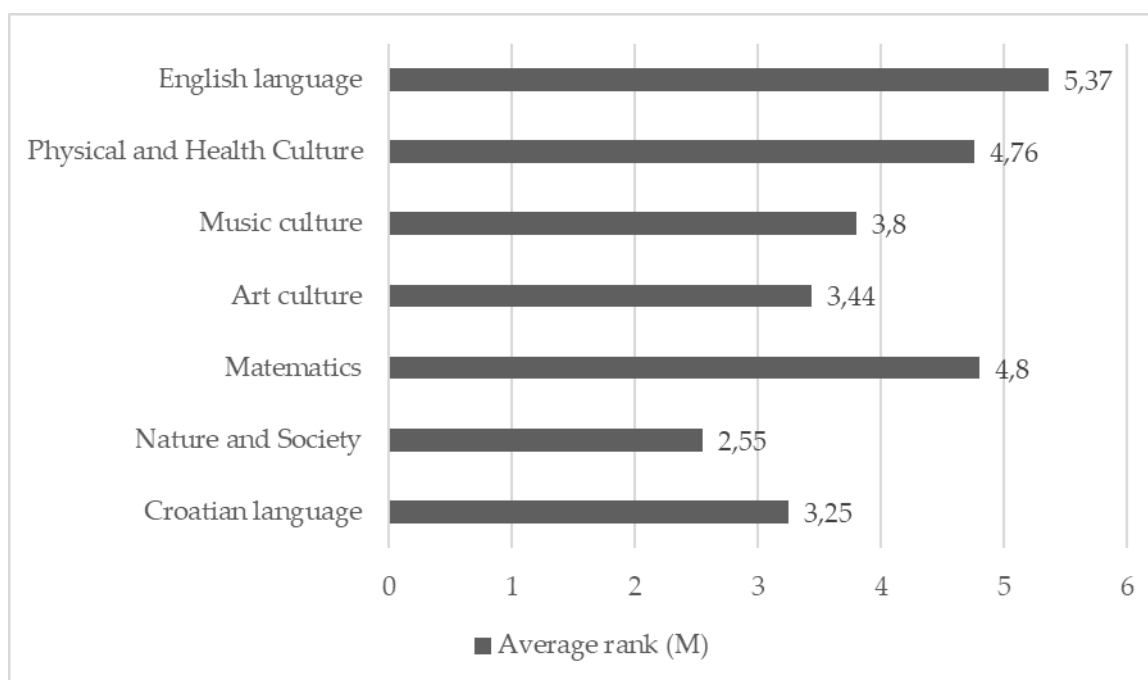


Figure 2. Graphic structure of average rank (M) of the representation of cultural heritage contents in regard to a specific school subject in Croatia

4.3. Didactic strategies for cultural heritage education

In order to provide some guidance on how to teach cultural heritage contents in classrooms, firstly the current situation at schools when it comes to teaching the contents had to be identified. The teachers participated in the research were asked to rank didactic or teaching strategies which they use the most for cultural heritage education. The strategies they were offered to rank were experiential learning, research based learning, classical frontal teaching (explanation and conversation), and project based learning.

Table 2 portrays the average values of mostly used teaching strategies in Croatia. Teachers from the Croatian group ranked strategies on a scale from 1 to 4 – number 1 stands for the most frequently used and number 4 for the least frequently used teaching strategy for cultural heritage education.

Table 2. Average value of teaching strategies used for cultural heritage education in Croatia.

Strategies of teaching cultural heritage	Country
	Croatia \bar{x}
Experiential learning	1.96
Research based learning	2.13
Classical frontal teaching (explanation and conversation)	3.01
Project based learning	2.41

The results in Table 2 have shown that the most commonly-used strategy for cultural heritage education by teachers from Croatia is experiential learning whereas classical frontal teaching, when compared to the others, is not that frequently used strategy.

Participating teachers from Slovenia ranked teaching strategies on a scale from 1 to 3 by which 1 mean that they never use individual teaching strategy and 3 that they frequently use individual teaching strategy for teaching cultural heritage content. Results are presented in a table 3.

Table 3. Average value of teaching strategies used for cultural heritage education in Slovenia.

Strategies of teaching cultural heritage	Country
	Slovenia \bar{x}
Experiential learning	2,58
Research based learning	2,48
Classical frontal teaching (explanation and conversation)	2,56
Project based learning	2,17

Slovene group of participating teachers most frequently use experiential learning for teaching cultural heritage contents. Classical frontal teaching is on a second place and followed by research based learning. Teachers in Slovenia least frequently use project based learning for teaching cultural heritage content. In Slovene group of teachers results also showed that there is statistically significant difference among teachers in regards to the grade they are teaching ($p=0,030$). Slovene teachers that are teaching in lower grades more frequently use experiential learning than their colleagues in higher grades. Another statistical significant difference in this group can be detected in regards to the teaching environment (urban or rural primary school) ($p=0,040$). Teachers in urban primary schools more frequently use classical frontal teaching for teaching cultural heritage content than his colleagues in rural primary schools.

To conclude, both of the groups of teachers teach cultural heritage contents by using experiential learning strategy the most frequently. Furthermore, when comparing groups of teachers from Slovenia and Croatia when it comes to the didactic strategies they use for cultural heritage education, the results have shown that the teachers from Slovenia use classical frontal teaching more frequently than the teachers from Croatia.

4.4. Self-assessment of teachers' ability to teach the contents of cultural heritage

Another important aspect of efficient cultural heritage education is teachers' ability to teach these contents and to transmit the value of cultural heritage to the youngest students. So, teachers were asked if they are qualified to teach cultural heritage contents. They ranked their answers on a scale from 1, standing for "I am not qualified at all", to 5, meaning "I am completely qualified". The results of the answers by teachers from both countries are presented in Table 4.

Table 4. Frequencies (f) and structural percentage (f %) of teachers' self-assessment of their ability to teach the content of cultural heritage.

Level	Country	
	Croatia f / f%	Slovenia f / f%
1	2 / 0.6%	0 / 0.0%
2	19 / 5.5%	8 / 2.0%
3	152 / 44.1%	99 / 25.1%
4	140 / 40.6%	235 / 59.5%
5	27 / 7.8%	53 / 13.4%

As seen from Table 4, the majority of participants rated their abilities as 3 or 4 both in Slovenia and Croatia. Therefore, we can conclude that teachers think that they are able to teach cultural heritage contents.

Moreover, the verifications of statistically significant differences between teachers were made by the Kruskal-Wallis and Mann-Whitney non parametric test. On the one hand, the results have shown that the Croatian group of teachers showed no

statistically significant differences in regard to their years of service, grades they teach in, and the school environment. On the other hand, there were statistically significant differences concerning every independent variable in the Slovene group of participating teachers, i.e. teachers' years of service ($p = 0.048$), school environment ($p = 0.032$), and the grade they teach in ($p = 0.028$). Firstly, the teachers with more years of service consider themselves more qualified than the teachers with less years of service. Secondly, when it comes to the grade they teach in, the teachers in lower grades self-assessed their ability to teach cultural heritage contents better than the teachers in higher grades. Similarly, the teachers from urban school environment are more convinced in their abilities to teach cultural heritage contents than the teachers from rural school environment.

5. Conclusion

The purpose of the study was to carry out the comparative research in the fields of identification, preservation and presentation of cultural heritage in the Slovenian and Croatian educational system. The results have shown that the majority of teachers from both Croatia and Slovenia like to teach cultural heritage contents. However, the teachers with more years of service prefer to teach cultural heritage contents more in comparison to the teachers with less years of service. The majority of teachers participated in the research rated their abilities to teach cultural heritage contents at a satisfactory level, since the majority of them believe they are qualified to teach these contents. In terms of didactic strategies for cultural heritage education, teachers from both Slovenia and Croatia most frequently use experiential learning. Experiential learning is a strategy that attempts to connect the emotional and sensory experience of the students and their thinking into a whole; a key element of experiential learning is the student, and that the knowledge is a result of being personally involved in this pedagogical approach (Marentič Požarnik, 2003; Wurdinger, Carlson, 2010). Experiential learning is also listed as an advisable didactic strategy in didactic recommendation in National curriculums for various school subjects (for example the Slovene National curriculum for environmental studies, Social studies, etc.). Comparing the usage of different didactic strategies between the teachers from Slovenia and Croatia, the results have shown that the teachers from Slovenia use classical frontal teaching for cultural heritage education more frequently than the teachers from Croatia. In frontal teaching, the teacher's role is at the forefront and often dominates, which has its advantages and disadvantages. The process of teaching is carried out in such a way that students are at a disadvantage and their activity is limited to listening and watching. That kind of learning is bad from the perspective of constructivism, because the acquisition of knowledge is carried out as giving-receiving and not as pupils' own structuring. However, such an organization of class may also be relevant and valuable if we prevent or reduce disadvantages through a combination of different forms of teaching (Kramar, 2009). The cultural heritage contents can be successfully integrated in a wide range of school subjects in both Croatian and Slovene curriculums. Teachers from both countries participating in the research teach cultural

heritage contents the most frequently within Nature and society, Croatian/Slovene language and Art and Music Culture.

In conclusion, the teachers of the Republic of Croatia and the Republic of Slovenia have very similar opinions on the matter of the importance of cultural heritage education. They recognize the significance of teaching cultural heritage, but they are equally burdened with the fact they are only partly trained for that even though additional education is necessary for teaching cultural heritage contents. The research results should contribute stimulate the creativity in planning the joint activities on cultural heritage in Slovenian and Croatian primary schools in order for students to be acquainted with the habits, traditions, and culture of other people. What's more, it should encourage further professional education and training for teachers who already teach at primary schools, preferably in a form of workshops based on experiential didactic/teaching strategy so that teachers gain profound knowledge on how to teach cultural heritage contents. After all, cultural heritage is an important basis for acquainting, evaluating and preserving the heritage of the entire country. Therefore, teaching the contents of cultural heritage should not be taken lightly or for granted, and needs to be planned carefully.

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What goes into pre-service teachers' actions towards the common good? Leadership, citizenship, bravery, and other factors.

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Abstract:

The aim of this study was to explore the predictive validity of a limited set of theoretically related constructs for pre-service teachers' behaviors directed towards the common good. These are operationalized as consensual peer-assessed, prosocial civic actions. The measured constructs included the self-assessed traits such as valor, bravery, courage, nonconformity, leadership, cooperation, and citizenship as well as individual differences in sensitivity to injustice. The study participants were 94 students in their third year of university teacher studies (age range: 20–24 years). The results of the multiple regression analysis point to the predictive importance of self-assessed bravery, sensitivity to befallen injustice from the observer perspective, and cooperativeness, explaining one-fifth of the variance of prosocial civic actions. Prosocial civic participation is considered to belong to the key competences for lifelong learning. Accordingly, the findings were interpreted in relation to the contemporary educational perspectives on civic education, social and civic responsibility, teacher pre-service and in-service education, and the empirically proven influence of teachers on their students' learning and the outcomes of that learning.

Keywords: teacher traits, leadership, cooperation, citizenship, values

1. Introduction

Communicating a strong sense of right and wrong and teachers' well-developed sense of morals and values that goes beyond conventional rules may prove indispensable for the quality teaching practice and its accountability. If we want to have future moral leaders in education, we need to support the development and expression of teachers' and students' acts towards the common good. By focusing on their personal differences, we aim to shed light in this study on what goes into pre-service teachers' actions towards the common good.

2. Literature review

In this introduction we refer to many sociopsychological and educational constructs of immediate importance to our study findings and the recurring teacher education practice concerns. We deliver our literature review along two main theoretical frames that represent the basis of our study findings. The first one refers to the ecological model of human development (Bronfenbrenner, 1979; Woolfolk Hoy, Davis, & Pape, 2006, p. 727) that suggests that individuals are embedded in and significantly affected by several nested ecosystems. Furthermore, within our second theoretical framework we continuously point to the fact that *communication* traverses these nested ecosystems.

Teaching and learning are communicative acts situated within multiple interacting contexts. These include cultural norms and values, state and national context, immediate school and classroom context, and finally, the self or the sense of identity (see Wai & Rindermann, 2017). When we take into account the cultural norms and values, including the meaning of schooling, educational objectives (Anderson & Kratwohl, 2001; Bloom, 1956), and the state and national context, it is clear that teachers are currently perceived as civic agents (Mirra & Morrel, 2011; McIntyre, 2006), with citizenship usually referring to responsible life in a free society (see Giroux, 2013; Power & Scott, 2014). The social and civic competence, sense of initiative and entrepreneurship, and cultural awareness and expression are some of the key competences for lifelong learning, stated in the recommendation of the European Parliament (2006). Social and civic competences include personal, interpersonal and intercultural competence. They cover all forms of behaviour that equip individuals to participate in an effective and constructive way in social and working life, particularly in increasingly diverse societies, and to resolve conflict where necessary. Civic competence equips individuals to fully participate in civic life based on knowledge of social and political concepts and structures, and a commitment to active and democratic participation. Because the initial education and training should offer all young people the means to develop these key competences, the communication of the strong sense of right and wrong may be perceived as constituting an integral part of the role of the teacher. The social context, interpersonal relationships (Godor & Szymanski, 2017; Jellesma, Zee, & Koomen, 2015), and emotional well-being are important to student learning because interpersonal attachments are a fundamental human motivation (Baumeister & Leary, 1995) related to either personal thriving or distress (see Baumeister, Dwall, Ciarocco, & Twenge, 2005; Jussim, Eccles, & Madon, 1996; Lee, Draper, & Lee, 2001; Williams & Galliher, 2006). In 2015 the Coalition for Psychology in Schools and Education of the American Psychological Association among the Top 20 principles from psychology for preK–12 teaching and learning listed the overarching principles that summarize the following: a) learning is situated within multiple social contexts, b) interpersonal relationships and communication are critical to both the teaching–learning process and the social-emotional development of students, c) emotional well-being influences educational performance, learning, and development, and d) expectations for classroom conduct and social interaction are learned and can be taught using proven principles of behavior and effective classroom

instruction. These psychological principles point to the importance of numerous social processes in education.

Teachers in general display social vocational interests (see Holland, 1959, 1997), including generativity and the care for the wellbeing of others communicated in daily practice. As the longitudinal study of pre-service teachers' socially perceived traits by Rački, Škugor, & Sablić (in press) suggests, the *communicative* in the ideal teacher prototype stands for—*well informed or knowledgeable, norm-conscious, and wellbeing related production of authentic communications within the constraints of the teacher role by a person pleasing in appearance*. This suggests significant and positive relations with peer-assessed pre-service teachers' creativity, intelligence, knowledge, religiousness, and physical attractiveness. This lengthy list points to some sources of variance of what is communicated, and in what manner. Rački, Bakota, & Flegar (2015) found that the tested pre-service teachers' word knowledge was predictive, to a degree, of self-assessed linguistic creative behaviors. This may be so because the word knowledge can be considered a vehicle for the acquisition, refinement, and *expression* of thought, or communication. Yet, by communicating the teachers enact and transmit knowledge or various learned beliefs and values (see Ferić, 2009; Šverko, Babarović, & Šverko, 2007) in accord with their own developed identity and self-efficacy (see Bandura, 1995; Klassen & Tze, 2014). Richardson (1996) states that the three categories of experience influence knowledge and beliefs about teaching: personal influences, schooling, and knowledge. Personal influences such as stories and teacher biographies shape the views of teaching. Schooling refers to what prospective teachers may accrue from the study experiences, and the knowledge refers to knowledge related to academic subjects and pedagogical knowledge usually delivered in pre-service teacher education. In view of this, a question may arise whether we are educating teachers to make a difference, in other words to act towards the common good.

Some of the well-known sociopsychological processes linked to individual and group actions, especially with regard to the common good as the focus of this study, include conformity (Asch, 1956), obedience to authority (Milgram, 1963), ethics in social roles (Zimbardo, 1973), and moral reasoning (Kohlberg, 1976). For example, according to Kohlberg's model of moral thinking (see Kohlberg, 1976), the advanced, post-conventional level of moral development includes the acceptance of universal and personal moral principles that are valid apart from authority, in line with the civic engagement towards the common good. Other processes include leadership (Davis, Rimm, & Siegle, 2014; Mumford & Connelly, 1999; Pfeiffer, 2009; Sisk, 1993) development of competence (i.e., *in teacher role*, see Tankersley, Brajković, & Handžar, 2012), expertise (Simonton, 2000; Subotnik & Jarvin, 2005; Wai, 2014), and eminence (see Subotnik, Olszewski-Kubilius, & Worrell, 2011), as well as character strengths and virtues (Davis, 2003; Peterson & Seligman, 2004). The measures of these personality differences are therefore included in this study.

Due to space restrictions and the present scope of this research, comparatively more attention in this study is given to the self, bringing us a bit closer to the stated criterion variable in this study, *the common good*. According to Davis, Rimm, & Siegle (2014, p.

274) at the National Research Center on the Gifted and Talented (NRC/GT), *Operation Houndstooth* focuses on promoting six core interacting topic areas for the common good: *optimism* (hope, sense of competence stemming from hard work), *courage* (moral conviction, psychological and intellectual independence, freedom from fear of group rejection), *romance with a topic or discipline* (absorption, passion, self-actualization), *sensitivity to human concerns* (empathy, altruism, insight), *physical and mental energy* (charisma, curiosity, vitality, excitability), and *vision and a sense of destiny* (sense of direction, sense of power to change things, achievement motivation). The term *Houndstooth* refers to the houndstooth-pattern background behind the three-ring conception of giftedness (Renzulli & Reis, 2003, p. 76). Mikulić, Rački, & Brajković (2017) reported that teachers perceived as highly competent in different focus areas of teaching practice are perceived to be gifted. Sternberg (2005) believes that leadership is the most important kind of giftedness. For him, leadership is a function of generating ideas (creatively), evaluating and implementing these ideas (intelligence), and ensuring that these ideas are for the common good of those involved (i.e., wisdom). Wisdom is a trait also commonly associated with quality teaching (Arlin, 1999; Fung, 1996; Gentry, Steenbergen-Hu, & Choi, 2011; Porath, 2009; Towers & Porath, 2001). Acknowledging the personality continuities from childhood to adulthood (Caspi, 2000), and the relatively high stability of personality traits in the samples of adults such as the one that took part in the present study, we will shed light on some of the psychological processes at work in daily education.

The aim of this study is to explore the predictive validity of a limited set of theoretically related personality constructs for pre-service teachers' behaviors, which are operationalized as the consensually peer-assessed, prosocial civic actions towards the common good.

3. Methodology

3.1. Participants

The voluntary study participants were 94 students of university teacher studies in their third year of study. These middle class, educated Caucasian women with $M_{\text{age}} = 21.19$ years ($SD = 0.63$; age range: 20–24) were chosen as a convenience sample. They represented education generalists, in other words future teachers who will teach all school subjects (i.e., language, mathematics, natural sciences, physical education, and the arts) to children aged 6–12.

3.2. Materials and Procedure

The participants gave their written consent and participated on one occasion in the study for the duration of two hours. They were debriefed immediately following the study in line with the research ethics. The study consisted of two parts, the peer-assessment of the criterion measure, and the following self-assessments of the prepared questionnaires. The student participation was not anonymous, so care was taken to ensure participant confidentiality.

In the first part of the study the participants individually rated their study-year peers on their involvement in prosocial civic actions directed towards the common good. The social judgments of peer behavior, theoretically based on the hypotheses of usefulness, but not necessarily absolute accuracy of social judgment (e.g., Funder, 1987; Kolar & Funder, 1996; Jussim, Eccles, & Madon, 1996; Jussim, Harber, Crawford, Cain, & Cohen, 2005), were used in this study. The participants were provided with a sheet of paper with the names of all the study-peers listed in alphabetical order. At the top of the paper, they were asked to provide their name, and were required to give an individual answer for each of the listed peers on a 5-point scale akin to school grades (ranging from *Unsatisfactory* to *Excellent*) on how that peer, in their own opinion, exemplified the following behavior: *He/she proposes, develops, and successfully carries out actions of positive significance to the study year, individuals or community, with personal involvement in all types of actions you consider to be directed towards the common good.* The peer-ratings were used because the participants encountered each other in small groups for two consecutive study years prior to this study during which they had the opportunity to get well acquainted, which supports the criterion validity of peer-ratings. When finished, they were asked to state what they had in mind when rating their peers on the stated general criterion question. The students provided specific descriptions of various peer prosocial behavior directed towards the common good, such as dedicated and sustained volunteer work both at the faculty as well as outside (e.g., *she voluntarily leads a children's choir*), the peer engagement in student council and other university organizations, or their peers being generally active outside the regular study duties in caring for somebody or something (e.g. involvement in student organized charity work, acting as representative/s of study year in dealing with the faculty staff, serving as the student ombudsmen, or being an initiator of projects supported by the university, faculty, schools, or other organizations). Higher scores indicated more peer-rated student prosocial activity directed towards the betterment of the general living and thriving conditions of those surrounding them. The consensually rated criterion measure, *the peer-rated student participation in prosocial civic actions directed towards the common good*, had a possible range of peer ratings from group averaged 1 to 5. The observed range was 1.93–4.71 ($M = 2.93$, $SD = 0.61$), representing low to high result on the criterion measure for the participants.

To match the level of criterion measure behavior generality, the general construct measures used in the second part were taken from The International Personality Item Pool (IPIP; Goldberg, 1999; Goldberg et al., 2006; Mlačić & Goldberg, 2007). They were independently translated into the Croatian language by two university professors of English language, with possible item translation issues discussed with the designated psychologist. Five scales were chosen for use in this study due to their hypothesized importance for the peer-rated student participation in prosocial civic actions (e.g., cooperation, citizenship/teamwork, bravery/courage/valor, leadership, and conformity), limited by the given study time constraints. These five chosen IPIP scales theoretically covered some of the sociopsychological determinants of prosocial civic actions, spanning intraindividual valor, bravery, and courage, and the student-perceived personal differences closely tied to group dynamics, such as leading and

following within the available social context. On all of the IPIP measures, the participants indicated on a 5-point scale the extent to which they agreed or disagreed with each of the statements. Linear combinations of scale items divided by the number of items in each scale represented the independent measures used in this study, with Cronbach α ranging from .63 to .78.

The scale measuring *Cooperation* (HPI) consisted of one positively worded item (*Rarely overindulge*), and nine negatively worded items (*Resist authority; Oppose authority; Act wild and crazy; Feel that people have a hard time understanding me; Break rules; Enjoy wild flights of fantasy; Swim against the current: Look for hidden meanings in things; Suspect hidden motives in others*). Higher scores indicated a greater tendency to display cooperation. Cronbach's alpha for the total scale in this study was .78.

The scale measuring *Citizenship/Teamwork* [VIA: Cit] consisted of four positively (*Don't miss group meetings or team practices; Enjoy being part of a group; Support my teammates or fellow group members; Feel I must respect the decisions made by my group*), and five negatively worded items (*Am not good at working with a group; Prefer to do everything alone; Work best when I am alone; Keep to myself; Don't think it's important to socialize with others*). Higher scores indicated a greater tendency to behave in ways descriptive of teamwork and/or citizenship. Cronbach's alpha for the total scale in this study was low but satisfactory at .63.

The scale measuring *Bravery/Courage/Valor* [VIA: Val] consisted of six positively worded items (*Have taken frequent stands in the face of strong opposition; Don't hesitate to express an unpopular opinion; Call for action while others talk; Can face my fears; Speak up in protest when I hear someone say mean things; Am a brave person*), and four negatively worded items (*Avoid dealing with uncomfortable emotions; Avoid dealing with awkward situations; Do not stand up for my beliefs; Don't speak my mind freely when there might be negative results*). Higher scores indicated a greater tendency to display valor, bravery, and courage. Cronbach's alpha for the total scale in this study was .69.

The scale measuring *Leadership* [VIA: Lea] consisted of four positively worded items (*Try to make sure everyone in a group feels included.; Am good at helping people work well together; Am told that I am a strong but fair leader; Try to make my group members happy*), and three negatively worded items (*Have difficulty getting others to work together; Am not good at taking charge of a group; Am not good at planning group activities*). Higher scores indicated a greater tendency to behave in ways descriptive of leadership. Cronbach's alpha for the total scale in this study was .71. Note that these last three IPIP scales [VIA: Cit, Val, Lea] belong to Peterson & Seligman's (2004) *Values in Action Character Survey* (VIA).

The scale measuring *Conformity* (JPI: Cooperativeness [Cpr]) consisted of five positively worded items (*Worry about what people think of me; Conform to others' opinions; Need the approval of others; Want to amount to something special in others' eyes; Do what others do*), and five negatively worded items (*Don't care what others think; Am not concerned with making a good impression; Feel it's OK that some people don't like me; Want*

to form my own opinions; Want to be different from others). Higher scores indicated a greater tendency to conform. Cronbach's alpha for the scale in this study was .71.

In order to afford for the motivational variables regarding engagement in prosocial civic actions towards the common good, it was hypothesized that the psychological construct of sensitivity to befallen injustice may prove predictive of the studied criterion behavior. In this study we used *The Justice Sensitivity Scales* (Ćubela Adorić & Jurkin, 2008) that aim to measure the sensitivity to befallen injustice from the victim, the observer, and the profiteer perspective, with exemplary items listed in the brackets in the same scale order (e.g., *It makes me angry to be treated worse than others; /I get upset when I realize someone has used others; /I get upset when I get praised for someone else's work*). Higher scores on all three scales indicated higher self-assessed sensitivity to befallen injustice from these three perspectives that a person may assume. Cronbach's alpha for the scales, in the same order, were .84, .87, and .90. The statistical parameters for all of the used measures are listed in Table 1.

By using the regression analyses presented in the results section, in this study we aim to explore the predictive validity of the theoretically related personality constructs for the pre-service teachers' behaviors (actions) directed towards the common good, which are operationalized as the consensually peer-assessed prosocial civic actions.

4. Results

In order to provide the answer to the stated research question, three groups of analyses were performed: correlation analyses, principal component analysis, and multiple and sequential regression analyses. The intercorrelations, means, and standard deviations for all the variables used in this study are listed in Table 1.

Table 1. Summary of intercorrelations, means, and standard deviations for all the variables in the study

Measures	1	2	3	4	5	6	7	8	9
1. Criterion measure (DV): Prosocial civic actions	—								
2. Cooperation	.11	—							
3. Citizenship/Teamwork	.28**	.20	—						
4. Bravery/Courage/Valor	.36**	-.17	.44**	—					
5. Leadership	.32**	.06	.51**	.45**	—				
6. Conformity	.07	.11	.12	-.32**	-.03	—			
7. Sensitivity to injustice/Victim perspective	.15	-.14	.08	.04	.23*	.32**	—		
8. Sensitivity to injustice/Observer perspective	.28**	-.19	-.03	.19	.16	.10	.53**	—	
9. Sensitivity to injustice/Profiteer perspective	.21*	-.08	.06	.30**	.22**	-.21*	.23*	.43*	—
M	2.93	3.42	3.58	3.31	3.78	2.74	4.44	4.60	4.36
SD	0.61	0.56	0.44	0.53	0.46	0.49	0.72	0.68	0.80
Skew	0.93	-0.51	-0.18	0.06	-0.14	0.09	-0.19	-0.07	-0.66

Note. $N = 94$. Potential range 1–5; *low to high*. Potential range for the sensitivity to injustice scales is 1–6; *low to high*. All variables are normally distributed. Pearson r is used.
 $*p < .05$. $**p < .01$.

No cases had missing values. The linear combinations of items in the scales represented variables for further analyses. All the variables followed the normal distribution. The correlation analyses indicated that the criterion measure of peer-rated prosocial civic actions correlated positively and significantly in the descending order with the self-assessed bravery/courage/valor, $r(94) = .36, p < .01$, leadership, $r(94) = .32, p < .01$, sensitivity to befallen injustice from the observer perspective, $r(94) = .28, p < .01$, citizenship/teamwork, $r(94) = .28, p < .01$, and sensitivity to befallen injustice from the profiteer perspective, $r(94) = .21, p = .038$. The regression analyses were used to assess the proportion of variance of DV predictable with the self-assessments (IVs).

Preliminary regression analyses indicated that the variable *Cooperation* in model A (Table 3) is useful in prediction of the DV and in increasing the multiple R^2 by virtue of its correlations, mostly negative, with other independent variables (see Table 1). As a suppressor variable, it suppresses variance that is irrelevant to the prediction of the DV. To take into account these complex relationships, the factor analysis was performed on all independent variables in order to create new linear combinations of IVs to optimally predict DV, and therefore aid in the interpretation of the study findings.

Table 2. Factor loadings for exploratory factor analysis with varimax rotation of personality self-assessment scales

Participants' self-assessments	Factors			<i>h</i>
	I	II	III	
Citizenship/Teamwork	.87	-.09	.14	.78
Leadership	.80	.20	-.04	.68
Bravery/Courage/Valor	.65	.20	-.53	.74
Sensitivity to injustice/Observer perspective	.05	.86	.02	.74
Sensitivity to injustice/Victim perspective	.13	.76	.40	.76
Sensitivity to injustice/Profiteer perspective	.20	.59	-.39	.53
Cooperation	.29	-.43	.39	.42
Conformity	.00	.14	.87	.78
Eigenvalues	2.32	1.64	1.45	—
% of explained variance	28.99	20.53	18.18	—

Note. Factor loadings $\geq .30$ are printed in bold.

With the average communality at .68, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy at .59, and Bartlett's Test of Sphericity at $\chi^2(28) = 172.23, p = .001$, the Principal Component Analysis (PCA) was performed. Out of eight variables (i.e., second order analysis of scale results) three components were initially extracted based on the Eigenvalues over 1 with the characteristic roots as follows: 2.32, 1.64, and 1.45. Based on the scree plot, reproducibility and interpretability, the three-component PCA solution with orthogonal rotation was retained. These three components accounted for 67.7% of the common variance and are listed in Table 2. The single scale scores (model A), and the composite regression factor scores (Factor I, II, and III) were used as predictors (model B) of the criterion, as listed in Table 3.

Table 3 displays the unstandardized regression coefficients (B) and intercepts, the standardized regression coefficients (β), the semipartial correlations (sr^2), R^2 , and adjusted R^2 . With diagnostics pointing to no collinearity issues and standardized residuals within the expected limits, the two regression models presented in Table 3 proved robust. R for regression in model A was significantly different from zero, $F(3, 90) = 8.55, p < .001$, with R^2 at .22 and 95% confidence limits from .07 to .36. The adjusted R^2 value of .20 indicates that one fifth of the variability in peer-rated prosocial civic actions is predicted by the self-assessed bravery/courage/valor, sensitivity to injustice from the observer perspective, and cooperation. The size and the direction of relationships suggest that the more prosocial civic actions are made among women with higher scores on these three scales. However, self-assessed bravery/courage/valor is more important, as indicated by the squared semipartial correlations. These findings are elaborated in more detail in the sequential regression analysis.

Taking into account the results of the multiple regression analysis (model A) and the insights from the principal component analysis (PCA; see Table 2), the sequential regression analysis was employed to determine if any additional information on *variable structure* improved the prediction beyond what was accounted for by the differences in the overall and the combined scale scores in multiple regression. Factors I, II, and III were used as orthogonal predictors to clarify what they carry as additional information in model B. In this model, R was significantly different from zero at the end of step 1 and step 2, painting a richer picture of variable and structural relations described in the discussion section of this article. After step 1, $R^2 = .15, F(1, 92) = 16.76, p < .001$. After step 2, $R^2 = .20, F(2, 91) = 11.42, p < .001$. After step 3, with all three IVs in the equation, $R^2 = .20$ with 95% confidence limits from .06 to .34, $F(3, 90) = 7.53, p < .001$, all the variance in equation was already accounted for by step 1 (15.4%), and step 2 (4.66%).

Table 3. Standard multiple regression analysis of self-assessed personality measures on peer-assessed prosocial civic actions (model A), and the sequential regression analysis results with composite factor scores (model B)

Criterion measure (DV): Prosocial civic actions	B	SE B	β	sr^2 (unique)	95% CI of B
A)					
Constant	-0.25	0.67			[-1.59, 1.08]
Bravery/Courage/Valor	0.40	0.11	.35**	.12	[0.18, 0.62]
Sensitivity to injustice/Observer perspective	0.23	0.09	.25**	.06	[0.06, 0.40]
Cooperation	0.23	0.10	.22*	.04	[0.03, 0.44]
	$R = .47; R^2 = .22; \text{Adj. } R^2 = .20$ [95% CI .07-.36]				
B)					
Constant	2.93	0.06			[2.82, 3.05]
Factor I (Step 1)	0.24	0.06	.39**	.15	[0.12, 0.35]
	$R = .39; R^2 = .15; \text{Adj. } R^2 = .15, p < .001$				
Factor II (Step 2)	0.13	0.06	.22*	.05	[0.02, 0.24]
	$R = .45; R^2 = .20; \text{Adj. } R^2 = .18, \Delta R^2 = .05, p = .024$				
Factor III (Step 3)	0.00	0.06	.00	.00	[-0.11, 0.12]

$$R = .45; R^2 = .20; \text{Adj. } R^2 = .17, \Delta R^2 = .00, p = .997$$

[95% CI .06-.34]

Note. $N = 94$. CI = confidence interval. Steiger & Fouladi (1992) R2 computer program was used to calculate the confidence intervals (CI) for R^2 ; lower and upper limits are shown.

* $p < .05$. ** $p < .01$.

Given the value of R^2 at .22 for model A, and .20 for model B, the effect sizes for these multiple regression coefficients (i.e., Cohen's f^2) are .28, and .25, indicating medium effect size. By using more complex composite scores, or self-assessments of relatively stable dispositional characteristics, such as citizenship/teamwork, leadership, bravery/courage/valor, sensitivity to befallen injustice (more specifically from the observer perspective), and cooperation or lack thereof, it is possible to explain at least one fifth of the variance of the peer-rated prosocial civic actions. These findings are discussed in the following section.

5. Discussion

The results of this study generally point to the fact that up to a certain level (one-fifth of the variance) being non hesitant in expressing (unpopular) views with bravery, courage, and valor, while being sensitive to befallen injustice, especially from the observer perspective, and flexibly cooperative towards the group betterment, may result in the creation and successful implementation of peer-rated prosocial civic actions of positive value to individuals and community perceived as the common good.

The findings of this study are of specific importance to the teacher educators, and the future teachers as the participant group in this study, for they (will) perform in education on daily basis throughout their career, possibly modeling and supporting their students' and colleagues' behaviors of serious, cumulative, and preferably positive consequences. As the results presented in Table 2 and Table 3 suggest in more detail, the first factor has predictive validity for the common good through behaviors of active citizenship, leadership and teamwork, and acts of bravery, courage, and valor. These processes alone explained 15% of the criterion variance. Together, they stand for some of the character strengths and virtues described by Peterson & Seligman (2004), and this study proves their importance. The second factor may describe the additional predictive importance of processes descriptive of the willingness of individuals to refuse to cooperate with the group when they perceive that the group is involved in unjust acts. Such refusal of cooperation, as is evident in the negative loading on the cooperation scale and positive loadings on the sensitivity to injustice scales (see Table 2, Factor II), adds additional 5% to the overall explained criterion variance. This small yet significant addition may prove to have significant importance for the commencement of prosocial behavior regardless of its possible collision with the group expectations. To exemplify this point of discussion, by using her metaphor of the *sense of justice murmuring underneath*, the worldly acclaimed musician and social activist involved in music education (e.g., see *The Biophilia Educational Project*), Guðmundsdóttir, in the lyrics of one of her songs posed a question

“How am I going to make it right?” (2004). This cultural reference succinctly describes the outwardly communicated moment when one feels inclined to act upon one's hurt sense of justice, yet wisely accounts for the common good, and simultaneously, one's fear of rejection, ridicule, or being perceived as oppositional and defiant (non-cooperative). While acting within the constraints of the teacher role, and yet paying attention to the murmur underneath, an expert teacher may didactically develop a set of *authentic communications* shaped in such a way to motivate and inspire others to act towards the recognized common good. Herein lies the communicative power that teachers possess.

Are we educating future teachers to make a difference towards the common good? This is not a simple task to teach, and the balance in this complex social endeavor that we call the common good may not be easy to achieve in one go. The results of this study have importance for pre-service and in-service teacher education, general education of students, as well as gifted education. Pre-service students of teacher studies, teachers, and students may benefit from ascribing positive value to prosocial behavior, initiative, autonomy, and inventiveness, as well as civic education. In general education, allowing for nonconformity and disobedience when protecting the wellbeing of others and self, supporting the development of moral reasoning and prosocial action repertoire, and teaching the democratic values may seem in order to build teams, groups, and community. Some of the universal values (e.g., Davis, 2003) that both university-level teacher educators, and teachers in classrooms should commit to in daily teaching practice may include responsibility, honesty, empathy and compassion, respect, self-respect, regard for others' rights, caring for our environment, and generally positive life goals. In gifted education, because gifted students often are labeled tomorrow's leaders, discussions of universal values based upon the impact of our behavior upon others (e.g., honesty, fairness, pleasantness, helpfulness, empathy, dependability, and respect for others' rights) would be valuable in developing good moral thinking (Davis, Rimm, & Siegle, 2014, p. 283). In order to fulfill this mission, displays of bravery, courage, and valor, civic education, and leadership training, need to become a daily practice.

To detect injustice and set oneself apart from the group, yet at the same time to have the courage to act upon injustice towards making it right, or *to speak out*, for some teachers, regardless of their power of character and virtue, may personally be very risky under certain conditions. The third factor may suggest the interplay of an additional set of intraindividual and social processes indicative of defensive or self-protective strategies of conforming and cooperating with the group involved in (unjust) acts. Here the fearful self is probably involved in reducing sensitivity to injustice from the profiteer perspective (i.e., an individual accepts the personal gain), and not displaying acts of bravery, courage, and valor, but conformity, thus avoiding personal harm. In conclusion, as a very clear message that others can take from our study and apply to their situation in some way, is that this third factor explained no additional criterion variance of peer-rated individual display of prosocial civic actions towards the common good.

6. Conclusions

By means of the more complex factor scores, or by using simple scores on the self-assessments of relatively stable dispositional characteristics, the results of this study generally suggest that at least in certain groups, up to a certain level (up to one-fifth of the criterion variance), the display of character strengths and virtues may predict the creation and successful implementation of peer-rated prosocial civic actions. These include being nonhesitant in expressing (unpopular) views with bravery, courage, and valor, while being sensitive to befallen injustice, especially from the observer perspective, and flexibly cooperative towards the group betterment. The results of this study point to the relatively stable intraindividual differences that predict consensually rated prosocial acts, thereby providing guidelines for which personality differences to acknowledge and nurture in our students if we are to see more initiatives and acts of active citizenship, leadership, and the much needed societal improvements towards the common good in the future.

7. Limitations and implications for further research

There are limitations inherent in this study that caution to over-generalize the results – the relatively small number of participants (female students of university teacher studies) and the reliance on self-assessments in the measurement of personality constructs. IPIP personality measures had just satisfactory reliabilities ($\approx .70$), limiting the correlation size and therefore truncating their predictive value. By means of the provision of the detailed description of materials and procedures used in this study, all the materials and procedures are made available for replication and further study.

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Researching mentoring, developing researchers: a parallel approach to research and development in teacher education

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Abstract:

This paper takes an interpretive approach in examining how institutional support has facilitated newer teacher educators' professional learning as researchers whilst undertaking a research project about mentoring in teacher education. The research project took place within a faculty of education in England and asked; what supports mentors' professional development? Acknowledging that mentoring is a social practice and can be seen as 'doings, sayings and relatings' (Kemmis et al, 2014), the team adopted a thematic approach to the analysis of data (Strauss and Corbin, 2009) and discovered that what supports the professional learning of mentors also supported their own professional learning: These include knowledge of one's own educational aims and principles, support and resourcing, taking advantage of diverse opportunities, opportunities to practice and understand how to undertake research and developing strong relationships and reflecting on these in order to develop pedagogically excellent practice. This paper demonstrates that including novice teacher educator researchers in faculty projects builds capacity and expertise and can help to improve and maintain quality within the challenging context of English teacher education.

Keywords: teacher education, mentoring, developing researchers, professional learning

1. Introduction

This paper explores our experiences as a group of teacher educators from England who voluntarily participated as novice researchers in a research project about mentoring within a large faculty of education. It is the aim of this paper to share these experiences in order to attend to the 'universal lack of attention to the professional learning needs of teacher educators' (Czerniawski, Guberman, & MacPhail, 2017).

One of the authors of this paper was invited to lead a faculty funded research project in July 2016 that arose out of her existing role as an Assistant Faculty Director. The research was initiated in order to learn about the impact of changes on mentoring

approaches within the faculty following a substantial change in working practices. These changes affected the working practices of mentors supporting initial teacher education programmes within our large partnership. Mentors are school-based teachers who support student teachers on university-based programmes whilst they are undertaking placements within a school setting, in order to assess their practical experience. The role of the link tutor had also changed from directly supporting and co-assessing students on placement to supporting the mentor who both mentors and assesses student teachers that are on placement in the setting.

The decision to change working practices within the partnership followed a periodic review which had highlighted some inconsistencies in the working practices of our mentors and link tutors. This finding along with a subsequent Ofsted inspection in 2014, which concluded that we needed to 'improve the quality of school based mentoring and increase the impact of link tutors to develop their quality assurance role in order to help trainees fulfil their full potential' (Ofsted, 2014), led to this change. Ofsted is a high stakes inspection that has an impact on our ability to attract students. This recommendation, when understood within the English policy context of continued marketization of UK universities (Menter, Valeeva, & Kalimullin, 2017), meant that we were potentially in a vulnerable position if we did not change our working practices.

A new conceptualisation of partnership was developed between school and university partners resulting in an approach that adapted the roles of university based tutors from working directly with students and mentors to that of professional developer of mentoring within the school. This move was an attempt to ensure that high quality mentoring continued to support the practice of new teachers at the initial stages of their training. When schools are held more accountable and are given more responsibility for the training and assessment of student teachers, it becomes vital that this is well supported (Smith, 2017). A self-evaluation toolkit called a Partnership Evaluation Framework was developed to support this work in four key areas: Induction, Professional Development, Mentoring and coaching and Working in Partnership. Alongside this, a five session Mentor Development Programme was conceived, designed and taught in different areas in the partnership. This programme is designed to support mentoring as a leadership skill and impact on the school community as a whole. It was this new approach to working that our research project was designed to evaluate.

Both the project lead and five members of the research team who had volunteered to be part of this research project, were originally recruited to their university roles because of their prior experience as teachers. This aligns with the findings of Ellis, McNicholl, & Pendry, (2012); Griffiths, Thompson & Hryniewicz, (2014); and Murray and Male, (2005). Most of the team had been experienced mentors and teachers in school, some very recently and it was because the theme of the research project was on mentoring that they were attracted to the project. Tack, Valcke, Rots, Struyven, & Vanderlinde, (2018) claim that linking teacher educators' practices with structures within which to do research, supports their professional learning (Tack et al., 2018).

They had recognised that this was a valuable opportunity to develop their knowledge and understanding of doing research. Although some of the team had Masters level qualifications, they were not solely recruited to their university roles on the strength of their research profiles or on their experience in doing research. However, as they found themselves researching about the impact of these changes in working practices within the faculty, they began to appreciate the significance and value of becoming more experienced at being more research focused as teacher educator researchers (Tack & Vanderlinde, 2014).

The project lead had previous experience in being part of a steering group aiming to promote a department based self-study project (Wilson, Jordan-Daus & Vincent, 2014), this inevitably had an influence on the direction of the project in fostering an inquiry based approach to the project. The team found that as they developed their knowledge and understanding of the perceptions of what supports mentors' professional development, they became more aware of their developing 'researcherly dispositions' (Tack & Vanderlinde, 2014). The following diagram (Figure 1) shows how the team combined researching changes in mentoring approaches in order to evaluate the impact of these along with a consideration of what they perceived effective mentoring to be. These conversations were dependent on the different and complex aspects of our daily lives as teacher educators. They formed an integral part of the project as we began to make sense of our own experiences of mentoring and as we continued to develop our own relationships with our mentors as link tutors. As these conversations emerged and it became clear that we were developing our own thinking about these changes as 'insiders' of the research project, we began to evaluate our own development as researchers.

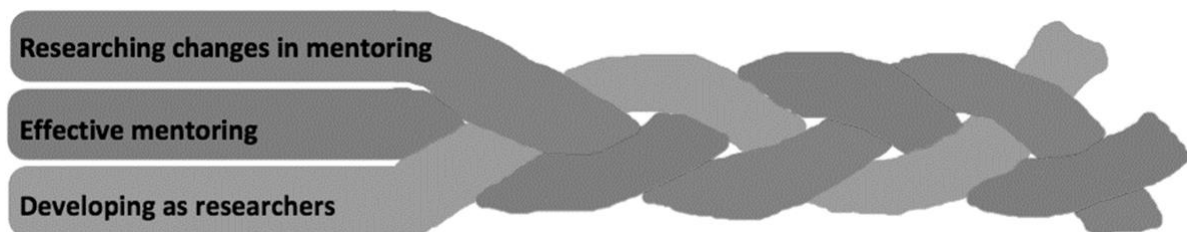


Figure 1. Different aspects of the teacher educator researchers' roles.

We hope that sharing our experiences of participating in this evaluation project, that we will help to add to the body of knowledge about English university based teacher educators' professional development.

As this paper is concerned with the parallel approach taken by the teacher educator researchers, in that they were simultaneously researching mentor development alongside reflecting on their own research development, this paper will be structured accordingly. Researchers' reflections will be delineated through the use of italics to highlight the development of their thinking throughout.

2. Policy Context of Teacher Education in England

The policy context of teacher education in England is biased in favour of school-based initial teacher education as opposed to university-based initial teacher education (DfE 2010, DfE 2011). English university-based teacher educators have therefore had to ensure a sharper focus on the development of mentoring in partnership schools in order to quality assure the experiences of student teachers as they are still responsible for professional as well as academic accreditation. Whilst many teacher education lecturers in England are very experienced teachers often recruited straight from school, they are usually less experienced as researchers as advanced doctoral study is not an essential requirement for appointment (Ellis et al., 2012; Griffiths et al., 2014; Murray & Male, 2005). This means that English 'once a teacher' university-based teacher educators require particular types of support in order to fulfil this aspect of their roles (Griffiths et al., 2014).

Universities compete for students along with schools, who are encouraged to train teachers in partnership with universities. Of school-based initial teacher training opportunities, some are salaried and some non-salaried. Wherever prospective new teachers choose to train, whether school or university based, universities are held accountable for the awarding of both academic qualifications and the granting of qualified teacher status. This means that schools must work in partnership with universities who are held accountable for the quality of training within both university and school based partnerships. Ensuring that the quality of mentoring is high is therefore essential.

Within this competitive and politically complex context, university departments of education in England are facing further challenges. Each university is awarded gold, silver or bronze teaching excellence awards according to the feedback that students give through questionnaires and surveys. These initiatives are intended to allow more consumer choice and thus drive up quality. This means that university based English teacher educators are working within complex systems subject to many pressures. Ofsted also makes regular, high stakes inspections awarding 'outstanding, good or requires improvement' judgements. These initiatives inevitably affect prospective student teachers' decisions about university choices and inevitably the ability of university departments of education to plan ahead and to invest in teacher education and development. These factors impact on university departments of education, often leading to teacher educators prioritising teaching over research.

2.1. Newer Teacher Educators learning about doing research in England

Developing the ability to do research is an important aspect of being a teacher educator (Murray & Male, 2005; Lunenberg, Murray, Smith, & Vanderlinde, 2017; Tack & Vanderlinde, 2014). It is a vital aspect of their continuing professional learning. In England, within an 'increasingly fragmented system' (Lunenberg et al, 2017 p. 559) this is incredibly challenging because demands are increasing, particularly in relation to quality assurance processes. Support for doing research is 'under-researched' (Murray, 2005 p68) meaning that if English university based teacher educators have

the 'tendency', 'ability' and 'sensitivity' (Tack & Vanderlinde, 2014) to engage in research, they may need to consider how to embed a research-informed approach within their existing roles. This involves 'rediscovering the relationship between theory, practice and research in a way that is more connected to, and reflective of, one's professional life' (Kuzmik, 2002, p. 227). Learning more about the experiences of mentors as a social practice (Kemmis, Heikkinen, Fransson, Aspfors, & Edwards-Groves, 2014) within the partnership was a way for the teacher educator researchers in this project to combine this aspect of their professional roles as link tutors and developers of mentoring alongside the development of their role as a teacher educator researcher.

3. Understanding mentoring and researching through a social theory of practice lens

Mentoring can be seen as a social practice (Butler and Cuenca, 2012, Kemmis et al, 2014) where 'characteristic actions and activities (doings) are comprehensible in terms of relevant ideas in characteristic discourses (sayings), and in which the people and objects involved are distributed in characteristic relationships (relatings)' (Kemmis et al, 2014, p.155). The teacher educator researchers recognised that becoming involved in this project might be a way of making sense of what has been described as a 'rocky road' (Wood and Borg, 2010) in their formative years of teacher education. This induction phase is recognised as being incredibly challenging (Murray & Male, 2005; Van der Klink, Kools, Avissar, White and Sakata, 2017). They were grappling with dual identities as newer teacher educators and as formerly experienced teacher-mentors in school and were trying to make sense of a changed way of working within the partnership that was previously familiar to them as well as a change of job as illustrated by Gayle in the following reflection;

'I was really feeling my way as a visiting tutor between the tensions of what it is like in school and what the university is asking of schools. It has enabled me to give the whole thing some grounding and (understand) the range of practices out there and how I need to do my job differently from perhaps how I was doing it because I need to understand the pressures and tensions for mentors which are not the same in any two given schools.' (Gayle, Reflection, April 2017)

Having support from the Head of School meant that the project retained a sense of momentum. It was regularly referred to in faculty conferences and meetings, helping to endorse the value of the project. The idea of adopting a framework based on Kemmis et al. (2014) practice architectures initially came from the Head of School who suggested that we consider it as a theoretical framework in the evaluation project because we were aiming to understand the barriers and enablers for mentors in their professional learning. If we understand that cooperation between parties is essential within the new conceptualisation of partnership, then we can begin to know more about how what mentors are 'doing, saying and relating' (Kemmis et al., 2014) within the different types of relationships that exist within the partnership. We might then be able to better understand what the experiences of our mentors and newer teacher educator researchers might be in order to support their development.

'All of it is raising the status of mentoring and giving that credit where it is needed and I think that sometimes mentors need support with empowering themselves and I think that this has empowered me to know that I can go and give them that support that they need but actually to be able to say that there is support out there and to utilise it and to think about what their priorities are as well'. (Sally, reflection, April 2017)

Knowing that the project was important to senior leaders within the faculty was crucial to the success of the project. Endorsement from them came from sustained, regular and continued interest during planned and chance meetings.

4. Planning the research: Structure and approach

The project lead was asked to lead the project by the Head of School, based on previous experience as an Assistant Faculty Director and involvement in a development group set up to monitor and support the changed ways of working within the faculty. The project lead (Katy) had not previously led a research project but is currently undertaking a Doctorate in Education. The Head of School also asked an experienced researcher (Jill) within the faculty to be part of the project as a facilitator and another experienced researcher (Wendy) in the faculty agreed to be a critical friend to the project. The School of Teacher Education and Development asked for volunteers to participate in this evaluation project. No specific qualifications were necessary, just an interest in mentoring. Five of us met initially to conceptualise how the project might operate. I had discussed some guiding principles with the Head of School and explained to the newly formed team that;

'This will be a participatory project. It is an opportunity for collaborative enquiry and will invite participation from link tutors and mentors at various stages. Ideally participants might be co-researchers rather than just respondents but people will be involved as appropriate and feasible' (Katy, meeting notes, July 2016)

Whilst the team understood that the aim of the project was to 'improve organisational partnerships and professional relationships to support initial teacher education, so as to enhance the learning, development and wellbeing of children and young people' (Katy, meeting notes, July 2016), the notes of the meeting show that as an open ended project, we struggled to define a clear sense of direction. Apart from Jill, the team had no previous experience in doing a large research project as illustrated in the following quotation:

When I responded to (Katy's) email to get involved with researching how we support mentors I didn't know how far I would be taken out of my comfort zone. As a primary school teacher, I was at the top of my game. Coming here, I was at the bottom of the game. I didn't even know what this research game was. (Hannah, July 2017)

One of the members expressed that she joined the group because she wanted to be able to research with some experts, which was interesting because the perceived 'experts' didn't see themselves as such! The research lead had never led a research group before

and very much felt her way through and Jill admits that she didn't really know what her role was at the beginning and saw herself as scribe and guide:

'I think at the start I was following (Head of School's) request to provide help and guidance to shape the project. I adopted the role that I know works, which is to ask questions, problematise, introduce ideas about process based on my experience and to help with documentation. I tried to offer reassurance and be a sounding board and critical friend. It was important to let colleagues have the necessary discussion they wanted to have and speak the language that was meaningful and I wanted to support the project leader in enabling this'.

(Jill, reflection, September 2017)

The team were very clear that they wanted to gather 'rich stories of mentoring' (Meeting notes, July 2016). Yet also asked how they might 'do rigorous research when it involves data like stories?' thus illustrating the team's insecurity in undertaking research. Yet, Jill ambitiously encouraged the team to agree on a timeline for the project, including some key aims such as presenting at the faculty July scholarship day in the summer of 2017:

'By the July Scholarship Day there will be an interesting story to report, including what has been learnt about tutoring and mentoring and what has been learnt about how a collaborative enquiry model can support professional and partnership development in the new Initial Teacher Education model' (Meeting notes, July 2016)

Wendy, as critical friend to the project, suggested early on that The Head of school should act as a sponsor of the project. This meant that Katy would need to regularly brief him in order to ensure that the project remained on track with the original aims. As part of this role, the Head of School shared an article by Kemmis et al. (2014) as a potential theoretical lens. Kemmis et al. (2014) conceptualise mentoring as a specific kind of social practice in terms of a theory of practice architectures i.e. specific cultural-discursive, material-economic and social-political arrangements found or brought into a site that enable and constrain a practice: arrangements that make the practice possible. 'Understood as a social practice, mentoring is a specific kind of cooperative human activity in which characteristic actions and activities (doings) are comprehensible in terms of relevant ideas in characteristic discourses (sayings), and in which the people and objects involved are distributed in characteristic relationships (relatings)' (Kemmis et al., 2014).

Mentoring is therefore:

1. Understood and conceptualised in different ways (sayings)
2. Enacted in different ways (doings)
3. People relating to one another differently (relatings) (Kemmis et al., 2014)

The research sought to understand:

1. The different things people in the partnership were saying about mentoring (sayings)

2. The different things people in the partnership were doing when mentoring (doings)

The different ways people were relating to each other in the partnership when mentoring (relatings)

Considering Kemmis et al. (2014) theoretical framework helped us to shape possible ways of designing the project and gave us a direction.

4.1. Ethical considerations

In line with University policy and best practice, we conducted our evaluation with clear adherence to ethical practice and principles. We operated on a basis of informed consent from all participants. This included the right to withdraw from research activities at any stage of the process, the right to review data (as objects willingly 'given' to the evaluation) and to withdraw or request amendment of these, the opportunity to participate as appropriate in data gathering activity. We ensured that all data was held securely and was anonymised so that no participant or partnership setting is identified during this research project. In the event, no participant chose to withdraw from participation. There was a strong emphasis placed on ownership of the data, including interviewees and the mentors were given the opportunity to review the data before final analysis and publication and given the right to reject any comments they would not wish to have included. However, gaining ethical clearance was another learning journey for the team as illustrated in the following conversations:

'So I knew about ethics, because I work with student teachers who have to do ethical sheets for their assignments. I get it, I know it's important but the turnaround time seems incredibly long and you submitted and it seemed a while before anything came back and I'm thinking ...we're wasting time, we're wasting time...so I think it's been an eye opener to me and I know it's important we do those processes. I do absolutely support that, but that was interesting'. (Gayle, conversation April, 2017)

'When you are in a school setting and doing a little action research project to here, it's just huge isn't it? (Hannah, conversation, April, 2017)

'It's just massive' (Katy, conversation, April 2017)

Taking time to ensure that due process was followed and consideration given to all aspects of the requirements such as risk assessments and peer review took time, particularly as this was based on acquiring new knowledge. This was frustrating for some of the team who found it difficult that research processes are incredibly complex and take time to complete.

4.2 Deciding on the Methods to use

'The first day we met, I just went home buzzing with the excitement of it all. There was, I don't know if we all felt experts, but there definitely was at least one expert with us that day and I learnt so much just from that and was so encouraged'. (Hannah, reflection, April 2017)

While we knew that we wanted to gather mentors' stories and learn about their experiences of mentoring, we iteratively constructed an approach to gathering these

using mixed methods in order to capture perspectives on mentoring that could be used to evaluate impact. However, this process was a source of tension for the project lead, Katy who was at that time grappling with a doctorate assignment that questioned the nature of knowledge and methodological approaches as illustrated in the following excerpt:

'I think one of the things that I'm holding on to is the fact that we said right back in July we wanted rich stories of mentoring and this is one of the things that I'm kind of really grappling with. We want rich stories of mentoring and yet we are generalising those rich stories through the emerging of themes. We are looking for themes aren't we, which actually moves away from rich stories? It's a personal thing I'm really grappling with. I don't know if any of you have felt that at all or whether that's...I don't know'. (Katy, conversation, April, 2017)

Gaining access to mentors' perspectives required the research team to go out into the field, as this was not information gathered routinely. They did this through both individual mentor conversations. Other sources of data were obtained through activities that were naturally occurring within the university and partnership such as meetings and conversations. The research team also audio recorded conversations and meetings.

Nine Mentors in total consented to being part of the individual research conversations. The mentors were recruited through pre-existing relationships with university tutors, some offered to be part of the research through attendance at the Mentor Development Programme and some were specifically requested to be part of the research so that as wide a representation of mentors as possible was achieved. We aimed to represent the many different 'types' of mentors that work in partnership with us. Mentors participated in an elicitation exercise, where they had nine statements about mentoring to place in a diamond 9 ranking from most important to me to least important to me, a sorting activity and some semi-structured questions about mentoring in order to prompt conversations about their mentoring experiences. The 9 statements mentors were asked to place on a continuum from most important to me and least important to me were:

- 1. Holding weekly mentor meetings
- 2. Taking a diagnostic and rigorous approach to documentation
- 3. Monitoring records and files
- 4. Engaging in moderation and assessment
- 5. Ensuring a coherent and evidence based focus on progression
- 6. Knowing them well enough to offer support when required
- 7. Ensuring an effective dialogue is maintained between stakeholders so that timely action can be taken if required
- 8. Encouraging independent self-reflection and ambitious target setting
- 9. Undertaking observations that are focused on pupil learning and are used diagnostically to assess progress

Getting to the stage of conducting the interviews was demanding. One of the most valuable exercises for the team was piloting the research activities and questions. It

gave them the opportunity to see an interview in progress with a volunteer mentor who attended one of the research meetings and learn that the questions and activities that they had designed induced a strong response. We had asked the mentor about a time that had challenged them as a mentor and they told us a story about how one of their students had turned things around, tearfully as Pippa recalls:

'When we introduced ourselves as novice researchers this was the first opportunity for me and some of the group to collect data so we started with a role play interview and we invited a mentor in for a trial run. A learning experience was that we produced an emotional response in the mentor demonstrating how powerful interviews can be for participants'. (Pippa, Reflection, September 2017)

This helped to reassure us that we had connected with what was important to mentors. We believed that our questions were appropriate and would prompt conversations about mentoring:

- *How are you supported as a mentor and by whom?*
- *Can you describe the process of observing and feeding back of an observation of a student teacher?*
- *What has been the impact of the changed role of the link tutor on this process?*
- *Can you tell me about a time when you felt that you were effective as a mentor?*
- *What was it that made you effective and how did you know that you were effective?*
- *Can you tell me about a time that challenged you as a mentor? (What would you have hoped had happened?)*
- *Where did you place this school in terms of the PEF and what do you understand by the terms 'effective mentor'?*

We felt sure that these carefully considered questions would tell us about individuals' experiences of mentoring and proceeded with piloting our interviews. We then arranged for the Head of School to attend our meeting to share the results of our pilot interviews in February 2017. As it turns out, this marked a turning point for the research project in that these were not favourably received meaning that we had to substantially revise our research questions and approach. This was a painful process, particularly for the research lead who recalls:

'The Head of School turned up to our meeting to hear the results of our pilot project and for us to share our work so far. I had shared the questions during one of my regular briefings and we had worked on the wording so it was a surprise to me to learn that we were on completely the wrong tack. We were not asking the right questions about what enables and creates barriers to mentor development. This was the essence of the evaluation project. Had the changes that had been implemented had any effect or not? As the leader of the project, I felt like I'd led the team off a cliff. We were encouraged to take a more creative approach and began designing all sorts of ambitious methods to gather data on these but I have to admit, it felt like it was a struggle to get through the rest of the meeting'. (Katy, reflection, February, 2017)

However, despite this setback, we revised the questions and changed our approach in order to ensure that we were more sharply focused on collecting data about what enabled or created barriers to mentoring. We retained the sorting activity elicitation exercise and amended the semi-structured questions. We also created a mind map to allow mentors to focus on their own development so that we could consider how we might best support this. The main phase of the research aimed to involve a wider representation of mentors in answering the following questions which we hoped were more focused on learning about what supported or created barriers for mentors:

- *If you were writing a job description for your role to hand over to a new mentor, what would be on it?*
- *Using these statements provided (mentoring statements on diamonds), please place the statements in a line from most important to me to least important to me and talk through the reasons for your choices.*
- *Is there anything that is not there in the statements about mentoring that you think should be?*
- *What factors have had the most impact on the development of your mentoring role in recent years*
- *Have any of the following processes, events or relationships contributed to your mentor development (if not already mentioned)? Can you explain how?*

Processes: *Partnership evaluation framework, Student feedback from placement surveys, Partnership agreement*

Events: *Initial mentor training, Mentor development programme, attending partnership area meetings, attending specific mentor meetings, attending conferences,*

Relationships with others: *Link tutor, other mentors and teachers, other mentoring and coaching programmes*

Now that they had acquired the data, the team needed to find a way of making sense of it however, this was not a straightforward task. At one of our day long meetings, we sat surrounded by piles of data, discussing how best to go about finding out what it was telling us. As Jill recalls, this felt quite paralysing at the time:

'The team now had a wealth of data but the interesting thing is the way in which they were somewhat overwhelmed by it and had to find a systematic and meaningful way of analysing it- and the realisation that this wasn't mysterious but that they were well equipped to do once they had decided how' (Jill, reflection, September, 2017)

Organising the data in themes helped the team to overcome 'data paralysis'. This task was initially spurred on by Jill who modelled it to the group and the group took up the challenge of making meaning from these findings. This meeting turned out to be one of our most memorable and rewarding experiences. As we created mind maps and diagrams together, it was clear that the whole team was involved and highly motivated with this task. They felt competent to undertake it.

5. Findings and discussion

Data was categorised and sorted according to emerging themes (Strauss & Corbin, 2009). The emerging themes were subsequently used as a basis for further analysis according to Kemmis' theoretical framework by constructing a table according to Kemmis' architectures and placing the data within this (Kemmis et al., 2014). Subsequently, we also used this approach to analyse our own development as researchers.

It was through this process of data analysis in order to understand what had the biggest impact on the development of mentoring that four clear emergent themes became apparent:

- Knowledge of own principles in order to develop a sense of purpose and the confidence to mentor
- Opportunities to make sense of processes and frameworks for mentoring and understand what is required
- Having support and resourcing for mentoring to aid understanding what is, and what is not possible
- Developing relationships and reflecting on these to develop pedagogically excellent mentoring practice

Mentors clearly acknowledged and expressed their own firmly held principles and could explain how this has led to a sense of purpose and confidence in what they are doing. They also felt that the new way that they were now working offered opportunities for them to make sense of the processes and frameworks designed to support them. The partnership evaluation framework and documentation that outlines expectations, along with attending placement lectures with students, all supported their understanding of the components and aims of the initial teacher education programmes. Support and resourcing was valued and felt to be having an effect as it helped to delineate where the boundaries of mentors' roles and that of the link tutors met and helped them to understand what was and what was not possible.

Mentors also drew clear links between developing relationships with link tutors and student teachers and saw how these aided the development of pedagogically excellent mentoring practice: for example, they valued link tutors conducting joint lesson observations along with positive feedback from students and school colleagues.

Discussing what supports mentors' professional development as mentors through our findings from the project was the point at which we realized that this also supports us as researchers too! We continued to consider these factors alongside a consideration of our own development as researchers through reflection and discussions which we systematically recorded using audio, reflective pieces, conversations and emails. We substituted the word mentoring for researching and we saw that the same things appeared to support us too.

Looking back over the project, frameworks and structures were essential to our learning as researchers. Jill had encouraged regular meetings and communications during the initial stages. Seizing diverse opportunities as they arose were also important, such as applying for funding for an international study visit to the Netherlands where two members of the team observed an educational system with similarities to our own along with some fundamental differences (e.g. emphasis on research in developing pre service teachers). This helped us to question our own practice and sparked some really interesting conversations about possibilities. We put ourselves forward for two faculty conferences and presented papers at them and the Head of School identified the Association of Teacher Educators October conference as an international opportunity for us and enabled us to apply for faculty funding to attend. In addition to this we have taken advantage of faculty arranged writing away-days and this is where we collaboratively wrote our first, article which is going to be published in a professional development publication for teachers.

'The opportunities keep coming and, as we take on these risky activities, we are slowly becoming people who feel confident to call themselves researchers'. (Hannah, conversation, July 2017)

We have had to decide what was realistic in the time that we had and we shared out the responsibilities for the project between us and brought our learning back into the group. We have developed strong relationships within the group as a result of regular reflection and consideration of practice.

'The collaboration works within the group but there is also a need for each individual to work independently to gather evidence, do writing and so on and this is what fuels the group. Colleagues have been willing to be honest and make themselves vulnerable, making the group meetings a safe space without which the work could not have progressed as it did' (Jill, reflection, September 2017)

Being in a group that enables the members to expose their vulnerabilities is crucial in supporting teacher educators' professional learning (Wilson, Jordan-Daus & Vincent, 2014; Vanassche and Kelchtermans, 2016). We both support and challenge each other and this has meant that we are in a good position to support new members this year. We have become self-sustaining. Whilst there are still relationships of hierarchy and dependence, there is clearly some sort of apprenticeship of learning happening (Vanassche and Kelchtermans, 2016).

'Another risky activity for me was to lead a workshop in the Partnership Conference last month. Last year, I attended the conference for the first time, looking up to the workshop leaders that presented. This year I led a workshop. It was terrifying for me to be sent a list of the participants and their roles for my workshop a couple of days before the conference. What could I share that would be of interest to people of this calibre? It has struck me today, that fear is a real barrier to creativity'. (Hannah, reflection, July 2017)

Taking a risk and participating in new research activities requires courage and determination. Going public with our work was acknowledged as being scary and

placed the team in a vulnerable position. We were sharing our research about mentoring at our own mentoring conference held in our university and therefore opened ourselves up to critique. We also began to write about our experiences for publication. This was a defining moment for one of the team and demonstrates the beginnings of the development of a research identity (Griffiths et al., 2014; Swennen, Jones, & Volman, 2010).

6. Conclusion

There is growing recognition that successful professional development programmes articulate 'well thought through ideas about the learning process' (Moon, Butcher, & Bird, 2000 p4). This research team has benefitted from the thinking of the senior leaders within the faculty. An important part of this is in the induction of new professionals through collaborative self-development opportunities. Building independence and resilience as well as encouraging pro-activeness and initiative together are an important way of achieving this. A sense of purpose also appears to be important. The research team have benefitted from the mentoring approach taken by the Head of School and Research facilitators and critical friends to the project. Personal support appears to be equally important to mentors and teacher educators; both the collaboration and teamwork that the partnership fosters in order to support student teachers as well as support provided for their individual roles.

Mentors are very conscious of their responsibility as 'gatekeepers to the profession'. In a similar way, the Head of School and Jill, as experienced research facilitators, aim to uphold standards. They recognise this as a challenging and demanding aspect of their roles. In recognising the need to ensure that professional standards are kept, they acknowledge that there is a requirement to act if these are not upheld. This was seen in the meeting where the team discovered that their research questions were not appropriate. Being a mentor and guide does not appear to be without its tensions.

While the faculty organises many opportunities for teacher educator researcher development, what appears distinctive in this research has been the opportunity to participate in and generate ideas for a live research project affecting both our daily work and the future of our faculty. We all share a sense of mission, which is to raise the status of mentoring and recognize the value of professional learning but we have come to realise that our own professional learning as teacher educator researchers is also integral to that of our mentors' professional learning. All aspects of this are interrelated as we seek to make meaning and move forward together.

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How would you like to demonstrate your expertise? Implementing personalized study paths in professional teacher education at Oulu University of Applied Sciences, Finland

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Abstract:

In competence-based education, individual demonstration and development of knowledge is enabled via personalized study path. This article describes the personalization of competence-based teaching practice through academic years of 2014-2017 in the School of Professional Teacher Education in Oulu. Seventeen teacher students participated in the personalized teaching practice that is described in this article. The students planned and implemented their personal study plan under supervision. The students' participation, which is one of the main principles of competence-based education, was consolidated in the teaching practice guidance. By adding the teacher students' freedom of choice and responsibilities of the planning and implementation, they had the opportunity to advance by their own schedule and they were able to demonstrate their competence in ways that were suitable for them personally. This article demonstrates how the students' advanced in the different stages of their teaching practice process. A model for competence-based teaching practice was made, and it describes the different stages of the process and the roles of the teacher students and tutors in those stages.

Keywords: competence-based education, participation, personalized study path tutoring, teaching practice, professional teacher education

1. Teaching practice as a part of professional teacher education

In Finland, professional teacher education is suitable for teachers of universities of applied sciences, or vocational schools. The program consists of 60 ECTS, which include basic studies of education, pedagogical studies, teaching practice, and other studies. (Act on Universities of Applied Sciences, 932/2014; Decree on Universities of Applied Sciences, 1129/2014.) The students of professional teacher education come from a heterogenic field of professions, and they all are experts of their own field. However, the students can have different levels of pedagogical expertise. Some of the students may already have teaching experience, when they start the program, and some may not.

The School of Professional Teacher Education in Oulu has developed competence-based teacher education since 2011. Because of that, all teacher students have had a chance to attend competence-based teaching practice since 2014. Teaching practice was chosen as the starting point for competence-based conduct, because it is a significant part of professional teacher education, and therefore it should be under ongoing research and development. Teaching practice planning should be on the focus, because several studies show that loosely planned and guided teaching practice does not advance a student's development (Feiman–Nemser & Buchmann, 1985; Zeichner, 1996; Zeichner, 2010). Competence-based conduct aims to enable students to advance in studies in their own pace, and to recognize and acknowledge the students' previously acquired expertise as extensively as possible. The teacher students plan the implementation of teaching practice, evaluate their own know-how, acquire more competence, and choose the method to demonstrate their skills. No learning tasks are provided for them. The teacher students are responsible of the ways they acquire and demonstrate their know-how. The aim is to recognize and acknowledge the students' already existing skills as diversely as possible in their professional teacher education. In addition, we aspire to give the students a chance to participate and influence the planning and implementation of their own study paths.

In Finland, competence-based education is widely practiced in vocational education and in the universities of applied sciences, so it is not a completely new policy. However, the practical implementation of competence-based education may vary in different educational levels and different academies. Competence-based education, as we describe it, requires that the students evaluate and reflect their conduct, and are responsible of acquiring, recognizing, and acknowledging their own expertise. At the same time, the teachers and organizers of the training must have skills to enable the students' participation in the planning and implementation of their personal study paths. Personalizing competence-based curricula may be challenging, because the students' may be insecure in planning and participating, and teachers may not have the skills, or may not have the fortitude to recognize and acknowledge the students' expertise. A teacher must have courage to acknowledge students' competence by different types of documents, or demonstrations of skills. A display of expertise does not always require common tasks, or a demonstration for inspectors.

In the competence-based conduct that we have described, the teacher students' study paths were personalized. In this description of competence-based conduct, we define personalization as pragmatic actions, in which a student and a teacher agree on the manners that the student will use to acquire, recognize, and demonstrate one's expertise. Each teacher student planned a personalized study path, which was then put to practice. In this article, these personalized study paths will be called Personal Study Plans (PSP).

17 teacher students, five females (F), and twelve men (M), participated in the personalized teaching practice described, in the School of Professional Teacher Education. All participants had previous experience of teaching: eleven was working, or had worked as teachers in vocational schools, and six of them had taught in

universities of applied sciences. The goal for the participants' teaching practice was to acquire the skills that are required in the curriculum. The writers of this article, two teacher educators, tutored the participants.

The goals for developing the competence-based teaching practice were:

- to recognize a participant's previously acquired expertise, and to compare it to the skill requirements of teaching practice,
- to endorse and guide a participant's involvement in planning and implementing the plan, and
- to plan a process model for acquiring, recognizing, and acknowledging expertise in teaching practice.

In this article, we describe different phases of the competence-based teaching practice, the students' advancement, tutors' observations, and the process model, that resulted from the experiment. In the end we will reflect the different styles of guidance, which were used during the teaching practice.

2. Competence-based teaching practice in the School of Professional Teacher Education

Competence-based conduct is based on the curriculum that defines learning objectives, which includes the knowledge, skills, ethical abilities, and attitudes students need to develop and attain during their studies (Mulder, 2012). The learning objectives for professional teacher's teaching practice define what a student should achieve during practice. The learning objectives also refer to the ways and situations, in which one is able to prove one's competence. Therefore, the learning objectives must only describe the kind of know-how that is attainable, and also measurable in the study context.

Competence-based conduct also has principles about how students and the educators actualize the demonstration of competence. The concrete actions may vary, but the common goal is to gain and demonstrate competence, not just get through the studies. In the competence-based teaching practice that is described in this article, the principles were: personalized study paths, free scheduling and professional relevance.

In addition to these principles, enabling the students' participation, responsibility, and freedom was a significant pedagogical solution. In competence-based education students are active participants, and therefore they are personally committed to plan and implement their studies. Participation means that when a personal study plan is made, all stakeholders – the student, the teachers, and the other students in the group – are involved in setting the objective, planning, implementing, and evaluating the process. Participatory pedagogical conduct emphasizes communality, reciprocal learning, and commitment. (Hooks, 2007, pp. 41–53; Stenlund, 2011, p. 13.)

Next, we will describe, how participation, personalized study paths, free scheduling, and professional relevance actualized in the teaching practice described in this article.

3. Teacher students' participation in the planning and implementation of their personalized study paths

Participatory pedagogy emphasizes student-based conventions. The teacher students chose the ways to actualize the learning objectives of teaching practice. The teacher students were independent and responsible actors in planning and implementing their studies, development and expertise, and therefore they were able to be active participants.

The average age of professional teacher students is over 40 years, and they often have extensive work experience in their field, and a suitable degree, before they start teaching (Mahlamäki-Kultanen, & Nokelainen, 2014, p. 23; Robertson, 2008, p. 11). The teacher students were experts in their own field, and had know-how, and insight about teaching their own subject. For them, participating competence-based implementation meant, that they were able to commit personally and effect the course of actions. Thus, they were also responsible of the consequences. They were able to have a meaningful study experience.

In the beginning of the teaching practice, the teacher students explored the learning objectives in a peer group. Participation meant, that the students' evaluated their own, as well as the other students' expertise. This enhanced their awareness of their own know-how, and eased them in planning their PSPs. Because the group consisted of people of different ages and professions, and different experiences of teaching, the peer discussions expanded everyone's understanding of personalized and flexible study paths. Peer group helped everyone to recognize their own – and the others' – expertise. Previously attained know-how of the participants was revealed to the group, and it enabled the teacher students to have a new way of thinking about diverse ways to demonstrate one's expertise, and flexible ways to complete studies (Simmons, Barnard, & Fennema, 2011, pp. 88–94).

To be able to be responsible of one's studies, one needs freedom. In participatory pedagogy, a student needs freedom to be able to develop and demonstrate expertise in a suitable way and time. In the teaching practice we have described, all students planned their personalized study path to acquire and demonstrate their expertise.

A teacher is an important aid in participating students. In participatory pedagogy, a teacher is a guide, a supporter, and a manager of the learning context. A flexible teacher encourages students, enables personalized study paths. Challenges and risks draw students out of their comfort zone. To succeed in this, a teacher needs to guide, create, and maintain study conditions in a cooperative context. (Simmons et al., 2011, pp. 88–94.)

4. Personal study plans in teaching practice

In competence-based teaching practice, each teacher student implemented a personal study plan. In practice, it meant that the teacher students evaluated their own expertise, and planned and implemented their PSP. In the implementation, the

students' life situations, previous expertise, and learning requirements were taken into consideration. The personalization effected, for example, the content and length of teaching practice, and the demonstration of expertise.

Teaching practice started with an orientation phase, which included exploration of the learning objectives independently, and in a group. Since the students of the School of Professional Teacher Education are from various fields, the learning objects are general, and not targeted to a certain field of expertise. Reciprocal reflection helped the students to connect the learning objects to their own fields of expertise.

The goal of the group discussions was to help the students develop in reflecting and recognizing their own expertise. With the help of reflection, the teacher students can develop as educators during their studies, and in work life. Teacher education studies have revealed that sometimes teacher students' reflection might be superficial (LaBoskey, 1995, p. 30; Ostorga, 2006, p. 6). In order to deepen the reflection, we used peers and tutors, and aimed to combine practicality with theoretical reasoning (Happo, & Lehtelä, 2015; Korthagen, 2011). Tutoring, which aimed to recognize expertise, was built on conversations, and the students' self-evaluations. During tutoring, the teacher students were supported in recognizing their theoretical and practical expertise, and combining them in teaching in vocational education learning environment. With the help of gradual reflection, the teacher students' individual, theory and practice combining theories developed.

Tutoring was provided throughout the process. Teacher students compiled contexts and implementations that best suited their development. They created personal study plans based on the learning objectives, in which they described the methods they would use to acquire more expertise, and the ways to demonstrate it. The reflective conversations lasted approximately one or two hours, and often one or more extra conversations were provided to help the students with the self-evaluations and personal study plans. Guidance was based on the conversations, and enhanced the teacher students' awareness of their know-how, and the various ways they could demonstrate their expertise. During tutoring the students had a chance to present different types of reliable documents, such as formal records, evaluations, statements from employers and colleagues, et cetera. Based on the documents, the final form of the personalized study path was formed. It included the teacher students':

- self-evaluations,
- a suggestion for recognizing previously acquired expertise, and
- a plan for obtaining and demonstrating the rest of the required learning objectives.

The teacher students' process of demonstrating their expertise "lived, developed and changed its form" individually, as one of the students (M 14) described it. Some of the teacher students worked independently, and some needed more peer support and personal guidance. The critical challenge in the process was becoming aware of, and recognizing ones' expertise. During tutoring, the tutor often recognized the teacher students' expertise, even when the students themselves were unable to recognize or

conceptualize it. That is why self-evaluation was perceived as difficult in the beginning. Transforming learning objectives to one's own comprehensible language required guidance and reflection with peer group and tutors. At first, the students' self-evaluation may have been written in performative language, describing the tasks they have performed that are related to the learning objectives. The next quote will describe the teacher students' performative language in the beginning of self-evaluation.

Learning objective: Teacher student collaborates with the work community and work life actors.

"Team meetings every other Monday." (M 5)

Work experience, and taking part in some activity does not as such describe expertise, but rather experience. As a result, from experience and reflection, the teacher students' self-evaluations changed. Teacher students' descriptions showed that they were able to recognize, evaluate and describe their expertise.

Learning objective: Teacher student plans, implements, and evaluates learning process based on the curriculum.

"I am able to apply learning enhancing teaching methods, such as lecturing and communal learning. I am also capable to apply basic principles of teaching, for example, demonstrations and activation." (F 7)

5. Free schedule in teaching practice

One principle of competence-based conduct is free scheduling. It means that acquiring and demonstrating competence is not tied to a certain time or a certain number of hours in teaching practice. Instead, the expertise of a student is under examination. No schedules, learning paths, or assignments are given to the students: the students are responsible for familiarizing themselves with the learning objectives, and based on them, the students need to describe in the planning phase how, and where they will acquire the demanded skills, and how they will demonstrate their expertise. If the students have previously acquired expertise of the learning objectives, they can present that expertise, or demonstrate it in the personalized study path. An essential basic idea of competence-based conduct is: It does not matter where one has acquired their expertise, it is still expertise (Haltia, 2011). The students' responsibility in competence-based studies is substantial. It means that students work on and take responsibility over their own learning and acquiring new skills. (Stenlund, 2011.)

In the implementation described in this article, the teacher students started to familiarize themselves with the learning objectives in peer support groups, and by themselves. They were responsible for finding out what the learning objectives mean, and how it should, or could be demonstrated. Because of free scheduling, the teacher students advanced by their own schedules and they contacted tutors when necessary. During the process, the teacher students had as much time for the guidance as they needed.

6. Professional relevance in demonstration of competence

The learning objectives are based on work life requirements. Also, professional relevance, in this context, meant that the skills were acquired in work life, and demonstrations of competence were given in authentic environments. Teaching practice for educators' learning objectives require mainly the kind of expertise that one cannot acquire outside genuine teaching environments. Some of the learning objectives can be demonstrated, for example, in writing, or in orally, but the expertise that a student needs to acquire during the practice, is always closely related to a teacher's work in an academy. When a teacher student worked as a teacher during one's studies, acquiring and demonstrating expertise was a natural part of the work.

For their personalized study plans, the teacher students planned individually for each learning objective, how and where they would like to acquire and demonstrate their expertise. By demonstration of expertise, we mean in this context, all the individual ways and means, in which the teacher students can demonstrate that they master the skills that are described in the learning objectives. Also, the expertise that had been recognized during self-evaluation was demonstrated in accordance with the personalized study plan, if needed. The following quotes describe the parts of personalized study plans, where the students describe their plans about teaching environments:

Learning objective: The teacher student utilizes appropriate teaching and guidance methods and takes different types of learners to consideration.

"I will give a lesson about forestry and timber harvesting, and demonstrate my acquired skills during the lecture. I will invite the teacher tutor to review the teaching." (M 10)

Learning objective: The teacher student reflects one's own actions as a vocational teacher.

"I will keep a journal during the practice. I will write down the actions, and notes about successes and failures. I will reflect, when I contrived, and which parts of my work need further development." (M 12)

Most of the learning objectives connect with authentic teaching situations, guidance, or other tasks that are linked to education. In the action phase of demonstration of expertise, all seventeen teacher students chose their genuine work environment as one way to demonstrate their skills, and they invited the teacher tutors to join the classes and evaluate them. The demonstrations combined many learning objectives most of the time: a student proved expertise, and a teacher tutor evaluated it. These demonstrations often included other, demonstrative documents, for example, lesson plans in writing, or safety records. During the semester, demonstrations were given and evaluated in, for example, a forest, a workshop, a classroom, a personal tutoring situation, a blasting site, a hospital, and a hair salon.

7. Tutoring for recognizing, acquiring, and demonstrating one's expertise

This article describes competence-based teaching practice principles: participation, personal study plans, free scheduling, and professional relevance. These principles required that the teacher students took responsibility of the planning and implementation of their studies, and the tutors needed to be flexible, and take every student's needs into consideration in the guidance. The teacher students, as well as the tutors, were responsible of advancing the project. Compared to the students' previous study experiences, the setting was different, because the teaching practice did not have a ready study path, schedule, and assignments, but the students' designed their personal study plans.

In competence-based curriculum a student's path is not predetermined. The plan and implementation depend on the students' previous skills, preparedness to study, and some preconditions, that the students, and the educators cannot affect, such as common learning objectives, and possible restrictions of the study time. Anyway, the premise is the students' own involvement in the planning of the implementation, and therefore the tutoring should always be dialogical. Dialogical tutoring means that the goal of the interaction between a student and a tutor is not to find a final, right answer or conclusion, but to combine possibly different views (Bakhtin, 1981). The aim is to equally consider and familiarize with the student's expertise, and how to recognize and demonstrate it.

Responsibility of planning and implementing one's own studies requires self-directing skills from a student. Self-directing normally means self-directing learning, which includes the learning process, as well as a student's preparedness for self-directing learning (Knowles, 1980). However, self-directing does not mean that a student is left with a major responsibility of the entire learning process. During studies self-directing can be enhanced with participatory techniques and methods. All participants had the opportunity to take part in shared reflection, and the tutor's needed to choose the kind of methods that encouraged the teacher students to participate in reciprocal conversation.

The teacher students had an opportunity to act and advance independently, and timely guidance was offered to them throughout the process. By timely guidance, we mean the kind of tutoring that is given based on the students' needs, in the time of their choice and in the manner of their choice. Though the evaluation and feedback phase happened mostly during the latter part of the process, the tutors gave the students feedback throughout the process, during guidance. Therefore, the aim of tutoring was also to keep up the motivation, and to support professional growth in a wider sense, than just for a particular course's learning objectives.

This kind of competence-based guidance sets special requirements for the tutor and guidance sessions. A tutor must recognize the students' needs for guidance, and choose the right methods for each student. In a study that analyzes the conceptions of teaching practice supervision, Perunka (2015) has defined three dimensions of supervising. In practical dimension, guiding a teacher student's practical skills are

emphasized in normative instruction, which is given as immediate feedback. In humanistic-constructive dimension the instructor aims to support the reflecting and autonomy of a student with open, initiative questions. The goal is that a student becomes aware of one's own learning theories, and his or her personal teacher identity develops. During inquiry-based dialogic dimension, the instructor and student encounter as equals and aspire to observe learning and teaching situations as phenomena, and to develop, for example, new pedagogical solutions. In the teacher training described in this article, the relationships between tutors and teacher students realized the humanistic-constructive dimension in most occasions. It guided the teacher students to reflect and become aware of their own actions and expertise. This type of guidance supports students' participation and genuine, competence-based learning.

8. Conclusion

In this article, we described the personalized processes of the teaching practice of the students of the School of Professional Teacher Education in Oulu. It started with orientation phase, in which the students familiarized themselves with the learning objectives and recognizing their own expertise in peer groups and by themselves. In the planning phase the students designed the ways to acquire expertise, and how they would demonstrate it. In the implementation phase the students acquired and demonstrated expertise in the ways they had designed in their personal study plans. In the evaluation and feedback phase the students' expertise was evaluated, and they received feedback based on their skills of that time. Via dialogic reflection, the teacher students also recognized some areas to develop further. A tutor from the School of Professional Teacher Education guided and supported the students throughout the process. During the process the tutors evaluated their skills, and if those skills matched the learning objectives, tutors gave recognition of the students' expertise.

As the phases advanced, the process took shape and clarified to all participants. In the following process figure, (see Figure 1) we have designed a model of the implementation of competence-based teaching education, based on the personalized study paths of teacher students. From the students' point of view, the process was not tied to a certain time or location. We have aspired to reduce the process to the extent, that it can be applied to other competence-based studies as well.

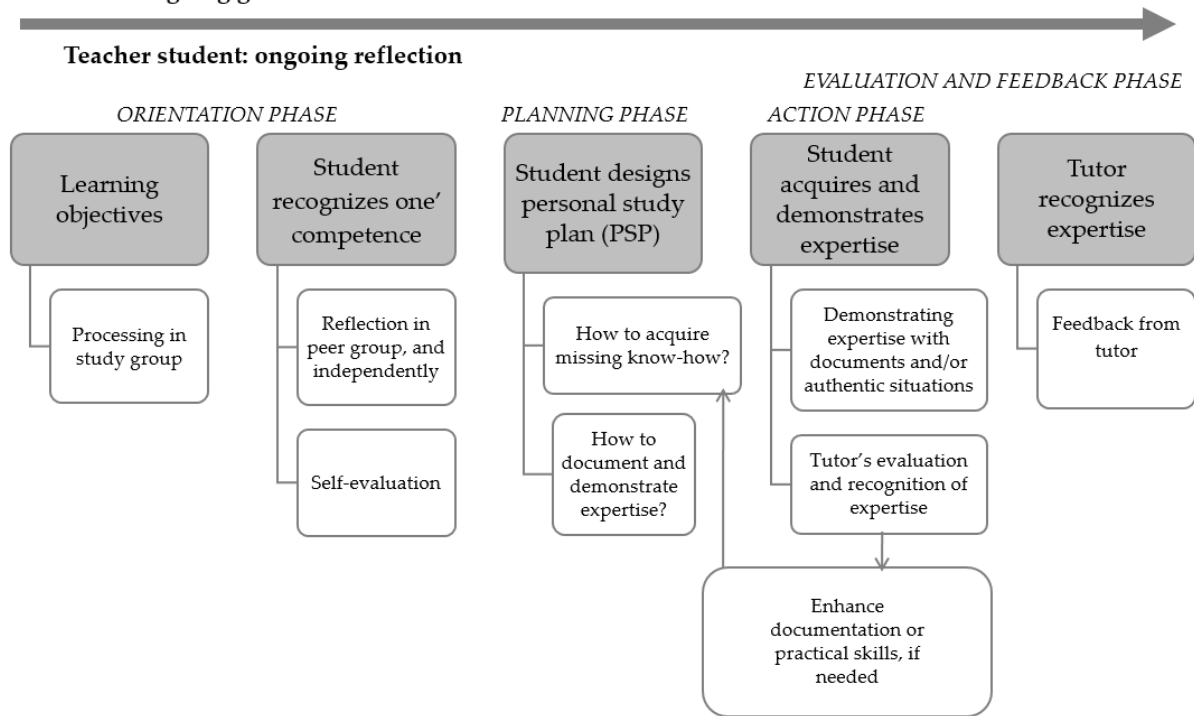


Figure 1. The process of implementing a teaching practice based on personal study plan

As tutors, we experienced that the teaching practices were implemented well, based on personal study plans. All participants ($n=17$) finished the process, and they developed their skills to match with the learning objectives. They all had previous experience of teaching, and they evaluated that this way to implement the process was motivating and suitable for them. However, the start was not straightforward for all participants. Self-evaluation was challenging, and conceptualizing and describing one's own expertise was demanding. Reflection in peer groups, and guidance sessions with tutors helped everyone to move forward in the process. Some of the teacher students had difficulties to receive the freedom to design and implement their own studies at first. As the process advanced, they become more conscious, and the teacher students were empowered as they took over their own studies. Empowerment is a personal and social process, which is built inside a person, as an inner process (Siitonen, 1999). This process should be supported, when competence-based curriculum is implemented. In competence-based conduct, principles of personalization and participation, freedom and responsibilities, are closely connected to the feeling of empowerment (see Siitonen, 1999). Competence-based curriculum and personalized study paths give an opportunity to educators to offer freedom and responsibility, and a chance that the teachers and students just need to take, even though it takes courage. Students' empowerment is an asset to everyone. It could be said, that in competence-based studies, empowerment is the ideal situation between a student's choices and the educator (see Siitonen, 1999).

Guiding competence-based studies challenges teachers in a new way. A teacher's work changes from ready-planned teaching and guidance more towards situational actions.

Decision-making skills are seen as a specially important skill in teaching (Ryan, & Cooper, 2004, p. 148). A tutoring situation always consists of many factors and mechanisms, and there is not one, single theory that leads to guaranteed solution. It could be said, that pedagogical solutions are scarce, because pedagogical theory does not provide a model that is suitable for every tutoring situation at hand. However, different instruction methods and theoretical skills strengthen expertise. One can structure tutoring in the light of different theories, and it will support pedagogical decision-making. (Hilpelä, 1998, p. 31; Perunka, 2015.) Every tutoring situation is meaningful, and it challenges a teacher to reflect upon the quality, meaning, and appropriateness of one's actions, because often there are several suitable solutions for a student (Suoranta, 1997, p. 149). In teacher education, teacher students should experience competence-based studies, and how it is instructed, so they can start form a relationship with it, and use it in their own work as vocational teachers.

Students have always demonstrated their expertise. The essential part of what we have described, is the change of direction. Previously, the teacher made the plans and explained to the students what they already know, and how they should study, but in competence-based education the question is: "How would you like to develop and demonstrate your expertise?"

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Austria's innovative initial teacher education reform

Which academic teaching competences do first semester students expect from teacher educators?

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Abstract:

Academic teaching is a core quality indicator for higher education institutions in general. University colleges of teacher training, being responsible for initial and further teacher training, play a specific role in this context. Teaching and learning is not only focussed on subject matters, but also on didactics. Student-teachers are taught how to teach, and every single teacher educator functions as a role model.

Recently, Austria's academic programme for initial teacher education has undergone a fundamental reform in order to foster quality. Its aim was a substantial development of the study program, ensuring a competence-based education up to master's level for all teachers and enabling graduates to acquire the professional as well as scientific qualifications and competences needed in today's classrooms. It can be assumed that these fundamental changes have multi-layered implications for academic teaching and the quality of teacher education.

In order to accompany this critical phase, a longitudinal study based on a multi-perspective and mixed methods approach is being conducted at the University College of Teacher Education Styria. The focus lies on perceptions of and experiences with academic teaching. In this context the TCM-S serves as a reference framework. The TCM-S is a general teaching competence model that has been developed and implemented as a common framework by nine Styrian HE institutions. This paper gives insight into the teacher reform as well as into the characteristics of the TCM-S. First results of the quantitative part of the study among first semester students (N=210) about their attitudes towards and expectations of academic teaching are presented and discussed.

Keywords: Competence model for teaching, human resource development, students, competence-based teacher education, curricula development

1. Introduction

Quality enhancement in higher education is described as a mainly prospective process in order to improve teaching and learning (Biggs & Tang, 2011, p. 294). Not surprisingly, competence development is seen as one of the internal key factors in this context (Nygaard, Courtney, & Bartholomew, 2013, p. 6f.).

With regard to teacher education, this key factor has been challenged due to the implementation of the new teacher education in 2015 in Austria. This reform has prompted a paradigm shift at the organisational level and presumably for academic teaching at university colleges of teacher education, as well.

At the same time, Science Space Styria, a network of all tertiary institutions in Styria, has addressed the importance of teaching competences by its commitment to the development and implementation of a common teaching competence model (TCM-S).

Both developments, which are described in detail in chapter 0 and **Pogreška! Izvor r eference nije pronađen.**, led to the need for conducting research on teacher educators' teaching competences. On the one hand, first data have to be collected in order to test the empirical power of the TCM-S. In this context it needs to be emphasized that teaching competences in the context of teacher education are of particular relevance, since teacher educators always act as role models in teaching for their students. This fact represents a remarkable difference compared to other academic teachers. Teacher educators need to teach the content just like all other academic teachers do, but at the same time they should have their didactics in mind for showing their students, who want to become teachers themselves, how to convey the content in an appropriate way. Therefore, their teaching competences are of high relevance for the students' learning process and their way of teaching. On the other hand, academic teaching practices have to be reflected with regard to the implementation of the new concept and the changed conditions for both stakeholder groups; teacher educators and students.

1.1. Austria's initial teacher education reform at a glance

The need for reforming Austria's education system has been in discussion and preparation for a long time. However, the reform was driven by Austria's disappointing PISA results in 2003 and 2006. At the same time, equal opportunities for all children became of particular political interest. In 2009, first expert groups were implemented by the government in order to discuss and design an innovative educational concept. Finally, in 2013, the legal foundation of Austria's initial teacher education reform – the legal framework for a new initial teacher education 2013 (Bundesministerium für Unterricht, Kunst und Kultur, 2013) – was established. On the one hand, this reform represents the change to the Bologna system. On the other hand, it ensures an academic and competence-based education up to master's level for all teachers, from primary school to upper secondary level. As a result, this reorganization is meant to lead to a substantial development of the study program, intended to enable the graduates to acquire the professional as well as scientific qualifications and competences needed in today's classrooms (Bundesministerium für Bildung, 2017).

Apart from this content-related change, the new teacher education system also means a paradigm shift at the organisational level of the participating institutions. Until the new curricula were implemented in 2015/16, teachers for academic secondary as well as for vocational schools and colleges were educated at universities at master's level, whereas teachers for primary and lower secondary schools received their initial teacher training at university colleges of teacher training at a bachelor's level. After obtaining their degree, graduates of the secondary level from universities were qualified to teach young people from 10 to 19 whereas graduates from university colleges proceeded to teach pupils aged 10 to 14. With the implementation of the new reforms, all teachers will be trained at a master's level.

In this context, it has to be pointed out that there is no comprehensive education provided at the lower secondary level in Austria. After the completion of four years of primary education, 10-year-old children can be sent to two different types of schools based on their performance in primary school. Academic secondary schools have specific entrance requirements, which inevitably results in a selection of children in the education system. This *“leads to segregation between a track leading to higher education and a track almost excluding students from higher education”* (Bertelsmann Stiftung, European Bureau for Policy Consulting and Social Research Vienna, & Economic Policy Center University of St. Gallen, 2017, p. 155f.) and reflects social segregation. Therefore, international studies have recommended establishing joint schools in order to abolish early streaming in the Austrian school system, which is seen as a great disadvantage for young people, especially for those coming from a poor social background (Bertelsmann Stiftung et al., 2017; OECD, 2012).

The core idea of the new concept of initial teacher training in Austria is a joint education for all secondary teachers based on a close compulsory cooperation between the two types of institutions, i.e. university colleges of teacher training and universities, with common curricula. In order to organise and implement the new teacher education, four cluster regions (see Table 1) were formed by the government. Each of them acts independently as collaborators responsible for developing and implementing teacher education in the respective part of Austria. As shown in Table 1, the cooperation in each cluster region does not only occur between different types of institutions but also across regional borders.

Table 1: Cluster regions of Austria in initial teacher training

CLUSTER REGION	PROVINCES	INSTITUTIONS
WEST	<ul style="list-style-type: none"> • Tyrol • Vorarlberg 	<p><u>3 University Colleges of Teacher Education</u></p> <ul style="list-style-type: none"> • Catholic University College of Teacher Education Edith Stein • University College of Teacher Training Tyrol • University College of Teacher Training Vorarlberg <p><u>2 Universities</u></p> <ul style="list-style-type: none"> • Mozarteum University Salzburg • University Innsbruck

CENTRAL	<ul style="list-style-type: none"> • Salzburg • Upper Austria 	<p><u>4 University Colleges of Teacher Education</u></p> <ul style="list-style-type: none"> • Catholic University College of Teacher Education Edith Stein • Private College of Teacher Education Diocese of Linz • University College of Teacher Education Salzburg • University College of Teacher Education Upper Austria <p><u>6 Universities</u></p> <ul style="list-style-type: none"> • Anton Bruckner Private University Upper Austria • Catholic Private University Linz • Johannes Kepler University Linz • Mozarteum University Salzburg • Paris Lodron University Salzburg • University of Art and Design Linz
NORTH-EAST	<ul style="list-style-type: none"> • Lower Austria • Vienna 	<p><u>4 University Colleges of Teacher Education</u></p> <ul style="list-style-type: none"> • Catholic University College of Teacher Education Vienna/Krems • University College for Agrarian and Environmental Pedagogy • University College of Teacher Education Lower Austria • University College of Teacher Education Vienna <p><u>1 University</u></p> <ul style="list-style-type: none"> • University of Vienna
SOUTH-EAST	<ul style="list-style-type: none"> • Burgenland • Carinthia • Styria 	<p><u>4 University Colleges of Teacher Education</u></p> <ul style="list-style-type: none"> • Catholic University College of Teacher Education Graz • Private University College of Teacher Education Burgenland • University College of Teacher Education Styria • University College of Teacher Education Carinthia <p><u>4 Universities</u></p> <ul style="list-style-type: none"> • Alpen-Adria University Klagenfurt • Graz University of Technology • University of Graz • University of Music and Performing Arts Graz

For teacher educators at university colleges of teacher training this reform implies a wider target group, since their students should be able to teach pupils not only at the lower secondary but also at the upper secondary level in mainly three different types of schools (new middle schools, academic secondary schools as well as vocational schools and colleges). With the new curriculum students have to choose two subjects and undertake education and training in four main areas: the discipline itself, subject related didactics, educational sciences and school practice. Throughout their bachelors' programme, which is designed as a concurrent model, they have eight different internships in schools awarded in total with 20 ECTS points.

The South-Eastern cluster region was the only one that started with the new teacher education at the primary and secondary level in 2015/16 (the other cluster regions started a year later at the secondary level). For both levels students have to pass entry assessment procedures (Neubauer et al, 2017).

Regarding teacher education for primary schools, the change was a little more moderate. Such training is still the responsibility of university colleges as it used to be before, but now it also follows the Bologna system with a bachelor's and master's degree. All four cluster regions had to start with the new concept for primary school teaching in 2015/16.

Concerning the qualifications and routes, the curricula for primary and secondary education correspond to the common practice in other European countries. Regarding their structure, a concurrent model has been chosen for both levels, whereas in other countries a consecutive model is predominant for upper secondary teachers (European Commission & Caena, 2014, p. 8).

It can be assumed that this novelty in teacher education also has a significant influence on the conditions of teacher educators' academic teaching at university colleges, especially with regard to the secondary level. As organizing teaching and learning is the core area of responsibility of university colleges, research focus must be put on teacher educators' teaching competences, especially in such a sensitive and critical phase. This is also considered relevant in the context of quality enhancement (Nygaard et al., 2013, p. 8).

1.2. Teaching Competence Model of Science Space Styria (TCM-S)

Teacher educators are highly relevant in the process of teacher education, especially for the quality of teachers (Boei et al., 2015, p. 352). Supporting the professional development of teacher educators has become an important matter for universities offering teacher-training programmes. Their competences are examined in numerous research papers (e.g. Zehnter, Taus, & Mallich-Pötz, 2013; Paetz, Ceylan, Fiehn, Schworm, & Harteis, 2011; Brendel, Eggenesperger, & Glathe, 2006). Mostly, teacher educators' competences focus on *specific competences*. For example, the pedagogical use of digital competences should be considered in order to prepare student-teachers for practice (Krumsvik, 2012, p. 273; Uerz, Volman, & Kral, 2018). Further investigations focus on a broad range of issues such as professional development of teacher educators, values, social competences and didactical skills (e.g. Lunenberg, Dengerink, & Korthagen, 2014; Loughran, 2014).

The *Teaching Competence Model of Science Space Styria* (TCM-S) was developed by Science Space Styria, which represents a community of all nine universities and university colleges in Styria, one of the nine Austrian provinces. Among other aspects, its aims are to strengthen higher education based on regional collaboration (Science Space Styria, 2015). In order to enhance the visibility of the Styrian higher education sector, one of the lighthouse projects was the development of the TCM-S. The procedure followed a clear structure: first, a group of experts reviewed existing specific teaching competence models (e.g. Trautwein & Merkt, 2012; Fiehn, Spieß,

Ceylan, Harteis, & Schworm, 2012; Stahr, 2009) and came to the conclusion that these models did not completely fulfil the following requirements:

- Must meet requirements of nine different universities according to their essential needs (5 universities, 2 universities of applied sciences, 2 university colleges)
- Must ensure the independence of institutions, fields, subjects and sectors

Thus, it was necessary to create a new teaching competence model. The TCM-S is influenced by the specific subject area and embedded within the context of the university or university college. Teaching attitudes and values provide the basis of the model. The three columns - methodological-didactical skills, institutional and contextual knowledge as well as social and personal competence - ultimately lead to teaching competence (see Figure 1).

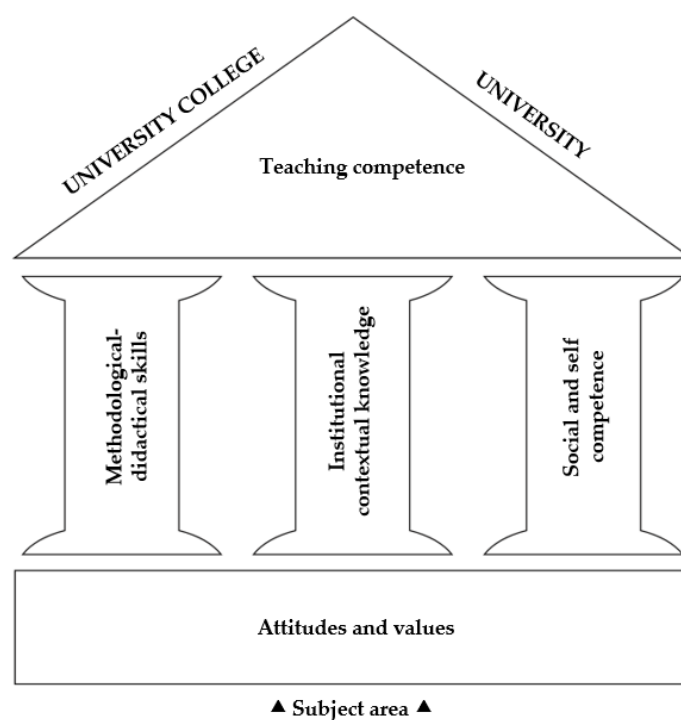


Figure 1: Teaching Competence Model Science Space Styria (TCM-S) (Salmhofer, 2016, p. 134)

Each competence consists of a number of *sub competences*, which are shown in Table 2.

Table 2: Competence areas and sub competences of the TCM-S

COMPETENCE AREA	SUB COMPETENCES
ATTITUDES AND VALUES	<ul style="list-style-type: none"> • Respect and empathy • Diversity awareness • Openness to self-reflection
METHODOLOGICAL AND DIDACTICAL SKILLS	<ul style="list-style-type: none"> • Student-centered teaching • Managing heterogeneity • Research-based teaching • Planning skills • Digital competences • Consulting skills • Grading competence

INSTITUTIONAL KNOWLEDGE	CONTEXTUAL	<ul style="list-style-type: none"> • Evaluation competence • Contextualisation • Teaching organisation • General conditions • Networks
SOCIAL AND PERSONAL COMPETENCE		<ul style="list-style-type: none"> • Communicative skills • Teaching in English • Conflict management • Self-organisation ability

Salmhofer (2016, p. 133) summarised the main competence areas in an overview: *Attitudes and values* include fundamental attitudes and values based on personal teaching and learning experiences. They provide a framework for acting in different situations and teaching settings. These values are further influenced by the subject area and the university culture. *Methodological and didactical skills* involve a range of learning and teaching methods as well as theories of learning. *Institutional and contextual knowledge* refers to the organisation itself, e.g. strategies, aims, processes and structures of the university. In addition, European developments and national initiatives regarding academic teaching issues are important. *Social and personal competences* represent the final column of the TCM-S. It consists of communicative skills but also language skills and abilities of self-organisation.

The TCM-S can evolve to a reference framework for the development of academic teaching competences addressed by the Science Space Styria. The long-term aim is that future higher education concepts and initiatives may utilize the TCM-S as a general model of professional development of university teachers. In this context, this model may be used for systematic monitoring as an instrument for self-assessment for teacher educators regarding their students' learning and teaching as it is recommended by the European Commission (European Commission & Caena, 2014, p. 6). This is also the case for the University College of Teacher Education Styria (Matschek-Jauk, Teufel, & Amtmann, 2016, p. 219f.). Since it has been developed among higher education institutions in Styria, its implementation could represent a unique quality criterion compared to the institutions of the other cluster regions. Since the TCM-S in its current version constitutes a theoretical approach, empirical research was subsequently planned and implemented. Aim of the research was to collect data of teacher educators and student-teachers to investigate their perceptions, expectations and experiences of academic teaching competences. The study offers the opportunity that the TCM-S can be used as a reference framework in teacher education for the first time. A field, where teaching represents a core competence even stronger than in other fields of academic teaching.

2. Methodology and methods

This section provides an overview of the methodology and research design of the entire project before focusing on the students' part of the data collection and the used methods.

2.1. Methodology

The research design combines quantitative and qualitative research approaches in order to deepen the insights and substantiate the findings. This procedure complies with a mixed methods approach allowing an exchange of reciprocal enhancements. According to Creswell's classification, a concurrent triangulation strategy has been chosen and followed (Creswell, 2009, p. 213f.). Over the course of the study, qualitative as well as quantitative data will be collected, analysed and comparatively interpreted. The involvement of different and relevant stakeholder groups (teacher educators, student teachers, different employer representative) ensures a multi-perspectival approach that will broaden and deepen the findings. This strategy should also help to avoid the identified lack of so called consumer insights into research on teaching and learning (Voss, 2012, p. 163). The key aspects of the study can be illustrated by the following research questions:

- What do student teachers, teacher educators and different employer representatives expect from academic teaching at the University College of Teacher Education Styria?
- What are the attitudes of student teachers, teacher educators and different employer representatives towards academic teaching at the University College of Teacher Education Styria?
- How do structural conditions influence academic teaching at the University College of Teacher Education Styria?

By choosing a mixed method and a longitudinal approach the results will allow a detailed and systematic view on academic teaching at the University College of Teacher Education. Furthermore, quality criteria as well as potential for improvement will be identified by the involved stakeholder groups.

For each stakeholder group specific and more detailed research questions have been defined. Since the reported results relate to the student-teachers' perceptions, those questions are exemplarily listed below:

1. What do student-teachers expect from academic teaching at the beginning of their studies?
2. To what extent are the students' expectations met?
3. How do the student-teachers' expectations change over their period of study?
4. Are there any differences in student-teachers' expectations based on respondents' gender or the chosen age group (primary or secondary level)?
5. What kind of quality criteria for academic teaching are important for student-teachers?
6. Do student-teachers perceive any differences between academic teaching at university colleges of teacher education and at universities?

Table 3 below gives an overview of the five main project phases including the respective empirical methods of data collection.

Table 3: Overview of the project phases

Phase	Research	Aspects/instruments
1	Literature review	
2	Longitudinal survey among 2 nd cohort of student teachers for primary and secondary school levels	Online and paper-and-pencil questionnaire once a year
3	Survey among teacher educators	Two online or paper-and-pencil questionnaires during the project
4	Document analysis	Mission statement, service agreement, curricula
5	Biographical approach – student-teachers	In depth interviews once a year

This article focuses on phase 2, the survey among student teachers for primary and secondary school levels with regard to their expectations of academic teaching. Due to the lack of research on students' expectations in general (Voss, 2012, p. 164), and regarding academic teaching in particular, an explorative approach was chosen for the first survey. The key research question was: *What do first semester student-teachers expect from academic teaching at the University College of Teacher Education Styria?*

One of the rare studies in this field points out that, apart from subject-related expertise, commitment and excellent communication competences are relevant for quality-driven academic teaching. In detail, the following competences of academic teachers were named by the students: didactical and methodological competences, empathy, engagement, subject-related expertise, fairness, humour, communication skills, openness and reliability (Voss, 2012, p. 170). Students expect interactive pedagogies and engaging, informative, student-centred teaching and communication styles (Larkin, Rowan, Garrick, & Beavis, 2016, p. 6). All those relevant competences and personal qualities are also included in the TCM-S.

While the TCM-S has been postulated as model for teacher competences (Salmhofer, 2016, p. 134), its empirical integrity and consistency needs to be evaluated. Otherwise, it may become just another model for competence diagnosis, which have already been criticized (cf. Oser, Curcio, & Düggeleli, 2007, p. 14). This study is the first to empirically test the TCM-S and contribute to its further development. Accordingly, the following hypothesis was tested: *The TCM-S is an empirically verifiable and consistent competence model.*

2.2. Method

At the beginning of their studies, first semester student-teachers of the 2016-17 cohort (172 primary school students; 991 secondary school students) were asked to fill in an

online questionnaire about their attitudes towards and expectations of academic teaching at the University College of Teacher Education Styria.

The sample ($n = 163$) consisted of 78 primary school student-teachers (45.3 % of cohort) and 132 secondary school student-teachers (13.3 % of cohort).

The questionnaire was mainly based on the TCM-S and its 72 competences categorized into four main competence areas (see table 2). In contrast to most reference studies (e.g. Voss, 2012; Larkin et al., 2016) the student-teachers were asked to rate each of these 72 competences according to its relevance from their point of view from 1 to 4 (1 = completely unimportant, 2 = rather unimportant, 3 = rather important, 4 = very important).

The survey was conducted online and, in order to facilitate the accessibility, students received an email with the request to participate in the survey indicating the URL of the questionnaire. The questionnaire was available from 4th October to 20th November, 2016.

3. Results

3.1. Perceived Relevance of Teacher Educators' Competences

On average, the student-teachers viewed all teacher educators' competences as highly relevant. Offering the possibility that tests could be taken in English was perceived as the least relevant teacher educators' competence, with an average relevance of 2.68 ($SD = 0.92$). By contrast, treating students in an appreciative and respectful manner was perceived as the most relevant teacher educators' competence ($M = 3.91$, $SD = 0.28$). Overall, 69 of the 72 teacher educators' competences were rated on average 3 (= *rather important*) or higher.

The perceived relevance of the teacher educators' competences of the competence cluster *attitudes and values* (see table Table 4) ranged from using a gender-neutral and inclusive language ($M = 2.85$, $SD = 0.96$) to treating students in an appreciative and respectful manner ($M = 3.91$, $SD = 0.28$). For the competence cluster *methodological and didactical skills* (see table Table 4), the perceived relevance of the teacher educators' competences varied between taking notice of legal issues concerning the use of copyrighted material in education ($M = 3.10$, $SD = 0.82$) and using adequate questions for exams and/or assignments ($M = 3.85$, $SD = 0.39$). Within the competence cluster *institutional contextual knowledge* (see table Table 4), teaching students about science, industry, education, politics, culture and society beyond the limited world of universities was the teacher educators' competences with the lowest perceived relevance ($M = 3.10$, $SD = 0.73$). By contrast, adhering to the agreed upon workload for students when planning and giving their lectures was rated as the most important teacher educators' competence ($M = 3.74$, $SD = 0.49$). Finally, the relevance of the teacher educators' competences of the competence cluster *social and personal competence* (see table Table 4) ranged between offering the possibility that tests could be taken in

English ($M = 2.68$, $SD = 0.92$) and communicating in an appreciative and respectful manner ($M = 3.81$, $SD = 0.39$).

The following Table 4 gives an overview of the means regarding the competence cluster defined in the TCM-S.

Table 4. Overview of range of means by competence cluster.

Competence cluster	Range of means
Attitudes and values	2.85 – 3.91
Methodological and didactical skills	3.10 – 3.85
Institutional contextual knowledge	3.10 – 3.74
Social and personal competence	2.68 – 3.81

Note. Response categories varied from 1 to 4 (1 = totally unimportant, 2 = rather unimportant, 3 = rather important, 4 = very important).

3.2. Structure of Teacher Educators' Competences

The 72 teacher educators' competences derived from the Teaching Competence Model Science Space Styria (TCM-S; cf. tableTable 2) should be classifiable into the postulated four competence clusters *attitudes and values*, *methodological and didactical skills*, *institutional contextual knowledge*, and *social and personal competence*. To examine the structure of the 72 teacher educators' competences, an exploratory factor analysis was performed on their perceived relevance. As the TCM-S postulates four distinct clusters of competences, the exploratory factor analysis was performed with varimax rotation.

First, the appropriateness of the data for an exploratory factor analysis was examined (Backhaus, Erichson, Plinke, & Weiber, 2015). The dependency within the data was given (Bartlett test: $\chi^2[2556] = 6639.78$, $p < .001$) and the Kaiser-Meyer-Olkin criteria was sufficiently high ($KMO = .822$). Furthermore, the communalities were all above .51. It was therefore concluded that an exploratory factor analysis was appropriate.

Overall, the exploratory factor analysis yielded 21 factors with eigenvalues larger than 1. The 21 factors accounted for 67.04% of the variance. Closer inspection of the eigenvalues by scree plot revealed a drop in eigenvalues after the fourth factor. Therefore, the first four factors were examined.

The first factor consisted of five competences. These five competences were five of the six competences assessing the higher-order competence *grading competence* in the competence cluster *methodological and didactical skills*. The one *grading competence* which was excluded from this factor did not only involve grading, but also giving feedback on performance. The factor was sufficiently internally consistent ($\alpha = .79$) and the item-total correlations were between .49 and .64.

The second factor was made up of six competences. All six competences were of the competence cluster *methodological and didactical skills*. Four competences were of the higher-order competence *student-centered teaching*, while the other two were of the

higher-order competence *consulting skills* and *planning skills*, respectively. These two competences were also in line with student-centered teaching, either by assessing students' needs for consulting or by planning lectures in a student-centered way. The factor was sufficiently internally consistent ($\alpha = .80$) and the item-total correlations were between .46 and .66.

The third factor contained five competences. These five competences were of two different competence clusters. The most pronounced was the higher-order competence *openness to self-reflection* of the *attitudes and values* cluster. The other two involved 1) the *evaluation competence* of considering students' feedback for planning and giving lectures and 2) the *consulting skills* relating to lecturers giving feedback to students. It therefore seems that the *openness to self-reflection* should also involve making use of students' feedback and giving feedback. The factor was sufficiently internally consistent ($\alpha = .72$) and the item-total correlations were between .37 and .57.

The fourth and last factor was comprised of four competences. Three competences were from the *methodological and didactical skills* cluster, and one from the *social and personal competence* cluster. All four competences involved making use of different learning and teaching approaches. This final factor was also sufficiently internally consistent ($\alpha = .72$) and the item-total correlations were between .37 and .59.

In summary, the exploratory factor analysis yielded four factors. Three factors were essentially *methodological and didactical skills*. These three factors involved grading, student-centeredness, and the use of different learning and teaching approaches. The fourth factor featured lecturers giving and receiving feedback. Thus, while four factors emerged as postulated by the TCM-S, these four factors did not reflect the four competence clusters of the TCM-S.

4. Discussion

4.1. Implications

The data of the first student survey provided relevant results from two perspectives: the perceived importance of the individual competences on the one hand and, on the other hand, first data regarding the accuracy of the TCM-S.

Regarding the central research question of this first survey, it can be summarized that student-teachers in their first semester start with high expectations of their teacher educators' academic teaching competences. With the exceptions of three items, all 72 competences were rated as being rather important or very important for the students. *Methodological and didactical skills* (student-centered teaching, managing heterogeneity, research-based teaching, planning skills, digital competences, consulting skills, grading competence and evaluation competence) as well as *institutional contextual knowledge* (contextualisation, teaching organisation, general conditions and networks) have been rated as being of great importance for the entrants. These results are in accordance with a variety of studies (Larkin et al., 2016; Voss, 2012; Crisp et al., 2009). During their introductory phase at university, students need teachers who are able to

support them and are equipped with a profound contextual knowledge of a system that is totally new for them in order to provide orientation and a feeling of safety.

Regarding the competence cluster *attitudes and values* (respect and empathy, diversity awareness and openness to self-reflection), students put emphasis on respect and empathy (all six items are among the 8 items with the highest mean). This result might also be due to the fact that beginner students are particularly looking for social connectedness (Larkin et al., 2016; Voss, 2012; Crisp et al., 2009).

Even competences which were rated relatively less important, were still not rated as unimportant. The use of a gender neutral and inclusive language, the language competence to take tests in English and to integrate English elements such as teaching and learning materials, videos and articles are the only competences rated on average lower than 3 (= *rather important*). One explanation for this may be that students assume that teacher educators with a high English language proficiency would increase the likelihood of the students having to take English exams, which might be a challenge for some of them.

Regarding the accuracy of the TCM-S, these first results suggest an adaptation of the competence model regarding the competence clusters. The hypothesis that this competence model is empirically consistent could not be confirmed by the results from the first time of measurement. It therefore has to be admitted that at the moment the model does not meet the scientific quality criteria in a sufficient way, in keeping with Oser et al. (2007).

4.2. Limitations

Unfortunately, the response rates confirm research results which show that online surveys suffer from low response rates (Nulty, 2008, p. 303). The lower response rate with regard to secondary school student teachers can be explained by the fact that those students are difficult to reach. Only 10 % of all secondary students in Styria have enrolled at the University College of Teacher Education Styria, whereas all primary school students study at this institution and therefore have a much stronger institutional commitment.

Since the students participated in the survey just after they have entered the tertiary sector and started their career as student teachers, it can be assumed that most of them based their ideal of a general teacher educator on their school experience and expressed their expectations accordingly. This assumption has been confirmed by several studies (Larkin et al., 2016; Voss, 2012; Crisp et al., 2009) and may explain why the surveyed entrants put a higher emphasis on a supportive environment and highlighted the importance of relationship-building and social connectedness. Nevertheless, some students may have based their responses on a specific teacher educator. Accordingly, it cannot be excluded that the rating criteria may have varied from student to student.

At this early stage of a student career, it is questionable if and to what extent they are able to distinguish the requirements for school teaching from those for academic

teaching, and whether they can define or rate the relevance of teacher educators' competences. Williamson, Laybourn, Deane and Tait (2011, p. 153) state that the ability to reflect on their individual learning rapidly grew among students during the first year of studies. Therefore, a similar tendency in the perception of the teaching competences can be anticipated. Regarding this personal development of students, the results of the second measurement compared with these data will be of particular interest.

4.3. Next steps

The quantitative survey was conducted during the same period as qualitative interviews with students. For these interviews, students were selected at random from both types of age groups (primary and secondary school teaching) with regard to the gender distributions within the subsamples. In these interviews, the focus was on organisational aspects and study conditions. These results are expected to deepen the insight into entrants' expectations.

As indicated in chapter 0 in table Table 3, students will regularly be asked about their experiences throughout their student life cycle. The comparison of the results from the first (t_1) and second (t_2) time of measurement will be used to clarify if there is a difference between expectations (t_1) and experience (t_2) or not. At the second time of measurement, which will take place in 2017/18, the students will be in their second academic year and will have experienced a variety of classes, courses and teacher educators in different institutions. As a result, students may be able to rate the teacher educators' competences in a more differentiated way. Such a development is certainly possible, as has been suggested by other studies (e.g. Williamson et al., 2011).

In addition to the student survey, teacher educators of the University College of Teacher Education Styria will be asked about their opinions and perspectives on competences pertaining to academic teaching (see Table Table 3, phase 3). At the end of this academic year, comprehensive data will be available and first comparisons within and across stakeholder groups will allow further in-depth analyses.

The comparison of the students' results will allow conclusions whether students' expectations could be met during their first semesters based on their experience with academic teaching at the University College of Teacher Education Styria. On the one hand, the findings will be introduced as an important evaluation aspect in the further development of the curricula. On the other hand, on the organisational level they will be considered as relevant contributions to the development of institutional policies and procedures regarding the provision of appropriate conditions for teaching and learning as well as for personnel development measures.

In conclusion, the TCM-S was evaluated for the first time and will be subjected to further research and development. As it has been stated in several studies (Larkin et al. 2016; Voss, 2012; Crisp et al., 2009), there is substantial agreement that quality teaching – together with support and commitment – has a positive correlation with student achievement and student retention. It is therefore of great interest to develop the model further and strengthen its consistency in order to have a meaningful

instrument for developing academic teaching competences of teacher educators in the context of HR development.

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Prediction of reading comprehension ability in English as a foreign language

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Abstract:

Developing reading comprehension skills is one of the key purposes of teaching and learning a foreign language. Reading is a complex process dependent on a number of factors such as learners' language proficiency, prior experience and background knowledge, the way of processing information and personality. Since the use of modern technology has a growing impact on socialization and education nowadays, this research, besides addressing the issues of English as a foreign language (EFL) reading comprehension ability, Internet overuse and shyness, is concerned with achieving better understanding of the relationships among these variables. It aims to create a neural network model with good prediction capacity when the categories of measured Internet overuse and shyness, along with some other variables, are used as predictors. 225 class teacher students took part in this research. The results indicate that the majority of these students have limited symptoms of problematic Internet use (61.78%) and moderate level of shyness (58.67%). Moreover, these two variables did not show statistically significant relationships ($p < 0.05$) with EFL reading comprehension. Neural network model managed to predict a great degree (72.73%) of students' EFL reading comprehension abilities and revealed the significance of these variables in its prediction.

Keywords: EFL, reading comprehension, neural network, predicting

1. Introduction

Since a great deal of information stored online is in English, nowadays being able to read and understand texts in English has become the necessity for all learners of English as a foreign language. Reading is a complex skill that has been thoroughly studied both in first and foreign language and theories on reading comprehension abound. Numerous researchers agree that even though reading is a multifaceted activity, reading comprehension is determined by two components: decoding and linguistic comprehension (Gough & Tunmer, 1986; Hoover & Gough, 1990 in Netten, Droop & Verhoeven, 2011). Similarly, Grabe (2009) claims that reading comprises lower-level and higher-level processes that operate at the same time and interact with each other and we can get better insight into the complexity of reading only by

understanding these processes. Parfetti, Landi & Oakhill (2005) differentiate between understanding literal meaning of words and sentences and higher-level factors in comprehension such as sensitivity to story structure, inference making and comprehension monitoring. They stress that the last two higher-level factors can be seen as key aspects in comprehension development and comprehension problems.

The factors that influence reading can be divided into two broad categories: reader variables and aspects of the text (Alderson, 2000). Besides the knowledge of language and the world, other important variables related to readers are motivation, the purpose of reading, strategies they use, physical characteristics and personality. He states that personality is one of the stable reader characteristics that may be of interest in research on reading. Bernhardt (2011) corroborates that reading in a second language is determined by language knowledge, but adds that research should take into account first-language literacy and a number of other factors such as background knowledge and motivation.

Since numerous studies have already focused on the abovementioned factors influencing reading, this paper is an attempt at looking into some uncommon and so far not studied variables that might have an effect on reading. Individual differences such as personality, aptitude and motivation have been researched before by trying to establish linear relationships between them and certain performance variables, but future research could try to adopt less conventional methodologies and examine non-linear relations (Dorney, 2005). This research presents a step into these unexplored territories by using data mining.

The aim of this paper is to examine reading comprehension in English and the effects of Internet overuse and shyness on second language reading comprehension as well as to predict reading comprehension skills in English as a foreign language. The authors have attempted to create a neural network model with good prediction capacity when the categories of measured Internet overuse and shyness, along with some other variables, are used as predictors.

A brief overview of the research related to reading comprehension in EFL and data mining methods in foreign language instruction are presented in Section 2. Section 3 explains the methodology used in this paper followed by the interpretation of the results in Section 4 and discussion and conclusion in Section 5.

2. Literature review

Nowadays using ICT in education has become a prerequisite of quality teaching especially when it comes to foreign language instruction so a great deal of research has already explored the use and influence of technology on different aspects of teaching and learning English. Nomass (2013) studied different approaches which can help learners of English to improve their skills by using technology. The research was carried out on an arbitrary sample of university students and looked into the benefits of ICT and all four skills development (reading, listening, speaking and writing).

Similarly, Serostanova (2014) discussed the usage of the Internet, computer programmes, audio and video devices, smart boards and telecommunications in English language teaching on the basis of intercultural approach. Also, a number of studies examined the correlation of technology and possible predictors of a specific skill, i.e. reading in both first and foreign language (Kramarski & Feldman, 2000; Coiro & Dobler, 2007; Akbulut, 2007; Stearns 2012) and impacts on learners' motivation as well as the emergence of new strategies and learning styles.

Research on reading comprehension in a foreign language has also extended to various disciplines and is based on the interaction of reading with a number of learner-oriented factors as well as aspects related to text (Olmez, 2016). Ghaemi, Samimi and Hashemizadeh (2014) carried out the research on the impact of critical thinking, personality factors (extroversion and introversion) and gender on reading comprehension ability in EFL. Their study determined that critical thinking skills contribute to better reading performance, while no significant relations between personality, gender and reading comprehension were identified.

When it comes to research on the application of data mining methods in foreign language education, although some studies have been conducted, this area has still not been examined to a greater extent. For example, Dascalu, Dessus, Bianco, Trausan-Matu and Nardy (2014) created an integrated system called ReaderBench which uses text-mining techniques integrated in the system with the aim of analysing textual materials, learners' success and identifying learning strategies for comprehension assessment. Illanas Vila, Calvo-Ferrer, Gallego-Duran and Llorens Largo (2013) designed a game called Coln and used the results of 57 students who played this game to create five neural networks for predicting students' grades in a foreign language. Also, Wang, Tseng and Liao (2009) used decision trees as data mining method for optimizing learning sequences in foreign language instruction. This research included 50 students and used five variables one of which was a personality type. Wang and Liao (2011) used neural networks as a means of suggesting learning materials to students, while exploring learning performance of students in an e-learning system. Based on student characteristics, such as gender, personality type and anxiety level, they determined different levels of the teaching content. El Moucary, Khair and Zakhem (2011) used neural networks and clustering technique for predicting grade point average in a foreign language. Furthermore, Rupp, Garcia and Jamieson (2001) used multiple linear regression model and classification and regression trees (CART) for better understanding of item difficulty in language comprehension tests in reading and listening, while Schwarm and Ostendorf (2005) used support vector machines for classifying articles based on the reading level difficulty.

This research follows the same direction of the previous studies in the application of data mining in foreign language teaching and explores personality characteristics that have not been used in this context before.

3. Methodology

The sample consisted of 225 students from the first to the fourth year from the Faculty of Education. It is important to note that in year one at the end of the first semester before continuing the second semester, the students at the Faculty of Education in Osijek choose and enrol one of three modules: Developmental studies module, Computer science module or Foreign language (English language) module (Faculty of Education, 2005). All students enrolled in a certain study year attend the same mandatory courses, but by selecting a module they choose which additional competences they can acquire and what kind of additional training they can receive. For example, the students attending Computer science module have more ICT courses in comparison to students in other two modules and upon studies completion they are trained to teach Computer science in lower grades of primary school, while the students in Foreign language module have more courses in English and can teach English in lower grades of primary school.

This type of study organisation was the reason for including the students from all three study modules into the research. The distribution of the students based on the chosen modules is shown in Table 1. It is evident that the research included equal number of students from Modules A and C, while there were fewer students from Module B, which is to be expected since Module B usually has the lowest number of enrolled students.

Table 1. Students by study module.

Study module	N	%
Module A – Developmental studies	88	39.11
Module B – Computer science	49	21.78
Module C - Foreign language	88	39.11

To obtain necessary data for the research two instruments were used: 14-item McCroskey Shyness Scale (McCroskey & Richmond, 1982) to measure levels of shyness and Pathological Internet Use (PIU) scale by Morahan-Martin and Schumacher (2000) to identify the students with pathological Internet use. High level of reliability for both of these scales was reported by their authors. Shyness Scale (SS) consists of 14 five-scale Likert questions and the final result indicates one of three shyness categories: high level, low level or moderate level (McCroskey, n.d.). PIU contains 13 yes-no questions which serve for detection of PIU symptoms (Morahan-Martin & Schumacher, 2000).

Besides these scales, the students also answered 16 general demographic questions (e.g. gender, study year, module, etc.) and they were asked to read a text in English and answer 5 multiple-choice questions used to assess their reading comprehension.

Artificial neural networks (ANN) were used as a data mining method. They are systems whose structure is based on functioning of the human brain (Haykin, 1999).

Their massively parallel structure and ability to generalize enables them to solve complex problems (Haykin, 1999). Since multilayer perceptron (MLP) neural network models were designed and tested in this research, it was necessary to define input and output variables used for modelling. The variable with students' value of reading comprehension was the output variable, while the remaining 18 variables were treated as input variables. In order to reduce such a great number of input variables, associations between these categorical variables were studied using chi-square test of association at the significance level of 95 %. The strength of statistically significant association was checked by using Cramer's V test and the variables with strong association were eliminated from modelling. In this way the number of input variables was reduced to 12 (see Table 2) on which the neural network modelling was based.

Table 2. Input variables for modelling.

Label	Description
Q1	Gender
Q2	study year
Q4	type of secondary school
Q6	accommodation during studies
Q8	scholarship category
Q10	category with average grade in Computer science in primary school
Q11	category with average grade in English in secondary school
Q14	category with average grade in Computer science at the faculty
Q15	a longer visit to English-speaking countries
Q16	Erasmus+ exchange category
SC	shyness category
IC	Internet use category

As already mentioned, the output variable for modelling was reading comprehension in English which consisted of two categories. All the students who had 4 or 5 points in a short test which examined their reading comprehension of an unfamiliar text were classified as good comprehenders and this category was marked with 1. The rest of the students were put in the category of poor comprehenders which was marked with 0.

Statistica 12 software was used for statistical data analysis and neural network modelling. The aim was to create a neural network model with as accurate as possible classification of good and poor comprehenders.

The sample was randomly divided into three sub-samples: training sample (70% of the entire data), test sample (20% of the entire data) and validation sample (10 % of the entire data) in which models were compared.

4. Results

The analysis of the data obtained by PIU scale indicates that all respondents exhibit symptoms of pathological Internet use. The majority of participants, 61.77% have limited symptoms of problematic Internet use, namely, they detected one to three symptoms of PIU, while 38.22 % of the participants were categorised as the ones with pathological Internet use since they display four or more symptoms. These results correspond to the results obtained by Morahan-Martin and Schumacher (2000) in detection of students with limited symptoms of problematic Internet use, but not to those in categories with no symptoms and pathological Internet use since the research by Morahan-Martin and Schumacher (2000) detected a number of participants that did not display any symptoms of problematic Internet use.

The results of SS (see Table 3) indicate that a small number of students (12.89 %) reported high level of shyness.

Table 3. Reported levels of shyness.

Levels of shyness	Count	Percent
low	64	28.44
moderate	132	58.67
high	29	12.89

Chi-square test showed that there are no statistically significant associations between variables SC and IC at the level of significance of 95% ($\chi(2)=0.3348123$, $p=0.84586$).

Out of 200 trained, tested and validated MLP neural networks, the best overall accuracy (72.73 %) was obtained by a neural network that used a hyperbolic tangent function as hidden activation (see Table 4). This network could detect 80.00% of the students classified as good comprehenders and 70.58% of the students in poor comprehenders category.

Table 4. The architecture of the MLP neural network which obtained highest score.

Model	Training algorithm	Hidden activation	Output activation	Error function
MLP 38 – 3 -2	BFGS 0	hyperbolic tangent	Softmax	cross entropy

Furthermore, sensitivity analysis was conducted in order to establish which of the selected input variables had the greatest influence on this model's success and whether shyness and pathological Internet use had any impact on predicting good and poor comprehenders. The results are shown in Figure 1.

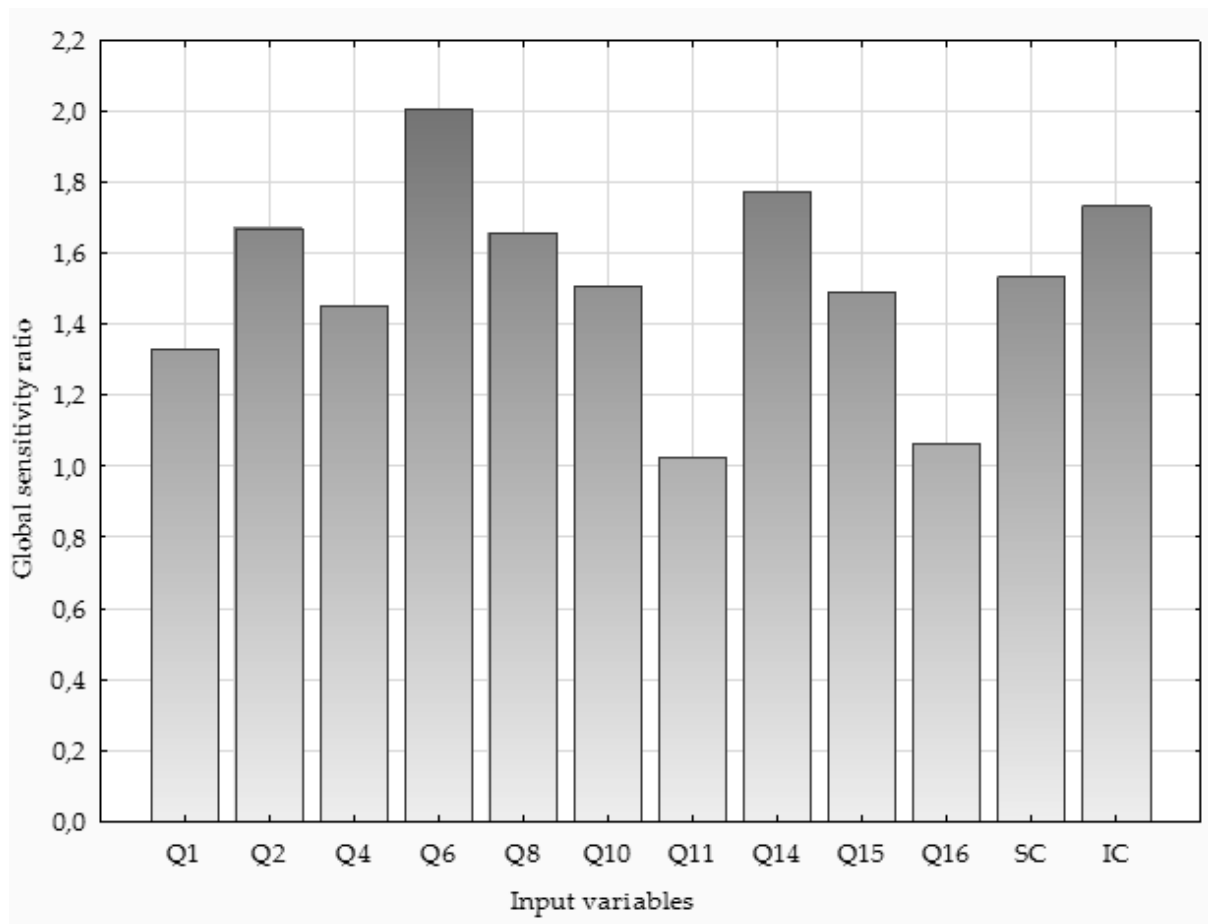


Figure 1. Global sensitivity analysis of model.

It is evident that variable Q11 (category with average grade in English in secondary school) has the lowest impact on the model's success, whereas variable Q6 (accommodation during studies) has the greatest influence on this model's success. Variables SC and IC also have good relative importance since due to their sensitivity ratio they are among the first six most influential variables in this model.

5. Discussion and conclusion

Numerous previous studies have concluded that good knowledge of vocabulary also promotes better reading comprehension. One of the ways of providing learners with a wide range of vocabulary is using computers and the Internet in teaching a foreign language. For example, Mustafa, Sain and Razak (2012) determined that the post-test results of the students who did online reading tasks were better than the results of the students who read printed materials from the same website. They believe that using ICT is more engaging for learners than using printed materials. Also, Wu (2014) concluded that using smartphones in teaching English was very effective in developing learners' vocabulary.

Although shyness has not been researched extensively as a variable influencing language performance, it was recognised by learners as one of the problems in learning

English since it contributed to learners' low self-confidence and fear of making mistakes, which was observed in the study by Akbaria (2016).

Consequently, it was interesting to examine whether by using these variables and data mining we could predict students' reading comprehension ability. The results show that neural networks are successful in predicting reading comprehension skills in EFL because an MLP neural network model was designed with relatively good overall classification accuracy (72.73%). Sensitivity analysis established a good relative importance of variables Internet use category and shyness category. Still, chi-square test showed that there are no statistically significant associations between them at the level of significance of 95%.

The model used in this research can be used in practice as help for those educators who want to early detect poor comprehenders in a different way before exposing the students to formal evaluation and exams. It has to be emphasised that the results are limited to the observed sample, but in order to be appropriate for more general application, it is necessary to include a more varied and bigger sample.

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Models of improvement of Croatian language teaching for Erasmus+ foreign exchange students at Josip Juraj Strossmayer University of Osijek

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Abstract:

In this paper, analysed for the first time are the models of improvement of Croatian language acquisition for foreigners, incoming Erasmus+ students at Josip Juraj Strossmayer University of Osijek. Croatian language classes they attend are taught in English (which is mainly not their mother tongue, but a language of communication). Two shortcomings were used as a starting point – the nonexistence of a curriculum, and the fact that no modern computer technologies are used in Croatian language teaching for foreigners.

Considering these facts, the paper proposes ways of improvement of Croatian language teaching for foreigners in view of applying network technologies, i.e. the existing or new computer resources in classes, which represents a new model of Croatian language teaching for foreigners at the University of Osijek. Apart from that, creating a curriculum for Croatian language teaching for foreigners is suggested, with clearly set learning outcomes that would, along with grammar and spelling competencies, also imply competencies of Croatian culture and history knowledge.

The aim of this paper is to indicate that this approach to Croatian language teaching for foreigners, which implies clearly set learning outcomes and the use of modern computer technologies, can improve Croatian language teaching within the Erasmus+ programme at the University of Osijek.

Keywords: Croatian language for foreigners, Erasmus+, computer technologies, learning outcomes, curriculum

1. Introduction

This paper analyses models of improvement of Croatian language acquisition for foreigners, participants of the Erasmus+ programme at the University of Osijek, who attend classes in English language, which is mainly not their mother tongue, but a language of communication.

Erasmus+ is the biggest programme of the European Union for education, training, youth and sport, within the period 2014-2020. It includes all European and international programmes and initiatives of the European Union in the field of education (general education, higher education, adult education), training (vocational education and training), youth and sport. Erasmus+ is oriented towards the strengthening of knowledge and skills, the employability of European citizens, as well as the improvement of education, training and working in the field of youth and sport. It is especially oriented towards connecting education, training and the youth sector with the business sector, and is open for their joint projects (Agencija za mobilnost i programe EU, 2015).

More than 90 % of Erasmus+ students attend Croatian language classes in every academic year at the University of Osijek, which goes in favour of the fact that this kind of introduction into Croatian language is a great opportunity to promote Croatian language and Croatian culture in general. This can be observed through the prism of promotion of Croatian language and Croatian culture since the promotion of Croatian language is one of the strategic goals of the Republic of Croatia, as well as connecting with Croatians abroad with regard to preserving the national identity and the tradition of learning Croatian.

One of the strategic goals of the Republic of Croatia is connecting with the emigrated Croatians and preserving its national identity. An important part of this strategic point are the educational programs that the Croatian Government supports on the level of higher education with 33 language centres connected with the national university programmes, and with around 88 teachers teaching Croatian language and culture at lower levels of education. In 2008, the Government directed around 30 million kuna for these purposes, which secured the implementation for around 6860 participants in 19 countries. Hudec (2009) and Korljan and Buljubašić (2011) pointed out that Croatian belongs to a group of "smaller" languages whose current and potential speakers are dispersed around remote places outside the Republic of Croatia. Everyone included in teaching Croatian as a second and foreign language, from the Ministry of Science and Education which oversees and finances around thirty five language centres and two Croatian Studies centres, to language teachers, but also students, members of the Croatian diaspora, and others who speak (or want to speak) Croatian, and want to know about its culture and literature as well, are all faced with the lack of material and insufficient cooperation between institutions and individuals included in that work.

This way, Croatian language, as a dynamic system, connects with other cultures and languages on a global level. According to Pasini (2010), language, as a closed and static

system of grammar structures, becomes an open and dynamic system through its cultural heritage, directed towards the world and its knowledge market. Good knowledge of culture is the basic prerequisite for overcoming cultural stereotypes and achieving one of the fundamental teaching goals in a contemporary foreign language teaching method – interculturalism. That is why cultural programmes of Croatian language teaching abroad are very carefully and systematically designed, and the teachers who possess cultural competencies in Croatian language are very important because they also contribute to the promotion of Croatia in the world and guarantee a safe future of Croatian language.

The above said should also be applied to designing a Croatian language learning programme for foreign students at institutions of higher education in Croatia, including Josip Juraj Strossmayer University of Osijek, taking into consideration that every year there is a higher number of students from different countries around the world who decide to learn Croatian during their exchange programme.

Foreign language learning represents a way of learning about the domicile culture and tradition. The example of J. J. Strossmayer University of Osijek's good practice is proof that introducing Croatian language class for foreigners, which includes the mentioned cultural part, promotes interculturalism among other things, which has a direct influence on increased student mobility since 2010 until today. In the period from 2010 to 2017 the number of foreign students in the Erasmus+ programme at the University of Osijek increased six times.

2. Croatian language for foreigners in the Erasmus+ exchange programme

Based on the Erasmus charter and the projects that were carried out, the University of Osijek has been realizing Erasmus mobilities of students, academic and non-academic staff since the academic year of 2008/2009. Students realize their mobilities for the purpose of studying and/or practical training at institutions of higher education or organizations in Erasmus+ programme countries (27 EU member countries), as well as Iceland, Norway, Lichtenstein, Turkey and Macedonia.

Foreign students who come to the University of Osijek within the Erasmus+ programme have a developed intercultural consciousness, and an aptitude towards living and studying in multicultural surroundings. From that point of view, the interest in Croatian culture is also higher and therefore it is expected that teachers popularize both the Croatian language and the culture. At the same time, along with maintaining academic excellence within the participants, considering their emotional motivation, acquisition of knowledge of Croatian tradition and culture should be constantly encouraged.

In the age of lifelong learning and student and staff mobility, knowledge of foreign languages is becoming one of the priorities in the career of any member of the academic community. Apart from that, student's motivation for learning a foreign language is very important. Not knowing a foreign language becomes a limiting factor in a career, and good use of one or more foreign languages is an advantage in the

labour market. In the context of student motivation for learning Croatian in the example of the University of Osijek, emphasis is also on the emotional relation toward the language. This means that apart from the practical need of adopting a certain foreign language, emotional attitude also plays an important role, in the context of an individual's relation towards the language and the culture that it implies.

The introduction of Erasmus into Croatian universities raised the need of introducing classes in English which significantly increased the number of incoming students and teachers, and is in accordance with the University of Osijek's internationalization programme. Simultaneous introduction of Croatian language for foreign students, as was explained earlier in the paper, in the context of promoting Croatian language and culture, confirms the University's tendency of preserving language identity which implies distinctiveness towards others, i.e. its definition, according to Škiljan (2000, p. 210-211), starts "from the premise that language is above all a symbol of the speaker and a means by which he defines himself as an individual subject different from other subjects."

Even though the primary goal of this paper is not the analysis of the cultural aspect in foreign language teaching, it should be emphasized that the said aspect should in no way be disregarded, because the students in Croatian language classes are expected to have different levels of cultural competencies and foreknowledge, since they come from different countries. It should be mentioned that with the start of the Bologna process, the

The Republic of Croatia has in a way committed to respect the contemporary educational standards, with cultural standard as one of its constituent parts as well.

Practice tells us that at this moment there is no single curriculum for Croatian language for foreign students, but the classes are held according to the programme prepared by the teachers at higher education institutions where Croatian is taught to Erasmus students. Although Jelaska et al. (2005) emphasized that the area of teaching and learning Croatian as a second or foreign language is currently quite inconsistent and unsystematic in Croatia, and there is no unique division of levels of knowledge of Croatian, it is not known what linguistic knowledge and which communication abilities need to be acquired at certain levels, there are different textbooks being used, but there are no specialized ones, etc. , in teaching Croatian as second and foreign language many things have changed:

A lot of research on the topic of Croatian as a foreign language followed after that, as well as establishing terminology, publishing manuals and textbooks for learning Croatian as a non-mother tongue. There are manuals for teaching levels A2, B1 and B2 according to CEFRL, and their respective workbooks and CDs. There is also a textbook Croatian B1: Framework of reference for B1 level, published in 2013 (Grgic et. al., 2013). Apart from the latter textbook, Croatian B2: Framework of reference for B2 level was also published in 2015 (Gulesic Machata, 2015). The frameworks refer to B1 and B2 levels according to the CEFRL reference level scale. Croatian B1 and Croatian B2 textbooks are a great help in creating more homogenous, higher-quality and more

transparent plans and programmes for learning Croatian as a second language, as well as in creating B1 and B2 level tests.

Since the beginning of implementation of the Erasmus programme at Croatian universities, several universities started the Croatian language for foreign students course, and those are, besides the University of Osijek, the University of Dubrovnik (Sveučiliste u Dubrovniku; Dubrovnik Language School "Queen Mary"), the University of Zadar (Sveučiliste u Zadru, 2016/2017) and the University of Split (Sveučiliste u Splitu – Filozofski fakultet u Splitu, Centar za hrvatske studije u svijetu).

As an example of inconsistent teaching of Croatian language for foreigners, we are providing a comparative analysis of the Erasmus+ programme at the University of Osijek and the classes at Croaticum – Centre for Croatian as a second and foreign language within the Faculty of Humanities and Social Sciences, University of Zagreb.

Croaticum was founded in 1962 at the Department for phonetics, and was first called Croatian language course for foreigners. In 1966 it was incorporated in the Department for Yugoslavian languages and literature. Twenty years later, in 1986, it developed into a Preparatory study year, which offered two semesters of language classes and, apart from learning Croatian, it also included classes from the area of Croatian cultural heritage. Preparatory study year primarily served for preparing foreign students to study at Croatian faculties by developing their linguistic competencies. In the eighties, apart from foreign students, the descendants of the Croatian diaspora also started attending the Course. Since 1993, three levels of classes were set up and became the standard (beginner's, middle and advanced level, and each was further divided into higher and lower). In 2003, the Preparatory study year was renamed into Croaticum – Croatian for foreigners, and four years later, in 2007, the centre became Croaticum – Centre for Croatian as a second and foreign language, as it is known today.

In the beginning, Croatian language was taught according to the principles of audio-visual global-structural method (AVGS) whose initiators were Petar Guberina and Paul Rivenc. According to Cvitanusic and Durdevic (2012) this method became widely accepted in the world and it made Croatia and the Faculty of Humanities and Social Sciences world-renowned in the area of foreign language teaching methods.

Table 1. Comparison of Croaticum and Croatian language classes for foreigners at Josip Juraj Strossmayer University of Osijek

	CROATICUM	Josip Juraj Strossmayer University of Osijek
programme and teaching levels	6 levels of Croatian language teaching 76 hours of classes	1 level of Croatian language teaching, 80 hours of classes
Transparency	Web page http://croaticum.ffzg.unizg.hr/?lang=hr	No web page.
ECTS	4	6
Price	450 €	Free
cultural aspect	a tour of cultural institutions and landmarks of the city of Zagreb is organized as a part of the course	a tour of landmarks of the city of Osijek is organized by the University's International Relations Office
Teachers	15 Croatian language teachers	1 Croatian language teacher

It can be concluded from the comparison that the University of Osijek could take the positive experiences from Croaticum, with the emphasis on setting up a web page with all the useful details, teaching materials, etc. Also, they could consider the possibility of organizing a summer/winter school of Croatian aimed at Erasmus students, but also at foreigners who come to study in Osijek and the institutions of higher education in the counties of Slavonia. This refers to foreigners who come to Slavonian counties for business reasons, and students who study at the colleges of applied sciences in Vukovar, Požega and Slavonski Brod.

The positive side of organizing classes of Croatian language for foreigners at the University of Osijek is that the course is free for the participants, and it is funded from the funds for the organization of Erasmus mobility. Since the classes are held during the entire academic year, the schedule is adjusted to the participants and coordinated with their schedule at the constituent units of the University of Osijek, as opposed to the organization of classes at Croaticum, where participants need to adjust to the already set schedule of the summer/winter school.

3. Croatian as a foreign language – (non)standardization of teaching

It is a widely known fact that in this age of globalization English language dominates in relation to other world languages and smaller languages.

According to Pasalic and Marinov (2008), as a consequence of globalization, one language is undoubtedly used in the whole world. In relation to other languages, English is the only language that has the status of a global language. The use of English language has been strengthening for decades, and it is currently one of the most

spoken languages on a global level, and used the most by non-native English speakers. English is spoken by more than 400 million native speakers, and by just as much speakers to whom English is a second language. Since English “takes” the place of other smaller languages, it presents a certain type of threat. The authors emphasize that it is obvious that the spreading of English language on a global level cannot be easily stopped. Therefore, it is highly unlikely for some other language to take over the dominant role that English has in different spheres, at least for now. That, however, does not mean that English language is better than any other language, and it must not be considered superior.

On the other hand, however, globalization and current trends in education, such as the Erasmus+ international mobility programme allow, apart from improving English language, the promotion of other languages as well, especially small languages, which is in accordance with the need to preserve language diversity in the European Union, and S. Wright has stated the reason for it, singling out several reasons for Europe to continue striving towards preserving language diversity: “The first one is that diversity is inherently good, in the way that biological diversity is good as well. Second, preserving a language allows the participants of the group to stay in touch with their own history and cultural heritage. The third reason is that language is a fundamental constituent part of identity that needs to be respected. And fourth, languages are irreplaceable resources of humankind.” (Wright, 2010, p. 218). As Siguan stated, language policy of the European Union is based on the idea that “building Europe cannot mean sacrificing (...) diversity for the benefit of one language, but exactly the opposite, it has to secure [its] survival” (Siguan, 2004, p. 191), and the participation of the University of Osijek in the preservation of language and cultural identity in the context of teaching Croatian to foreign students from the Erasmus+ programme is one way of such contribution. Mlikota and Baraban (2014) also emphasize language identity in the context of guaranteed rights and everyday practice.

Jelaska et al. (2005) has emphasized that the difference between Croatian and English language is in the fact that every English professors knows exactly what is expected from a student at specific learning levels, which grammar and vocabulary should be mastered. For Croatian as a foreign language, referring to Erasmus students, those standards still do not exist. If students are not beginners then they are hard to place in a group that would completely correspond to their level of knowledge, because there is no way of completely objectively determining their knowledge. It is very important to point out the difference in teaching second or in teaching foreign language – English is in Croatian school system foreign language, whereas Croatian is in some schools taught as second language, for example, Hungarian language is taught as first language in Baranja (Jelaska, 2007).

The author also states that learning Croatian as a second and foreign language needs to be brought into line with the standards of learning other European languages and with the *Common European Framework of Reference for Languages* (CEF). Due to the fact that we need new, modern programmes that would be based on the latest scientific

and professional findings of applied linguistics, psycholinguistics and foreign language teaching methods, and that would also take into consideration all of the specificities of Croatian language. As there is continuous need to have standardized tests for Croatian language that exist for all other (big) European languages, and since recently for our neighbouring languages as well (e.g. Slovenian), there are standardized ECL tests for non-native speakers created by the Faculty of Education in Osijek. Also, there are several standardized tests for international students when enrolling the 2nd study year in Croatia. Recently the tests have been created by the National Centre for External Evaluation of Education (2013).

When it comes to learning Croatian language for foreigners within the Erasmus+ programme at the University of Osijek, one of the main problems that arises is the devastating fact that there is no curriculum for teaching that would also have to go through evaluation and approval of the competent authorities. The education system needs to turn away from the traditional ways of teaching and towards a curricular approach. That approach to education needs to be incorporated into all courses, including the Croatian language for foreigners. Modern teaching is organized and planned according to learning outcomes as well, and it uses taxonomies and active verbs. Modern approach mostly emphasizes knowledge and competencies as learning outcomes, but those outcomes can be different.

Divjak (2008) pointed that learning outcomes describe the competencies that are shown through knowledge, skills and the corresponding independence and responsibility that a student can show upon finishing the learning process (it is not possible to do it sooner). It is important to mention here that every described outcome has three components on a micro-level: 1. the expected skill described with an active verb; 2. conditions; 2. minimal criteria for a passing grade. The expected skill implies the use of only one active verb and language that is understandable to the student. Conditions define situations where students will demonstrate their newly acquired skill, while minimal criteria for a passing grade define a minimum that needs to be satisfied (grade sufficient).

In accordance with that, learning outcomes give a clear and precise basis for determining the content for teaching and choosing a teaching strategy and methods that will be applied in classes. Also, they provide a basis for determining activities that the students should perform, as well as defining exam assignments which are used for evaluating success and progress.

Learning outcomes are not defined in Croatian language teaching for foreigners, participants of the Erasmus+ programme of the University of Osijek, which we consider to be a big disadvantage. Modern teaching without defined learning outcomes cannot produce quality results because the teacher cannot know what to expect from the student at the end of the teaching process, or he has overly individualized expectations.

As an example of good practice we give the example of the Faculty of Humanities and Social Sciences and the Centre for Croatian Studies Abroad of the University of Split

that carry out programmes Croatian Language for Foreigners (CLF) and Croatian Culture and Civilisation for Foreigners (CCC). The mentioned programmes have a curriculum as well as learning outcomes outlined for 2015 (Sveučiliste u Splitu – Filozofski fakultet u Splitu, Centar za hrvatske studije u svijetu, 2015, p. 3 – 4). Shown below is the description of the course Croatian Language for Foreigners in the context of the goals of the course and expected learning outcomes, and curriculum is not stated due to its extensiveness:

Course goals:

Introduce the students to the basics of Croatian language with the purpose of applying that knowledge in everyday use of Croatian language.

Conditions for enrolment in the course and required competencies: B1 level knowledge of English language

Expected learning outcomes:

After attending and passing the course, the students will be able to:

1. notice basic rules of Croatian language in speech and writing,
2. classify grammar rules,
3. recognize basic formulas of courtesy and the theme and basic information of short spoken and written texts,
4. use simple sentences (introduction, naming objects, people, events and description of basic feelings; verbally competent in basic life situations),
5. describe personal desires and wishes,
6. interpret spoken and written texts,
7. participate in conversations about everyday topics,
8. write independently and on dictation (simple messages, postcards, greeting cards).

When we take course goals, expected learning outcomes and a detailed curriculum into consideration together as a whole, we can determine with certainty to what extent the students of Croatian Language for Foreigners at the University of Split should know the basics of Croatian language and to what extent they could apply it in everyday life situations.

Apart from the University of Split, students at the University of Zadar also have the possibility of learning Croatian at several levels, while at the University of Dubrovnik classes are organized outside the higher education institution, and in summer months (Dubrovnik Language School "Queen Mary").

4. Modern technologies in teaching Croatian language for foreigners

In the context of development of modern computer technologies, there is a need for adjustments and changes in learning of foreign languages.

Modern networking and computing technologies enable faster, but not necessarily a completely reliable additional and individual adoption of different aspects of language that takes place simultaneously with attending classes. Modern, advanced computer sources, as well as the use of textbooks and other didactic materials in teaching, especially when applied to teaching adults, offer a variety of creative ways of presenting lessons, avoiding the sometimes insufficient and obtrusive uncreative dry learning, and thus changing the usual routine of lectures that is consistent with the planned program and the imposed textbook content.

In teaching of Croatian language at the University of Osijek modern technologies are not applied, although the authors Bates and Poole, according to Korljan and Buljbasic (2011), do not consider technology-based learning to be necessarily better or worse than classic teaching.

However, teaching contents available through different technologies should not be neglected because practice suggests that the use of teaching materials in paper form still dominates the teaching of Croatian language for foreign students. The question arises on whether to consider introducing new technologies, considering that almost all Croatian language learners come from European universities, where most of the classes follow modern trends in teaching, including the application of new technologies. In addition to designing e-materials that would be continuously available to all participants, the education of teaching staff with regard to the application of new technologies should be examined.

When it comes to the innovations from the last several years that can be implemented in teaching Croatian language for foreigners, it is certainly worth mentioning that a group of young linguists from the Faculty of Humanities and Social Sciences in Zagreb, according to Šaravanja (2016), created a free portal for e-learning of Croatian language within the HR4EU project, funded by the European Social Fund. As a part of the project, in addition to developing a language course for e-learning, they are developing new and upgrading the existing computer resources for Croatian language. The interactive course they have developed is divided into teaching units that exchange grammatical content, exercise questions, and anecdotes and interesting stories about Croatia, such as bora wind or cheese and cream.

In addition to learning Croatian language, HR4EU also offers information on Croatian culture, history and gastronomy as well as practical information that can be used by those who work or study in Croatia. The portal also includes interactive maps that represent Croatia and video clips that facilitate the use of the portal and the existing computer resources.

As project authors point out, one of the portal's target addresses for promotion are universities around the world that are teaching Croatian language, given that this course can primarily serve as an excellent learning aid. It is, above all, because it offers a lot of exercise questions in the form of quizzes with every teaching unit, and apart from that, all the grammatical content taught in the course is available in the form of a book and can be printed, which is also a useful resource because such revised grammar

descriptions are rare in the public domain, so this project can be considered a step forward in linking linguistic and cultural identity when it comes to Croatian language and Croatian culture. The application of such a project in the teaching of Croatian language for Erasmus+ students at the University of Osijek would certainly improve the quality of teaching.

Apart from the Croatian language learning portal, there are also some modern computer resources that help with the further development of language knowledge: Croatian Morphological Lexicon, Croatian Dependency Treebank, Croatian Wordnet, CroDeriV, Dictionary of Neologisms and Corpus of Croatian as a foreign language. By applying these systems, the teaching of Croatian language for foreigners would be modernized, but the individual approach in teaching, noticed in the teaching of Croatian language for foreigners at the University of Osijek, would also be reduced, and the students would be even more encouraged to research the particularities of Croatian language independently.

Croatian morphological lexicon is one of those resources. HML allows you to display all forms of a word if you enter a word form (for example, if you enter the word *table* (Croatian *stol*), all of its singular and plural forms will be shown), or it determines the dictionary form if one of its forms is entered (e.g. if the form *tables* (Croatian *stolova*) is entered, the starting form *table* (Croatian *stol*) will be shown). For users, such a resource is useful in learning because they can check, for example, the plural of a word if they are not sure. Within this project, that resource is enriched with new units.

Croatian Dependency Treebank is a resource that allows users to get insight into the syntactic structure of Croatian sentences. For the needs of the course users, this resource is supplemented with sentences from the texts that appear in the lessons and the users can see an overview of their syntactic structure (i.e. the subject, predicate, and object of the sentence) and the semantic roles of certain parts of the sentence (who the actor is, where the action happens, who the participants are, etc.).

The third existing resource that this group of researchers is working on is Croatian Wordnet, a semantic network of Croatian language. From it, users can find out all the synonyms of a particular word (e.g., *mother*, *mom*, *mum* - *majka*, *mama*, *mati* in Croatian) and words for concepts related to the searched word, such as hypernyms (parent - *roditelj* in Croatian), hyponyms (surrogate-mother - *surogat-majka* in Croatian) and other words that enter the lexical hierarchy of parenthood relations.

The researchers are also complementing CroDeriV, a morphological lexicon of Croatian verbs in which all the verbs are divided into morphemes, and the verbs of the same root are interconnected to form formative families (e.g. adding prefixes and suffixes to the Croatian verb *pisati*, to form different verbs: *pisati*, *ispisati*, *ispisivati*, *napisati*, *popisati*, *popisivati*, *prepisati*, *prepisivati*...). CroDeriV will also include nouns divided into morphemes which will be connected with the corresponding verbs through their roots, and will be able to show formatively related words (*pisac*, *spisatelj*, *pisac*, *pismo*...).

Researchers have also developed two new computer resources. The first is the dictionary of neologisms, which already had most of its material, but was not designed for computer display. It records words that came into Croatian language from other languages, such as the word *gadget*, but also words that at some point acquired another meaning under the influence of other languages, such as the word *workshop* (Croatian *radionica*, which previously designated a place where some work was being done, and now it also has the meaning of the English word *workshop*). Dictionary of neologisms is also open for user suggestions.

Another resource that is being developed is the corpus of Croatian as a foreign language that collects the texts of foreign users on the portal, which will provide researchers in that area useful material to explore issues such as the most common mistakes made by those learning Croatian.

All those resources have not been used in language learning, but were primarily used in natural language processing – the development of a machine translation system, a system for extracting information from texts and similar, and researchers also believe that they are a very useful tool for learning languages, which is why they encourage their users to use them.

An example of good practice in the context of modernizing the teaching of Croatian language for foreigners can also be taken from the University of Zagreb which organizes the HiT (Sveuciliste u Zagrebu (a, b)) project, i.e. online courses of Croatian language. The University of Zagreb, the Croatian Heritage Foundation and the University Computing Centre (SRCE) organize e-courses of Croatian language at beginner's level. The course is intended for those who do not know Croatian language or know only the basics of Croatian. The HiT-1 course is form of distance learning. This is a course conducted through an e-learning system, and includes 24 mandatory lessons with an online tutor (via Skype and Webinar). Since this course was founded on the Moodle platform, participants need to have basic computer skills. The course is not in the form of software that can be purchased and that remains available for use after its completion, but is carried out using teaching materials at an e-learning platform accessible only through the duration of the course.

The necessity of applying computer technologies in the teaching of Croatian language for foreigners in the 21st century is also confirmed by foreign language schools in Croatia. An example is Intellecta, a foreign language school and translation centre in Zagreb where Croatian language can be learned at four levels: a general course of Croatian language for foreigners, a crash course of Croatian language for foreigners, an intensive course of Croatian language for foreigners, and an individual course of Croatian language for foreigners. Intellecta's guiding principle is: "Knowing the language of the country you live in is not only a great advantage, but also a cultural enrichment! Learn Croatian in a school where lessons last 60 minutes, and brilliant teachers and modern teaching methods turn learning into pleasant language socialization!" It is also noted that the emphasis has been placed on modern teaching methods.

Literature also refers to the use of modern methods in teaching Croatian language to foreigners. It cannot be disregarded that the influence of computer technology today is huge, and that the use of such technologies can only contribute to the quality of teaching, of course, if it is well planned and if the learning outcomes are determined.

According to Janjić, Librenjak, and Kocijan (2017), students could easily do homework in audio or video format and thus practice the aspects of language that cannot be expressed in written form. Written assignments could easily be done on blogs and they would get feedback on their work not only from the teachers but also from colleagues. This way, the Internet would become not only a source of information that needs to be copied in the written work, but also an active tool for producing material available to the public.

For students, a simple and acceptable method is also interaction through blog as a network platform. The possibility of communication in Croatian language also exists outside the classroom, but implies a certain level of language proficiency and the teacher's digital education.

As for the cultural aspect of learning Croatian language, according to Lasic (2011), the comparison of Croatian language for foreigners with other languages from the aspect of cultural paradigm, points, in textbooks, to the fact that culture is of great importance in the process of acquiring any foreign language. Pasini (2010) noted that, according to the Common European Framework of Reference for Languages, intercultural skills (*savoir-faire*) include: the ability to establish a relationship between one's own and a foreign culture, cultural sensitivity and the ability to identify and use different strategies for establishing contact with people from other cultures (Bilic – Stefan, 2008), the ability to fulfil the role of a cultural mediator between one's own and foreign cultures and the ability to successfully resolve intercultural disagreements and conflict situations, as well as overcoming stereotypical relations (CEF, 2005).

In the process of acquiring a foreign language, according to Bilic – Stefan (2006), especially with the help of new computer technologies, an opportunity arises to effectively adopt intercultural attitudes that will, along with mastering the language, develop openness and positive attitudes in a speaker towards a particular culture, while rejecting stereotypes and possible prejudices.

5. Conclusion

When it comes to models of improvement of teaching Croatian language for foreigners within the Erasmus+ programme at the University of Osijek, special attention is put on two shortcomings in this paper, and their solutions are proposed. Even though the teaching of Croatian language for foreigners at the University of Osijek has been organized for the last 6 years, there is no official curriculum for it, and, accordingly, no learning outcomes that are necessary to exactly determine the students' future competencies. Croatian language teaching therefore depends exclusively on what the teacher deems that the students should know, and the teaching content is repeated from generation to generation without evaluation at the end of the educational cycle.

The nonexistence of learning outcomes that give teachers a clear and precise basis for determining the content they will teach and choosing a teaching strategy and methods that will be applied in teaching, results in the absence of application of modern technologies, i.e. computer resources in teaching Croatian language for foreigners. As a possible solution, this paper suggests designing and applying interactive courses, available at the university's page or a separate Erasmus+ programme page, which would include all language levels of Croatian standard language (phonologic, morphologic, syntactic, lexical), but also culturally important facts about Croatian culture and history. When it comes to computer resources, the paper suggests the application of the Croatian morphological lexicon, Croatian Dependency Treebank, Croatian Wordnet, CroDeriV, Dictionary of Neologisms and the Corpus of Croatian as a foreign language.

If we observe the concept of improving the teaching of Croatian language for foreigners, participants of the Erasmus+ programme at the University of Osijek, in the context of the 21st century, it can be concluded that the quality of the existing teaching can be improved by implementing a teaching curriculum (with clearly defined learning outcomes) and modern technologies (in the form of computer resources and online interactive courses), which opens the possibility for efficient acquisition of intercultural attitudes which will, along with acquiring Croatian language, develop openness and positive attitudes in the speaker towards Croatian culture, and at the same time reject stereotypes and possible prejudices.

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Teaching diversity to prospective teachers: A cross-cultural exploration of faculty practices in two teacher education programmes

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Abstract:

Despite the growing diversity in school population, many teacher educators fail to incorporate diversity-related content into the courses they teach. As a result, numerous preservice teachers lack quality learning opportunities to become well versed on issues of diversity in meaningful ways. This manuscript reports the results of an international study which explores preservice teacher perceptions of opportunity to learning to teach in diverse inclusive classrooms. A questionnaire was used to document the perceptions of 579 student teachers from Spain and the US. Results indicated that strong international differences existed in the perceptions of respondents towards the opportunity to learn theoretical aspects of teaching for diversity (e.g., know intervention strategies to meet student diverse educational needs, or develop skills to collaborate with parents and professionals), opportunity to learning to teach inclusively (e.g., learn how to develop an inclusive curriculum, or encourage participation of all students), and opportunity to observe and analyse diversity-related practical aspects of teaching (e.g., observe/analyse diversity-related examples of good practices, or conduct diversity-related field-work) all of them favouring US respondents. The results highlight the need for increased attention to teaching diversity in preservice teacher education programmes. Implications for ongoing development of initial teacher training are discussed.

Keywords: Teacher education for diversity, opportunity to learning to teach, diverse inclusive classrooms, preservice teachers' perceptions, international higher education.

1. Introduction

Preparing teachers for diversity and inclusion is currently a global concern. Due to a number of socio-economic shifts, elementary and secondary classrooms around the world are becoming more diverse and it is expected that such diversity will increase. Acknowledgment of the changing school population demographics has resulted in a

great deal of attention focused on how to best prepare preservice teachers to respond to the diverse educational needs of all students in the classrooms. Additionally, the inclusive school movement has also been an impetus for change, not only in curriculum and instruction but also in the roles of teachers and teacher educators. Current policy on inclusion (e.g., the United Nations Convention on the Rights of People with Disabilities [UN, 2006, art. 24], or the No Child Left Behind Act [NCLB, 2001]) call for highly qualified teacher educators and mandate that all learners, including those with disabilities, make adequate yearly progress. Also, in the conclusions and recommendations of the 48th session of the International Conference on Education held by UNESCO (2008), it is stated that policy makers should acknowledge the nature of inclusive education as "... an ongoing process aimed at offering quality education for all while respecting diversity and the different needs and abilities, characteristics and learning expectations of the students and communities, eliminating all forms of discrimination." (UNESCO, 2008, p. 3). Such elevated expectations have a profound impact on preservice teacher preparation internationally, which makes that teacher education issues are high on the educational policy agenda not only across Europe but worldwide.

In the European context, the OECD report *Teachers Matter* (Organisation for Economic Cooperation and Development, 2005) recognises that the demands on schools and teachers are becoming more complex, as society now expects schools to deal effectively with different languages and student backgrounds, to be sensitive to culture and gender issues, and to promote tolerance and social cohesion to respond effectively to disadvantaged students and those with learning and behavioral difficulties. Recognising this increasing complexity, in May 2009, the European Council of Education Ministers agreed on a strategic framework for European cooperation in education and training for the period after 2010: *the Education and Training 2020 Agenda* (Council of the European Union, 2009). In the context of this framework, the OECD Center for Educational Research and Innovation (CERI) project, *Teacher Training for Diversity* (OECD, 2010), focused on how teachers were prepared for the increasing classroom diversity, and aimed to identify the common challenges which European countries are currently experiencing in their teacher education programmes. The study resulted in no clear answers to essential questions. National responses and the priority given to diversity issues in teacher education programmes seemed to depend to a large extent on history and tradition, and they were also determined by the scale of the challenge and the perceived relevance of the topic in specific contexts. For this reason, one of the difficulties encountered in reviewing the literature is that there are different ideas regarding what counts as "diversity training" and what the intended outcomes should be.

To equip all teachers to meet the challenges connected with an increasingly diverse student population, several countries have included some diversity training in initial teacher education. However, the OECD (2010) and other studies (e.g., Severiens, Wolff, & Sanne van Herpen, 2014) emphasise the importance of core teacher education on diversity if teachers are to be effective as teachers and all children are to achieve. The

OECD particularly insists on the fact that diversity training should be part of the core pedagogical training of all teachers and should be included in all teacher training subjects at all stages of teachers' development.

Teaching diversity has also been a consistent theme in teacher education programmes across the United States (Miller, Strosnider, & Dooley, 2000), yet most institutions of higher education have struggled to incorporate standards for implementing diversity coursework into their certification programmes. In the case of multicultural training, Evans, Torrey, and Newton (1997) found that 82% of states require some level of multicultural or diversity training for teacher preparation programs. However, only 37% of these states have a specific requirement as part of gaining teacher certification. Most teacher education programmes infuse multicultural and diversity education into traditional coursework. Other attempt to improve social, cultural, and linguistically responsive teacher education appealing to university faculty to integrate diversity into their courses when, in reality, many faculties in content areas do not feel they are prepared to do that, leaving courses on diversity education as electives. Thus, specific requirements for diversity training vary greatly among states, with some having more rigorous or meaningful criteria than others.

In efforts to increase teacher quality, coursework related to teaching diversity has increased over recent years; nevertheless, the impact of this increase on teacher practices has received little attention. The majority of research in this area provides programme descriptions without empirical evidence regarding long-term effects on preservice teachers and student outcomes (Booker, Merriweather, & Campbell-Whately, 2016; Mayhew, & Grunwald, 2006; Milem, 2001; Morrier, Irving, Dandy, Dmitriyev, & Ukeje, 2007; Sciamé-Giesecke, Roden, & Parkison, 2009).

A few studies have indicated that effective diversity education courses should also provide an opportunity for a close look at the educator's own cultural biases and attitudes as it relates to the individual's culture as well as those of all the children to be encountered (Hefflin, 2002; Smith, 2000). Howard's (2001) seminal research looking at students' perceptions of culturally-relevant teaching indicates that students can tell if a teacher is comfortable with cultures and diversity different from his or her own. Diversity comfort is demonstrated by the amount of individualized authentic experiences educators provide students to engage them in academic content. However, there is a growing concern that teachers are not prepared or able to apply the national standards of academic excellence in an equitable manner to all students (National Council of Accreditation of Teacher Education, NCATE, 2010-2012; SMECS, 2007a, 2007b). In the US, a report from the National Center for Education Statistics (US Department of Education, 1999) found that only 20% of teachers expressed confidence in working with children from diverse backgrounds.

To understand the factors that contribute to teacher education resistance to incorporate diversity-related content into their course materials, a series of studies have investigated the effects of racial climate variables and faculty characteristics (Hurtado, 2001; Maruyama, & Moreno, 2000; Milem, 2001). Hurtado (2001) analyzed data from

the 1989-1990 Faculty Survey administered by UCLA's Higher Education Research Institute of over 16,000 faculties at 159 selective predominantly White institutions across the US. Findings suggested that women were significantly more likely than men to require reading on racial/ethnic or gender issues in their courses. Additionally, African American faculty were the most likely to report having required readings on gender or race/ethnicity in their courses, while Asian American faculty were the least likely to have done so.

In another study, designed to assess university faculty views on the value of diversity on campus and in the classroom, Maruyama and Moreno (2000) administered the *Faculty Classroom Diversity Questionnaire* to a representative national sample of 1,500 college and university faculty. Results showed that the majority of faculty valued diversity in the classroom for its role in helping students to achieve the goals of a college education, and in helping faculty members to develop new perspectives on their own teaching and research. However, the majority of these faculty members also reported making no changes in their classroom practices. In fact, although faculty in this study reported being well-prepared and comfortable teaching diverse groups, only about one third of them actually raised issues of diversity in the classroom. These results differed as a function of the faculty's professional characteristics and demographics. Senior faculty members were less positive about the value of diversity and less likely to address issues of diversity than faculty of lower Rank. Faculty of color and female faculty viewed the climate for diversity as less positive, reported the benefits of diversity as more positive, felt better prepared to deal with diversity, and were more likely to address issues of diversity than their White and male colleagues.

Milem (2001) conducted the most comprehensive study of factors that contributed to faculty's likelihood of incorporating diversity-related content in their course materials. He examined how a series of demographic, professional, and perception-based factors affected faculty members' inclusion of readings on the experiences of racial and ethnic groups in the classroom. Results showed that only 14% of faculty reported incorporating diversity-related content into their courses. Overall, factors predicting curricular inclusion of diversity-related content included academic discipline, gender, race, perceived institutional commitment to diversity, and faculty interest in research and teaching. Similar to findings from studies by Hurtado (2001) and Maruyama and Moreno (2000), Milem's findings showed that faculty of color and women were more eager than men and White educators to report that they incorporate reading on racial issues in their classes.

In summary, although the issue of diversity is contained in standards for teaching (NCATE, 2010-2012; SMECS, 2007a, 2007b), in practice, it is inconsistently and often ineffectively addressed in teacher education programs. Specific requirements for diversity preparation vary greatly among countries and within countries, with some having more rigorous or meaningful criteria than others (OECD, 2010). Clearly, institutions of higher education have had difficulty incorporating training for diversity in their teacher education programs. While some researchers and universities claim that they are adequately educating preservice teachers for diversity (Bodur, 2010),

other are not responding conveniently to the requirements of diversity issues (Ball, & Tyson, 2011) with the consequence that programme graduates are entering the profession without adequate knowledge, attitudes, and skills to teach diverse students (Benton-Borgh, & Chang, 2011). As Cochran-Smith (2004) stated, little has really changed in the ways student teachers are prepared to teach in diverse classrooms and major disparities about notions of equity, teacher learning and social change exist. "Many teacher educators themselves, perhaps even most teacher educators, have not had the transformative learning experiences necessary to interrupt the conservative assumptions underlying teacher education programmes at many higher education institutions. Few programmes and departments have built into their ongoing operations, the intellectual and organisational contexts that support teacher educators' learning about (and struggling with) issues of race, racism, diversity and social justice in education." (Cochran-Smith, 2004, p. 13)

The clear disconnection between teaching diversity and legislative mandates prompted us to explore the current practices of teacher educators for preparing preservice teachers for diversity at a comparative level. Because of the limited research on the effectiveness and impact of diversity training, the purpose of the current investigation was to ascertain to what extent teacher educators give opportunity to learning to teach sensitively and inclusively through the subjects they teach. For the purpose of this study, effectiveness was defined as student teachers' self-perceptions on how much (*none, brief, in depth, extensive*) opportunity educators give them to develop knowledge, beliefs, and skills to become well versed to work with diverse learners. A survey methodology was employed to address the following research questions:

- 1) How much opportunity student teachers have during course-work to learn diversity-related knowledge-based?
- 2) How much opportunity student teachers have to learning to teach inclusively?
- 3) How much opportunity student teachers have to observe and analyse practical aspects of diversity teaching?
- 4) Do these opportunities to learning to teach in diverse classrooms differ between Spaniard and US respondents?

2. Methodology

The study was intended as an initial investigation to shed light on what faculty members are actually teaching and doing in their classrooms to prepare student teachers to work in diverse educational settings.

2.1. Participants and context

The investigation took place in the context of two different teacher education institutions (one significantly more diverse than the other), located in Spain and in the US. The study was designed within the framework of a research project *Teacher Training for Diversity and Inclusion* led by the University of Alicante (UA), Alicante,

Spain, in partnership with the College of Education and Human Development, University of Minnesota (UMN), Twin Cities.

The participants were college students enrolled in teacher education programmes at these two four-year institutions. Both institutions offer accredited teacher education programs designed to prepare teacher candidates for K-12 setting. The UA Faculty of Education has a total student enrollment of 3,426 undergraduates (27% males and 73% females), 98% Spaniards majoring in Kindergarten, Elementary and Physical Education (UA, 2016). The UMN College of Education enrollment is of 2,437 undergraduate students (40% males and 60% females) majoring in Early Childhood, Elementary, and Special Education (UMN, 2016). According to data recorded in the Office of Institutional Research for Fall 2016, the demographic composition of UMN College of Education was 0.4% American-Indian, 13.1% Asian, 9.4% African-American, 4.8% Hispanic, 6.9% non-resident Alien, 64.7% White, 3.2% multi-ethnic, and 0.2% Unknown. This data is similar to that of the sample.

Students entering teacher education programmes at each of these universities are not required to enroll in a state-mandated course that focuses on issues relating to diversity and/or inclusive education, however, teacher education programs at both institutions are committed to providing teacher candidates appropriate and sufficient knowledge, abilities, and dispositions to enable them to understand, accept, and embrace diversity and equity in the learning processes, as indicated in the Conceptual Framework of Programme Plans in their respective institutional Websites.

The sample for this study was identified using the data available from the University of Alicante Office of Statistics (UA, 2016) and the University of Minnesota Office of Institutional Research (UMN, 2016). The sample included a two-stage sampling design: (1) identification of the number of preservice teachers' potential participants in the survey; and (2) selection of respondents from each institution. Based on an analysis of the university catalogues and programme sample plans by degree, we looked for the courses in which we could survey all the cohort. In doing so, we contacted with department heads who help in identifying the courses and facilitating instructors' contact details. All the students in the mentioned degrees of the 2016 academic year were selected and solicited for participation in the study. The total enrollment data by university included 707 student teachers at the UA and 125 at UMN. Therefore, the final sample included 832 student teachers. A total of 579 usable surveys were completed and returned, representing approximately a 70% return rate.

Table 1 summarises the demographics characteristics of respondents. As can be observed, respondents were pursuing a degree on Early Childhood (25%), Elementary (54%), and Special Education (21%). The sample of the UA was composed predominantly of Spaniards (98%), whereas the one of Minnesota of European-Americans (65.4%). The distribution of the entire sample was 81.40% female and 18.60 male ($n = 475$, 82% from UA sample, age range of 20-52, $M = 22.23$ and $SD = 3.76$); and $n = 104$, 18% from UMN sample, age range of 19-57, $M = 23.09$ and $SD = 5.20$).

Table 1. Demographic data by subsample

	UA Sample (Spain)					UMN Sample (USA)				
	Min.- Max.	M	SD	f	%	Min.- Max.	M	SD	f	%
Age	22-52	22.23	3.76			19-57	23.09	5.20		
Gender										
Female				378	79.6				91	87.5
Male				94	19.8				13	12.5
NA				3	0.6				0	0
Ethnicity										
Spaniard				466	98.1					
Other				9	1.9					
African-American									3	2.9
Asian									12	11.5
European-Americ.									68	65.4
Hispanic/Latino									4	3.8
Native American/PI									17	16.3
Degree										
Early Childhood				204	42.9				8	7.7
Elementary				271	57.1				52	50.0
Special Education				0	0				44	42.3

2.2. Instrument

The *Survey on Opportunity to Learning to Teach in Diverse Inclusive Settings* (SOLTiDIS) was developed by the principal researchers in 2015 and was pilot tested with a select number of experts and preservice teachers from the same participating institutions during the 2015 academic year. The pilot test included reviewer comments regarding face, content and construct validity. Adjustments were made to the instrument based on feedback from the field and results of the pilot data.

The SOLTiDIS included three sections. Section I: About this Survey; Section II: Demographics; and Section III: the *Opportunity to Learning to Teach in Diverse Inclusive Settings Rating Scale* which include 16 items which assessed along a 4-point continuum (1 = *None*, 2 = *Brief*, 3 = *In depth*, 4 = *Extensive*) the extent to which educators give opportunity for preservice teachers through their course-work to learn strategies to deal with student diversity in inclusive classrooms. Section III of the survey measure a variety of different constructs relating to diversity (e.g., intervention strategies to work on issues of diversity in meaningful ways; specific philosophical, curricular and instructional issues and practices on learning to teach inclusively; and critical reflection on expert teaching to develop practical skills. The survey instrument has been tested again with the sample of this study for internal consistency and construct validity.

Factor analyses were conducted by subsamples to investigate the factorial structure and invariance of the scale in each setting. Principal Components Analysis was used, with a Varimax rotation using the criterion of eigenvalues > 1.0 and item loadings greater than .45. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's Test of Sphericity were acceptable ($p < .000$) for both samples. A three-

factor solution with 16 items was viewed as a better representation of the SOLTiDIS scale for both cohorts (see Table 2). The three factors explained 61.41% of the variance (55.34% and 59.91%, Spanish and US samples, respectively). The first factor, with seven items, focused on the theoretical aspects and intervention strategies for teaching in diverse classrooms and explained 45.42% of the variance (37.98% and 37.94% Spanish and US samples, respectively); the second, with six items, related to specific issues to learning to teach inclusively and explained 9.02% of the variance (9.40% and 12.77% Spanish and US samples, respectively); lastly, the third factor (three items) measured opportunities to observe and analyse practical aspects of teaching for diversity and explained 6.97% of the variance (7.96% and 9.19% Spanish and US samples, respectively). As a result of the factor analysis, one item was eliminated because it failed to load in any factor or loaded in multiple factors simultaneously. Table 2 presents the factor structure of the instrument by subsample. As can be observed, the factorial structure is the same for both samples with similar factor loadings in each factor, which confirm the invariant nature of the construct.

The full-scale, composed of 16 items, shows good internal consistency (Cronbach's alpha .917 for the whole sample, and .887 and .884, for the Spanish and US samples, respectively).

Table 2. Factor structure of the Survey on Opportunity to Learning to Teach in Diverse Inclusive Settings (Principal component analysis) by subsamples

	Factor I		Factor II		Factor III	
	UA	UMN	UA	UMN	UA	UMN
Opportunity to Learn Knowledge-Based for Teaching in Diverse Classrooms (OLKT-DC)						
11. Propose appropriate intervention strategies.	.733	.797				
2. Know intervention strategies to meet student diverse educational needs.	.677	.697				
3. Acquire knowledge and techniques to motivate students.	.721	.691				
5. Develop skills to collaborate with parents/professional.	.717	.587				
4. Know/manage analysis and behaviour modification strategies.	.685	.671				
10. Gain understanding of schools, classrooms, and students' diverse educational needs.	.573	.676				
13. Identify special or specific educational needs and make appropriate referrals.	.622	.750				
<i>Eigenvalues = 6.08 and 6.07</i>						
Opportunity to Learning to Teach Inclusively (OLTI)						
14. Discuss issues of quality, equity, and equal opportunities.			.721	.696		
8. Adapt curriculum and teaching.			.677	.708		

9. Assess authentic learning.	.555	.703
12. Discuss educational law and policies with regard to diversity and inclusion.	.716	.483
7. Encourage participation of all students.	.626	.651
6. Design and develop and inclusive curriculum.	.492	.638
<i>Eigenvalues = 1.50 and 2.04</i>		
Opportunity to Analyse Practical Aspects of Teaching for Diversity (OAPA-TD)		
16. Conduct diversity-related field-work.		.815 .890
17. Observe and analyse diversity-related examples of good practices.		.783 .881
15. Observe and analyse expert teachers' performance.		.769 .880
<i>Eigenvalues = 1.27 and 1.47</i>		

2.3. Procedure

Ethics approval in accordance with university requirements were obtained from both institutions prior the survey administration. The survey instrument was administered to several student teacher groups (in their second/third year of study) of each university cohort during class time at a time and date arranged by both researchers and instructors. Students who were present in the class on the day of survey anonymously and voluntarily completed the survey after the informed consent had been granted. Before the survey administration, information about the research project's goals and procedures was read to participants. People who did not wish to participate returned blank surveys or left the room. After completion, the surveys were returned to the researcher present in class during the survey administration. All data collected was aggregated and kept confidential.

2.4. Data analysis

We performed descriptive, exploratory, and comparative analyses using SPSS, version 22, following three steps. First, frequencies and percentages were used to report demographic data. Second, data reduction techniques (exploratory factor analysis) were used to identify the scale factor structure. Third, means, standard deviations, and inferential statistics (*t* tests for independent samples) were calculated for each item of the SOLTiDIS scale by factors to describe how the respondents perceived opportunity to learning to teach in diverse environments, and compare if their perceptions varied as a function of university context. In addition, Cohen's *d* for *t* test (independent samples) was also calculated to measure effect size. Data was segregated by institution to facilitate the analysis. All statistical analyses were computed with an *alpha* level of .05.

3. Results

Results are presented structured according to the research questions addressed in this study.

3.1. Opportunity to learn diversity-related knowledge-based for teaching in diverse classrooms

The overall respondents' perceptions of opportunity to learn diversity-related knowledge and intervention strategies to work in meaningful ways in diverse classrooms were slightly below the neutral midpoint of the scale ($M = 2.49$, $SD = 0.73$) (see Table 3) for Spanish respondents, and clearly above the midpoint for US respondents ($M = 3.11$, $SD = 0.83$). Note that the scale ranged from 1 (*None opportunity*) to 4 (*Extensive opportunity*) indicating these results that while the Spanish student teachers perceived they had *brief* opportunities during course work to learn how to work with diverse learner in inclusive environments, US respondents believed that the opportunities they had were *intensive enough* to do so. In fact, 53% of the Spanish respondents reported none/brief opportunity to learn theoretical and intervention aspects of diversity while 81% of the US respondents rated the opportunities for them as quite extensive.

Table 3. Opportunity to learn knowledge-based for teaching in diverse classrooms: Descriptives, frequencies, and comparison of means by subsamples

	<i>M/SD</i>	UA Sample				UMN Sample				<i>t</i>	<i>d</i>	
		<i>NO</i>	<i>BR</i>	<i>ID</i>	<i>EX</i>	<i>M/SD</i>	<i>NO</i>	<i>BR</i>	<i>ID</i>			<i>EX</i>
1. Know intervention strategies to meet diverse educational needs.	2.6/0.7	2	45	45	8	3.2/0.7	0	13	54	33	-8.3*	.924
2. Propose appropriate intervention strategies.	2.4/0.7	6	54	36	4	3.1/0.8	3	17	47	33	-9.6*	.997
3. Acquire knowledge and use strategies to motivate students.	2.7/0.8	4	40	41	15	3.3/0.7	0	15	45	41	-7.2*	.823
4. Know/manage analysis and behavior modification strategies.	2.7/0.8	4	37	45	13	3.2/0.7	1	14	53	32	-6.6*	.703
5. Develop skills to collaborate with parents/professionals.	2.2/0.8	16	54	25	5	2.9/0.8	4	24	46	26	-9.0*	.968
6. Gain a better understanding of schools, classrooms, and students' diverse needs.	2.4/0.8	12	46	33	4	3.2/0.8	3	15	46	36	-8.8*	.968
7. Identify specific educational needs and make appropriate referrals.	2.5/0.7	5	41	48	6	2.9/0.8	4	22	51	23	-5.2*	.547
Total average	2.5/0.7	7	16	39	8	3.1/0.8	2	17	49	32		

All responses are on a scale of 1 to 4. The anchors are 1 = *None*; 2 = *Brief*; 3 = *In depth*; 4 = *Extensive Opportunity*.
*Significant at .001. Cohen's $d = .2$ small, $.5$ medium, $.8$ large effect size.

Table 3 also shows respondents scores on individual items. Spanish respondents reported that they had more opportunities to learn knowledge to manage behavior modification strategies ($M = 2.66$, $SD = 0.76$) or acquire techniques to motivate students ($M = 2.65$, $SD = 0.78$) than for developing skills to collaborate with parents and professionals ($M = 2.19$, $SD = 0.76$). On the other hand, although US respondents indicated that their opportunities for learning knowledge on diversity were clearly sufficient in all aspects considered, they reported having had less opportunity for

developing skills to collaborate with parents and professionals ($M = 2.95, SD = 0.81$) and for identifying specific learner educational needs and make appropriate referrals ($M = 2.94, SD = 0.78$) than for motivating students ($M = 3.26, SD = 0.70$) or learn intervention strategies to meet students' diverse educational needs ($M = 3.21, SD = 0.65$).

Comparisons of average ratings on knowledge-based on diversity by country revealed statistically significant differences in opportunities to learn this kind of knowledge between Spanish and US respondents at .001 (see Table 3). US respondents perceived that they had significantly more opportunities to learn diversity-related knowledge than did the Spanish preservice teacher participants, differences that can be considered strong (average Cohen's d effect size of .793).

3.2. Opportunity to learning to teach inclusively

Survey participants' ratings of the opportunities to learning to teach inclusively are presented in Table 4. Again, Spanish respondents had more neutral ratings (around the midpoint of the scale which is 2.50) in all the six items that measure opportunity to learning to teach inclusively ($M = 2.59, SD = 0.78$) than US respondents ($M = 3.11, SD = 0.75$). Particularly, Spanish student teachers tended to agree that they had below average opportunities to design and learn how to develop an inclusive curriculum ($M = 2.35, SD = 0.70$), while US respondents perceived slightly above the neutral midpoint the opportunity for analysing and discussing educational laws and policies with regard diversity and inclusion ($M = 2.83, SD = 0.82$). The opportunity to learning the other skills of this domain was rated by US respondents as sufficiently intensive. Note that only a half of the Spanish respondents (54%) rated the opportunity to learning to teach inclusively as *in depth* or *extensive* while the vast majority (80%) of the US counterparts did so. In all cases, Spanish respondents rated significantly lower the opportunity to learning to teach inclusively than did US respondents ($p < .01$), with strong effect sizes for Items 8, 9, 10, and medium or small for Items 13, 11, and 12, respectively.

Table 4. Opportunity to learning to teach inclusively: Descriptives, frequencies, and comparison of means by subsamples

	<i>M/SD</i>	UA Sample				UMN Sample				<i>t</i>	<i>d</i>	
		<i>NO</i>	<i>BR</i>	<i>ID</i>	<i>EX</i>	<i>M/SD</i>	<i>NO</i>	<i>BR</i>	<i>ID</i>			<i>EX</i>
8. Design and learn how to develop an inclusive curriculum.	2.4/0.7	8	53	34	5	3.0/0.7	3	18	54	25	-8.3*	.930
9. Encourage participation of all students.	2.8/0.8	4	26	53	17	3.5/0.6	0	5	42	53	-8.3*	.978
10. Adapt curriculum and teaching.	2.5/0.7	5	44	44	7	3.2/0.8	3	12	46	39	-8.7*	.930
11. Assess authentic learning.	2.7/0.7	2	37	53	8	3.0/0.8	3	22	49	26	-4.3*	.446
12. Analyse and discuss educational laws and policies on diversity and inclusion.	2.6/1.1	6	45	41	8	2.8/0.8	5	28	45	22	-2.4*	.285
13. Review/discuss issues of quality, justice, equal opport.	2.6/0.8	6	38	46	10	3.1/0.8	3	18	43	36	-6.4*	.679
Total average	2.6/0.8	5	41	45	9	3.1/0.8	3	17	47	33		

All responses are on a scale of 1 to 4. The anchors are 1 = *None*; 2 = *Brief*; 3 = *In depth*; 4 = *Extensive Opportunity*.
 *Significant at .01 or above. Cohen's $d = .2$ small, $.5$ medium, $.8$ large effect size.

3.3. Opportunity to observe and analyse practical aspects of teaching diversity

The Spanish and US student teachers' overall perception of opportunity to analyse expert teaching and develop practical skills in regards to diversity was brief or at low level ($M = 2.28$ and $M = 2.84$, respectively). The respondents' average ratings on this domain varied significantly across the three items (see Table 5). Respondents' perceptions of opportunity for conducting field-work focused on diversity ($p < .01$), observing and analysing expert teachers' performance ($p < .05$), and observing and analysing examples of good practices ($p < .01$) were significantly lower for Spanish preservice teacher respondents than for the US respondents.

As can be observed in Table 5, 63% of Spanish respondents vs. 29% of the US respondents reported none or brief opportunities to conduct field-work during their training period; almost half of the subsamples (42% vs. 41%) indicated lower opportunities to analyse expert teachers' performance, and 36% vs. 71% of the Spanish and US respondents, respectively, considered that the opportunities they had to analyse examples of good practice with regards to diversity and inclusion were quite extensive.

Table 5. Opportunity to observe and analyse practical aspects of teaching for diversity: Descriptives, frequencies, and comparison of means by subsamples

	<i>M/SD</i>	UA Sample				UMN Sample				<i>T</i>	<i>p</i>	<i>d</i>	
		<i>NO</i>	<i>BR</i>	<i>ID</i>	<i>EX</i>	<i>M/SD</i>	<i>NO</i>	<i>BR</i>	<i>ID</i>				<i>EX</i>
14. Conduct diversity-related field-work.	2.2/0.9	23	40	30	7	2.9/1.1	17	12	33	38	-6.2	.000	.750
15. Observe and analyse expert teachers' performance.	2.5/0.9	16	36	32	16	2.7/0.9	12	29	36	23	-2.3	.023	.243
16. Observe and analyse diversity-related examples of good practices.	2.2/0.9	22	42	29	7	2.9/0.9	10	19	44	27	-6.3	.000	.775
Total average	2.3/0.9	20	40	30	10	2.8/1.0	13	20	38	29			

All responses are on a scale of 1 to 4. The anchors are 1 = *None*; 2 = *Brief*; 3 = *In depth*; 4 = *Extensive Opportunity*.
 Cohen's $d = .2$ small, $.5$ medium, $.8$ large effect size.

Comparison of item ratings in this domain revealed again that student teachers from Spain rated the opportunity to observe and analyse the practical aspects of teaching for diversity significantly lower than their counterparts in the US (Cohen's d ranged in this domain from .243 to .775, small for Item 15 and strong for Items 14 and 16).

This has been a consistent trend throughout the analysis of responses to each of the scale's subfactors.

4. Discussion

Our main goal was to explore student teachers' perceptions of opportunity to learning to teach in diverse inclusive classrooms. Initially, a factor analysis was undertaken which revealed three domains of the construct: (1) Opportunity to learn theoretical aspects and knowledge-based for teaching in diverse settings; (2) Opportunity to learning to teach inclusively; and (3) Opportunity to observe and analyse practical aspects of sensitive teaching for diversity. These three domains are in line with the key areas of any process of instruction that emphasises learning to teach in effective and meaningful ways, in this case, for diversity.

Our results showed evidence of strong international differences in student teachers' perceptions of opportunity to learning to teach in diverse inclusive settings, with preservice teachers in Spain consistently reporting lower perceptions of opportunity than did their counterparts in the US. In terms of perceptions of opportunity to learn knowledge-based for teaching in diverse settings, the US student teachers reported significantly higher ratings of opportunity than Spaniards. These differences are, however, perplexing but comprehensible. In a previous study conducted under similar conditions, Cardona-Moltó (2017) compared the institutional sensitivity on diversity and its impact on teaching of preservice teachers from the same two colleges of education participating in this study and found that although 49% vs. 96% (Spanish and US preservice teachers) agreed that their college of education welcomes diversity only a third of the Spanish respondents believed that the university departments are really compromise to diversity (35% vs. 80%). Moreover, only one-third and one-quarter (UA and UMN samples, respectively) agreed/strongly agreed that their instructors did not change the way they teach to integrate diversity in their courses. This findings further support that of Maruyama and Moreno (2000) study who explored university faculty views from the US on the value of diversity and found that the majority of participants valued this aspect of the human differences as positive, but reported making no changes in their classroom practices.

With respect to opportunity to learning to teach inclusively and opportunity to observe and analyse the practical aspects of good teaching for diversity, ratings were considered low in the Spanish sample compared to the US sample. These results support previous studies conducted in Spain and the US (e.g., Cardona-Moltó, Tichá, Abery, & Chiner, 2017; Mayhew, & Grunwald, 2006), which identified a lack of programme coherence with the standard of diversity, as well as a lack of instructors' compromise on integrating diversity content into teaching. The findings of another study conducted in the US on factors contributing to faculty incorporation of diversity-related course content (Mayhew, & Grunwald, 2006) are congruent with the notion that many US faculty members still do not integrate diversity-related materials into their course content, fact that contribute to understand why student teachers report to have little opportunity to learning to teach in diverse settings.

Possible explanations for the identified differences in perceptions of opportunity to learning to teach in diverse settings of Spanish and US respondents in this study refer

to socio-cultural factors and experience with diversity. The UA and UMN samples differ in socio-cultural context, one is European and the other North-American. In addition, the UMN has a stronger tradition of diversity than the UA that only recently has begun to experience it. But possible explanations of the results do not should refer only to cultural or contextual variables. The findings of this study clearly shows that when it comes to teaching diversity, differences may well be much more subtle than the mentioned, and that the prevailing cultural context in each individual country, region, state, or institution might prove to be a better context in which to frame the results. Therefore, caution need to be taken when making assumptions about cultural context as an explanation for research findings in this area.

The data reveal potential areas of need concerning articulation of diversity and inclusion previously identified in the literature (e.g., Darling-Hammond, 2017; Sciamè-Giesecke, Roden, & Parkison, 2009) The findings clearly show that there is a need to (a) increase the coherence of study plans with the standard of diversity, (b) coordinate course requirements on the mandates of diversity and inclusion, (c) provide more faculty awareness of diverse learners, and (d) offer real opportunities for faculty practical teaming experiences and innovation on how to integrate diversity-related course content into their teaching. Also the findings reported here bridge the gap between past research concerning teacher training and current challenges articulated in UN (2006), OECD (2010), and country mandates on standards on diversity. Moreover, the results provide a baseline with regard to teacher training for diversity in higher education and serve as a call to the field respecting the need for improving the quality of preservice teacher education programmes.

This research is not exempt from limitations. The study was carried out at only two predominantly White TE institutions, being the samples one significantly lower than the other, so the findings may not generalize to other teacher education environments and/or student teachers' samples. Also, survey data are self-report in nature, so future studies should implement an observational component to see if what students claim is happening or occurring in the classroom setting. Asking faculty to allow for observations of course sessions could provide an additional layer of information from which administrators can plan for future diversity programming (Sciamè-Giesecke, Roden, & Parkison, 2009).

In spite of these limitations, the findings of this study are valuable for assessing how TE programs are preparing prospective teachers to teach in diverse inclusive settings. The findings may prove beneficial in measuring the knowledge and practical skills student teachers learn throughout their teacher preparation and in identifying needs to be addressed. In this study, not only Spanish but US participants showed needs that urge to be considered in their respective TE programmes (e.g., develop skills to collaborate with parents and professionals or conduct diversity-related course work). It is also the believes of these researchers that future research should consider the impact of different TE programmes (general education, inclusive, and separate programmes) alongside with other institutional characteristics (e.g., approaches to teaching diversity and inclusion) on prospective teachers' knowledge and skills for

inclusion, and consider this information in assessing and reshaping the preparation of future teachers before entering the profession.

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Association rules in students' standpoint analysis of educating special needs pupils with ICT

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Abstract:

Numerous studies have explained and established the impacts and benefits of effective Information and Communication Technology (ICT) use in education. Yet, for many future teachers there are still some uncertainties regarding the integration of ICT into the learning process. This is particularly noticeable when it comes to education of pupils with special needs, which raises concerns about future teachers' knowledge about the proper ICT use and their familiarity with technology that can be used to empower students with special needs. With the purpose of revealing class teacher students' characteristics regarding this issue, association rule analysis of their standpoints regarding education of students with special needs was conducted. Standpoints of 77 students from all study years of the class teacher studies at the Faculty of Education, University of Osijek were analysed. Two approaches were used for rule generation and graphical representation of obtained rule associations is presented.

Keywords: association rules, special needs, education, standpoint

1. Introduction

The term "students with special needs" broadly covers students with any disability as well as gifted students (Narodne novine, 2017). The ways in which they are recognised may vary in different countries, but the share of students with special needs in educational systems around the world is not negligible (Watkins & Weber, 2002). Educators are in a constant search of a way to include them effectively into regular classrooms during compulsory education with the aim of increasing their educational outcomes. ICT use is recognised as essential in special needs education (Abbott & Galloway, 2003). Following Means (1995 from Florian, 2004) which considers four purposes in which ICT is used in education of students with special educational needs (to tutor, to explore, to communicate, applied as tool), Florian (2004) considers additional two purposes, assessment (as support in diagnosis) and management (as support in creating individual education plans). Still, as noted in Ribeiro, Moreira & Almeida (2010) who refer to the Gabinete de Estatística e Planeamento da Educação (2007), Sancho and Hernández (2006), Paiva (2003), Brodin and Lindstrand (2003) and

Hasselbring and Glaser (2000), insufficient ICT training is repeatedly stated as the main reason for its poor use.

This paper aims to extract association rules from a database that contains class teacher students' characteristics regarding the proper ICT use and familiarity with technology that can be used in education of students with special needs. Revealed hidden patterns can serve to educators to design their curricula and approach to strengthen students' confidence and improve their knowledge related to ICT use in education of students with special needs.

A short introduction with association rules is given in Section 2 followed by the research overview that applied association rules in the field of education that is given in Section 3. The research results are presented in Section 4 followed by the conclusion.

2. Association rules

Association rules are presented as $X \Rightarrow Y$ where X and Y are disjoint sets (Agrawal, Mannila, Srikant, Toivonen & Verkamo, 1996; Pechenizkiy, Calders, Vasilyeva & De Bra, 2008; Romero, Romero, Luna & Ventura, 2010). Commonly used measures for evaluation of each association rule are measures of support (proportion of transactions that have X and Y) and confidence (proportion of transactions that have Y between transactions that have X) (Pechenizkiy et al., 2008; Romero et al., 2010). As given in Dimitrijevic and Bosnjak (2014) support is presented with:

$$\text{support}(X \rightarrow Y) = \text{support}(X \cup Y) = P(XY) \quad (1)$$

and confidence with:

$$\text{confidence}(X \rightarrow Y) = P(Y|X) = P(XY)/P(X). \quad (2)$$

Tackett, Shaffer and Schwartz (2016) imply that higher confidence results in considerable certainty in rule correctness. As noted in Chen, Wullemmin and Labat (2015), each produced rule should satisfy the condition:

$$(\text{support}(X \rightarrow Y) \geq \text{minsupport}) \wedge (\text{conf}(X \rightarrow Y) \geq \text{minconfidence}) \quad (3)$$

They explain that support condition insures that the sufficient items are presented in database and confidence condition provides insurance for rule application. Therefore, the rules that do not meet this condition are rejected in association rule mining (Chen et al., 2015). A user defines desirable minimum support and minimum confidence (Tyagi & Bharadwaj, 2012).

Another measure commonly used for assessing rules is lift (Dimitrijevic & Bosnjak, 2014):

$$\text{lift}(X \rightarrow Y) = P(XY)/P(X)P(Y). \quad (4)$$

As stated by McNicholas, Murphy and O'Regan (2008) it measures the dependences of X and Y . Han and Kamber (2006) describe it as a degree to which the occurrence of X increases the occurrence of Y and explain that the obtained values less than 1 suggest that the occurrence of X does not imply the occurrence of Y , while the values higher

than 1 suggest that they do. Value 1 indicates independence of X and Y (Han & Kamber, 2006).

3. Literature review

Although, association rules were first used for basket data analysis, they are applied in different fields (Agrawal et al., 1996). In the field of education, researchers mostly applied association rules on data collected from different web-based systems, such as learning management system (LMS). For instance, Merceron and Yacef (2008) used association rules for discovering behaviour of students in LMS course when checking exam samples in which they constructed rules regarding students' attempts to solve given exercises. Pechenizkiy et al. (2008) demonstrated the difficulties of rule extraction on dataset concerning students' online assessments. Romero et al. (2010) also explored LMS courses log files for discovering class association rules. They observed course and activity attributes with regard to the mark attribute. In this research they applied four different algorithms (Apriori-Frequent, Apriori-Infrequent, Apriori-Inverse and Apriori-Rare) and presented some gained meaningful association rules. In other research, Romero, Ventura, Vasilyeva and Pechenizkiy (2010), focused on students' test data extracted from LMS, constructed various data matrices and mined them with class association rules. Minaei-Bidgoli, Tan and Punch (2004) concentrated on contrast rules, proposed their formulation and presented an algorithm for discovering them. Aher and Lobo (2012) used association rules in predicting students' course selection in LMS system.

However, association rules were also used in research where data were not collected from web-based systems. For example, Abdullah, Herawan, Ahmad and Deris (2011) used it on students' enrolment data. Herawan et al. (2015) applied association rules mining method (SLP-Growth, significant least pattern growth) to datasets (exam, family, presentation and library anxiety) collected from a survey. Chalaris, Chalaris, Skourlas and Tsolakidis (2013) used it on students' questionnaires trying to find rules that would help them with issues related to student retention. Belsis, Chalaris, Chalaris, Skourlas and Tsolakidis (2014) examined students' length of studies at Technological Educational Institution of Athens. They also collected data using questionnaires in their research.

Based upon various studies which have used association rules method for acquiring significant patterns from their databases, association rule method is used in this research.

4. Results

This research was carried out in the academic year 2016/2017 at the Faculty of Education and 77 students from class teacher studies participated in it. Statistica 12 Data Miner software was used for association rule mining. The initial dataset consisted of 63 variables, which besides students' gender, study year and study module, mostly

contained information about students' familiarity with the use of ICT in educating students with particular needs (30 variables) or familiarity with the work in a program designed to educate students with special needs (21 variables). These 51 variables contained Likert data on a scale from 1 to 5 where 1 was the lower value. Remaining 9 variables contained information about students' opinions regarding future ICT use in education of students with special educational needs. In accordance with the consensus stated in Mangiafico (2016), Likert items were treated in this research as ordinal variables. Due to the large number of variables in the initial dataset, two approaches for rule mining were considered. Selected variables for association rule mining are labelled separately for each approach and their short description is provided. In the first approach, in view of the fact that the students from different study years participated in this research, feature selection of variables was performed and 10 best predictors (see table 1) were included in association rule mining along with variable of interest (FS_V1 - study year).

Table 1. 10 variables chosen with feature selection for first approach.

Label	Description	χ^2	p-value
FS_V10	ICT in work with specific type of special need	31.26	0.305821
FS_V5	ICT intended for educating students with physical disability and chronic illnesses	30.38	0.016126
FS_V11	the biggest obstacle in the application of ICT in the education of students with special needs	25.28	0.191108
FS_V2	ICT intended for educating students with visual impairment	24.84	0.072770
FS_V7	use of Frequency Modulation (FM) System	24.82	0.073113
FS_V9	use of trackball	22.03	0.142107
FS_V4	ICT intended for educating students with speech disorders	21.53	0.159198
FS_V3	ICT intended for educating students with hearing loss	20.96	0.180109
FS_V6	ICT intended for educating students with mental retardation	20.26	0.208802
FS_V8	use of TOBII	19.81	0.229075

Threshold value for minimum support was set to 20% and for minimum confidence to 10%. 470 rules that satisfied these criteria were generated. Web graph (see Figure 1) identifies pairs of items with high relative lift. In this case, it is evident that items FS_V5(1) (student who is not familiar at all with the use of ICT in education of pupils with physical disability and the chronic illness) and FS_V6(1) (student who is not familiar at all with the use of ICT in education of pupils with mental retardation) have the highest relative lift (lift value=4.28). However, smaller node size indicates that they have lower relative support and from the thin line that connects these two items, it is obvious that relative joint support is also smaller.

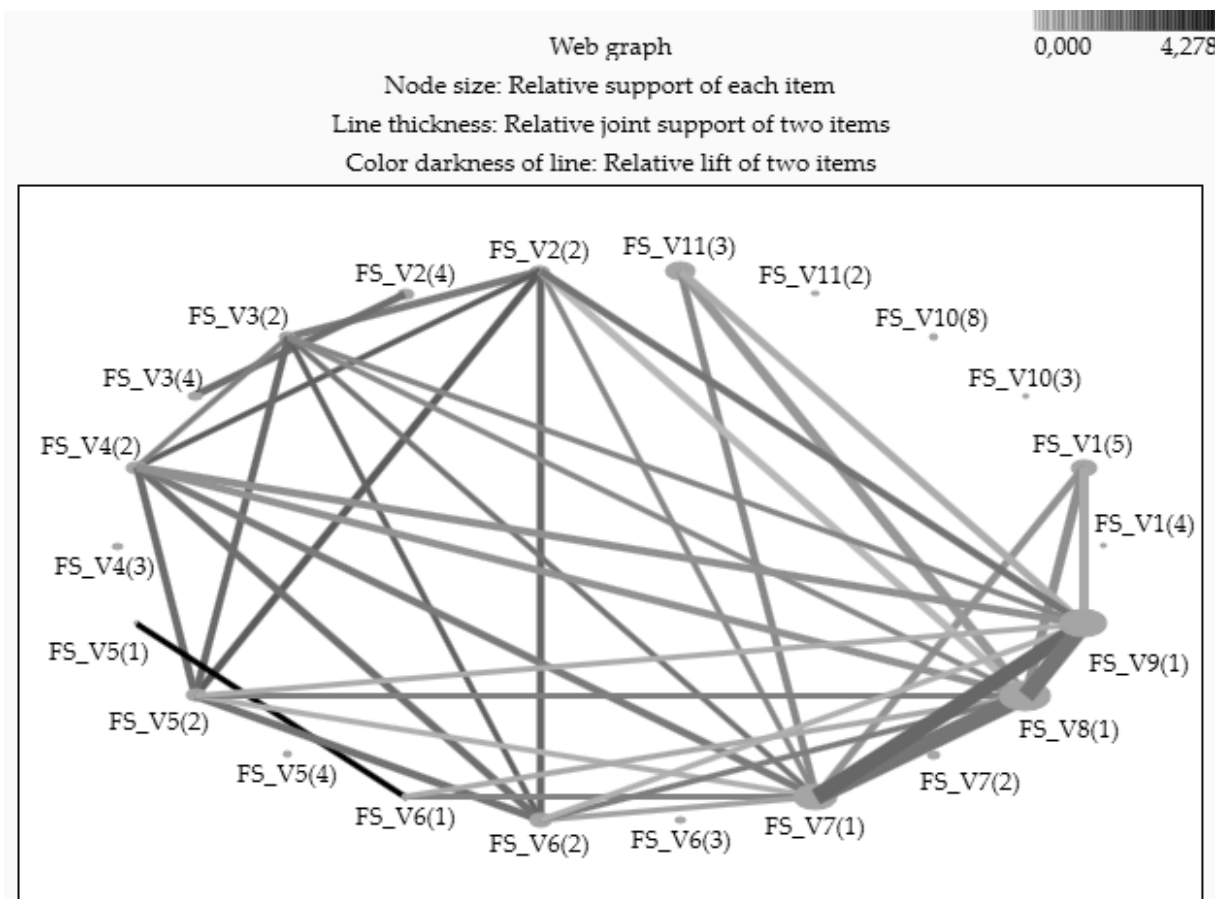


Figure 1. Web graph with all items for the first approach.

Even so, rule $FS_V5(1) \rightarrow FS_V6(1)$ obtained maximal confidence (100.00%), which means that although these two items $FS_V5(1)$ and $FS_V6(1)$ appear together in only 20.78% (see Table 2) of cases, in all those cases when a student who is not familiar at all with the use of ICT in education of pupils with physical disability and the chronic illness appears, he/she is also not familiar at all with the use of ICT in education of pupils with mental retardation. The probability of finding $FS_V6(1)$ in all cases which include $FS_V5(1)$ is 4.28 times probability of finding $FS_V6(1)$ in all cases.

Table 2. Rules with the highest lift obtained in first approach.

Body	==>	Head	Support (%)	Confidence (%)	Lift
$FS_V6(1)$	==>	$FS_V5(1)$	20.78	88.89	4.28
$FS_V5(1)$	==>	$FS_V6(1)$	20.78	100.00	4.28

242 obtained rules had lift value higher than 1.50 and in 211 of them confidence was higher than 50.00%. Interesting rules whose obtained lift value was higher than 2.00, support higher than 30.00% and confidence higher than 80.00% are presented in Table 3.

Table 3. Rules with combination of the highest support, confidence and lift obtained in the first approach.

Body	==>	Head	Support (%)	Confidence (%)	Lift
FS_V6(2)	==>	FS_V4(2)	31.17	82.76	2.20
FS_V4(2)	==>	FS_V6(2)	31.17	82.76	2.20

These rules imply that the probability of detecting a student who is poorly acquainted with the use of ICT in education of pupils with speech disorders (FS_V4(2)) increases 2.20 times in all cases where a poorly acquainted student with the use of ICT in education of pupils with mental retardation (FS_V6(2)) occurs, and vice versa.

In second approach, another set of rules was created with only statistically independent variables. The goal was to find out if some strong and subjectively intriguing rules could be extracted if only statistically independent variables were observed. Based on the results obtained by Pearson's χ^2 test, 10 variables were used in association rule mining (V1 – study year, V2 – study module, V3 – behavioural disorders, V4 – use of Windows eyes program, V5 – pupils with mental retardation and ICT use, V6 – full integration of pupils with special needs, V7 – ICT helps in integration of pupils with special needs into regular system, V8 - additional education for ICT use in integration of pupils with special needs, V9 - additional education for only one special needs pupil in class, V10 - willingness to use ICT in education of special needs pupils in future). Detailed information about students' study module can be found in the Faculty of Education (2005) program of studies.

Minimum support for association rule mining was set to 20% and minimum confidence to 10%. This resulted in creation of 2,598 association rules. These rules are graphically presented in Figure 2 where relative support value for each node is indicated by node size (node is bigger if support value is higher) while relative confidence is presented with colour (darker colour implies higher confidence). Relative support values of body and head for each rule are presented in Figure 2 with size of the node (a bigger node implies higher relative support) while relative confidence is represented with colour (darker colour implies higher relative confidence). As seen in Figure 2, the rule V9(1) ==> V8(1) has the highest support (92.21%) and very high confidence of 98.61%. In other words, in 98.61% of cases if a student would in future pursue additional education for only one special needs pupil in class (V9(1)) then that student believes that teachers should get additional education for ICT use in integration of pupils with special needs (V8(1)). However, 106 identified association rules had support higher than 50%.

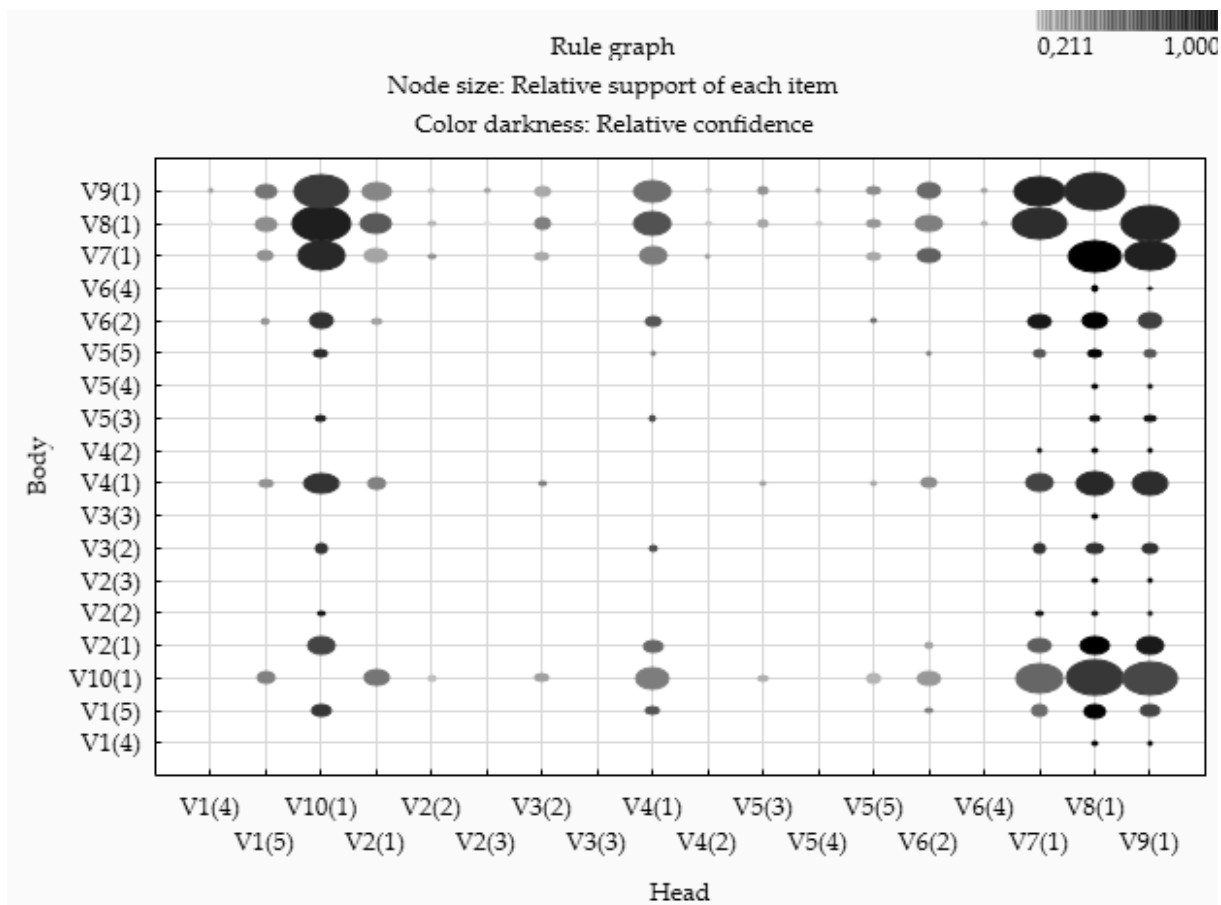


Figure 2. Graphical presentation of obtained association rules.

Identified association rules with the highest lift are presented in Table 4.

Table 4. Set of rules with the highest lift obtained in second approach.

Body	==>	Head	Support (%)	Confidence (%)	Lift
V5(5)	==>	V10(1), V6(2)	20.78	61.54	1.35
V5(5)	==>	V10(1), V6(2), V8(1)	20.78	61.54	1.35
V5(5), V8(1)	==>	V10(1), V6(2)	20.78	61.54	1.35
V10(1), V6(2)	==>	V5(5)	20.78	45.71	1.35
V10(1), V6(2)	==>	V5(5), V8(1)	20.78	45.71	1.35
V10(1), V6(2), V8(1)	==>	V5(5)	20.78	45.71	1.35

The first stated rule in Table 4 with high confidence (61.54%) and lift value 1.35 will be considered as an intriguing rule in the second approach. Support demonstrates that this rule's body and head appear together in 20.78% of cases. The lift value implies that if body (V5(5)) is present then there is 35% more chance of the occurrence of head. This means that if a student is well acquainted with the use of ICT in education of pupils with mental retardation then there is 35% more chance that a student is willing to use ICT in education of special needs pupils in future and that he /she doesn't believe that

pupils with special needs can be fully integrated into the educational system under the current conditions.

Then, the focus was set on generated rules only with variable V7 (ICT helps in integration of pupils with special needs into regular system) in rule head. Several extracted rules that obtained very high support (support $\geq 70\%$) and confidence (confidence $\geq 80\%$) are presented in Table 5.

Table 5. Generated association rules when variable V7 was set as head.

Body	\implies	Head	Support (%)	Confidence (%)	Lift
V8(1)	\implies	V7(1)	83.12	84.21	1.01
V8(1), V9(1)	\implies	V7(1)	77.92	84.51	1.02
V9(1)	\implies	V7(1)	77.92	83.33	1.00
V10(1), V8(1)	\implies	V7(1)	76.62	86.76	1.04
V10(1)	\implies	V7(1)	76.62	85.51	1.03
V10(1), V8(1), V9(1)	\implies	V7(1)	71.43	85.94	1.03
V10(1), V9(1)	\implies	V7(1)	71.43	84.62	1.02

As seen from the first stated rule in this set, support indicates that the belief that additional education is needed for ICT use in integration of pupils with special needs appears in database 83.11% together with the belief that ICT helps in integration of pupils with special needs into regular education system. However, the obtained lift value for this set of rules is slightly higher than 1. This means that appearance of the belief that additional education is needed for ICT use in integration of pupils with special needs does not increase the appearance of the belief that ICT helps in integration of pupils with special needs into regular education system.

Three obtained association rules when V7 was set as head had maximum confidence (100.00%) and lift higher than 1 (lift value= 1.20) (see Table 6). Support obtained for the first stated rule indicate that enrolment in study module B and the belief that additional education is needed for ICT use in integration of pupils with special needs are found together with the belief that ICT helps in integration of pupils with special needs into regular education system in 23.38% of cases. However, confidence shows that whenever enrolment in module B and the belief that additional education is needed for ICT use in integration of pupils with special needs were found, then the belief that ICT helps in integration of pupils with special needs into regular education system was also found.

Table 6. Rules with maximum confidence when V7 was head.

Body	==>	Head	Support (%)	Confidence (%)	Lift
V2(2), V8(1)	==>	V7(1)	23.37	100.00	1.20
V10(1), V2(2), V8(1)	==>	V7(1)	22.08	100.00	1.20
V2(2),V8(1), V9(1)	==>	V7(1)	20.78	100.00	1.20

5. Conclusion

This research examines standpoints and characteristics of class teacher students regarding ICT use in education of special needs pupils. Two approaches for association rule mining were applied. The first approach resulted in generation of rules with higher lift and confidence value, while the second approach relying on traditional support-confidence framework produced rules with notably higher support as well as combination of high support and high confidence. The rules obtained in both approaches were graphically presented by rule graph or web graph. Valuable information is revealed that may serve to educators of future class teachers when creating their lectures and for encouraging their students to use ICT in education of special needs pupils even though the results of this research are limited to the observed sample.

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Inclusion and democratic values in physical education

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Abstract:

The practical and physical part of Physical Education (PE) makes it perfect for promoting skills and attitudes such as respect, solidarity, inclusion and cooperation. In PE it is impossible to sit in the back of the classroom and say: *I'm soo tolerant!* You have to participate and show that you are. When the games are modified to promote cooperation and inclusion, it will help the players to get involved and to involve others.

However, when scoring and winning are the main concerns of the players, this may flout democracy and human rights values such as solidarity, respect, inclusion and cooperation. This study aims at developing games that can counter-balance egocentric drifts and engage the players in inclusive and cooperative playing.

Method

The study was conducted with PE student teachers in their 4th year. The students are introduced to the principles of rebound-games. Rebound-ballgames are games that require the cooperation of at least two players to score. To find out whether the students as players would act more inclusively when they play rebound-games than ordinary games four matches were played for the same amount of time, each match more modified to inspire cooperation better than the previous. The players and teams stayed the same through all the matches to make the constellations as consistent as possible. Involvements and passes were counted as a measure relevant to inclusion.

Results

Even though the games were short, they still show differences in the involvement and passing patterns. In the last games the total amount of passes was notably higher.

Keywords: Inclusion, democracy, physical education, modified ballgames.

1. Introduction

Physical Education has the obvious purpose of promoting mastery of physical activity individually and as group members, as well as enhancing physical well-being. Physical education can, however, also be a field for pedagogical work to promote inclusion and democratic values. To work with inclusion and democratic values in Physical Education can be a practical approach to democracy and human rights

thinking since you have to practice inclusion and active participation through your actions.

Physical Education has the potential to reach all children and young people. The curriculum in Norway and most European countries has a range of activity areas, both indoor and outdoor activities, such as games, gymnastics, dance, swimming, athletics and adventurous activities (KUD, 2006). As ballgames are often played in teams, they offer a context where belonging to a group is very relevant. However, it appears that in a competitive context, where scoring and winning are the main objectives of the players, the traditional ways of playing may ignore values such as participation, cooperation, respect, and inclusion.

The aim of this paper is to explore if modified ballgames can promote inclusion and other democratic values. To investigate how traditional games can be adjusted in ways that enhance broad participation, cooperation and inclusion, student teachers were engaged in playing four different, adjusted variations of the original football (soccer) matches. Based on the ideas of the match and the pedagogical aims, a set of criteria was developed and used to analyse the video-recorded games.

2. Theory

Grounded on the fact that my actions can reflect my personal values and beliefs more authentically than words (Baily, 2005; Bergmann, 2000), I wanted to give the students practical settings that promoted cooperation and inclusion that would help the students to involve others. The study is also based on the idea that there is an intimate connection between knowledge and activity (Figley, 1984; Lave and Wenger, 1991; Wenger, 1998, 2000).

The core of inclusion is to increase 1) the individual participation and benefits of involvement and 2) the amount/number/range/variety of people who have influence on the community (Haug, 2004). Haug (2004) has isolated 4 aspects that are important for improving inclusion:

- increase thoughts of community
- increase participation
- increase democratization
- increase benefits

Inclusion can be seen both as a process and as a goal; where participation in the community is built across the differences (ibid). In this case it is about differences in skills in ballgames and differences in participation in the games, and cooperation, exclusion, inclusion and the willingness to work together with others and become actively involved.

Democracy as the belief in freedom and equality between people or a system of government based on this belief, in which power is either held by elected representatives or directly by the people themselves (Cambridge English Dictionary, 2017).

Winston Churchill ironically said: "A democracy is the worst form of government in the world, except for all the other forms" (Barber, 2003: 4). Democracy is a difficult form of government (Barber, 2003), and therefore need to be maintained. To uphold it we need to educate and train young people in both the rights and obligations of democracy. Biesta (2014) points out that commitment to collective interest must be learned – it is not to be considered natural. Biesta believes we need to create opportunities for participation in "the enactment of the experiment of democracy (...)" on the assumption that participation in such practices can engender meaningful forms of citizenship and democratic agency" (Biesta, 2014, p. 10).

Inclusion and democracy have a lot of common ground, as equality, participation, involvement, community and the need for cooperation. To work with both at the same time seems manageable, because of the similarities in qualities. Working with inclusion and democracy in ballgames we need to combine physical and technical improvement with increased involvement. To maintain the aim of the ballgame and at the same time improve players' social skills, it is necessary to achieve more than one goal in a game.

Claims made on behalf of participation in sporting activities, suggest that it may contribute to the process of inclusion (Stidder & Hayes, 2013). Sports bring individuals from a variety of social and economic backgrounds together in a shared interest in activities that are inherently valuable; offering a sense of belonging, to a team, a club, a program; providing opportunities for the development of valued capabilities and competencies and increasing 'community capital', by extending social networks, increased community cohesion and civic pride (ibid). Participation in voluntary sporting activities serves several purposes, amongst them the acquisition of technical and tactical skills, of high self-efficacy and of experience of inclusion in a group. As PE involves activity in groups consisting of pupils both with and without the skills and experiences acquired through voluntary sporting activity, there is a high risk that pupils with good skills will cooperate with other pupils with good skills, and exclude pupils without similar level of skills (Eiberg & Siggaard 2000, Stolz & Pill 2013). The lack of self-efficacy amongst pupils without (sufficient) experience from voluntary sporting activity, is likely to strengthen this tendency. It is to counter such tendencies, and to level out differences in skills, that the modified ballgames are developed (Jenssen 2010, Stolz & Pill, 2013).

To improve physical and technical skills the frequency and intensity of participation and the degree of adherence over time of the participants need to be high (Corbin, Pangrazi & Welk, 1994). These factors (frequency, intensity and participation) have been shown to be especially significant in the improvement of fitness in physical education (Corbin, Pangrazi & Welk, 1994). Participation rate is also important for the feeling of being part of a community and for the development of social skills (Haug 2005, Klafki 2002).

To improve as a ballplayer; the most important factor is to have as many ball touches as possible during each session (Giske, 1996, Halling et. al 2007, Jenssen, 2010). Many

ball touches are often linked to the technical side of the ball game, because a lot of ball touches of good quality improve the individuals' technical skills (Gallahue & Ozmun 2006, Gjerset, 2006, Halling et. al 2007, Jenssen 2010, 2016). Many ball touches may also be linked to the social aspects of the game, such as inclusion and self-efficacy, where you want to include through passing the ball (Jenssen 2010).

Ballgames are often divided into 3 or 4 different categories (Eiberg & Siggaard 2000), in the categorization below they are divided into three.

Table.1 Ballgames divided into broad categories

Categories of ballgames		
INVASION PLAYS	NETPLAYS	HIT- AND TARGET PLAYS
Basket, football, hockey, Polo, bandy, rugby, handball...	Volleyball, badminton, tennis...	Curling, golf...

Invasion games are team games in which the purpose is to invade the opponent's territory while scoring points and keeping the opposing team's points to a minimum, within a certain time period. In invasion games, teams and players "occupy" ground all over the field, but the play have a distinct direction. Invasion games include sports where the ball is being carried or caught across a line, thrown or shot into a target, or struck with a stick or foot into a specific target area (Rafoss & Zoglowek 2008, Pearson & Webb, 2008). There are rules to regulate the intrusion, but in the invasion ballgames the players from both teams mix in the playground, and there is a certain amount of physical contact (Rafoss & Zoglowek 2008). Invasion games are the most strategic types of games with many transferable skills (Griffin & Butler 2005).

This paper deals with the invasion game of football (soccer). The undertaking has been to create invasion ballgames that in their nature encourage involvement and cooperation. The modified games will hopefully be more inclusive than the traditional ballgames with international rules. At the same time, they still keep the idea of the game. Invasion games have a clear direction, and the play goes from goal to goal, most of them at high speed (Rafoss & Zoglowek 2008). To keep the idea of the game also means to use the same technical skills to improve in your game when playing the modified version.

The different elements that you can modify to affect the ballgame and the qualities and skills that are outcomes of different ballgames are shown in the "Ballgame wheel":



Figure. 1 The Ballgame Wheel (Jenssen 2010).

The inner circle represents the possible outcomes of different ball activities divided into in broad categories. They consist of technical, tactical, physical, psychological and social qualities. The inner circle represents the qualities that are stimulated and therefore support the aim of the ballgame lesson (Jenssen, 2010).

The outer circle (the satellites) represents the impact factors – the factors you can modify to promote various goals and intentions. (Jenssen, 2010).

In order to promote special outcomes, you can modify the ballgame using one or more of the satellites in the figure above. This means that you can change organisation, activity, rules, players, court, ball, goal, coaching style and the amount of time used to influence the outcome of the lesson. By modifying one or more of the satellites, you change the conditions for the game to promote the goal you have for the ballgame or lesson. In this sequence I changed three satellites: the rules, players and goal (and the way to score) in order to include all players better than in the original game of football.

First: what is an inclusive and democratic ballgame? It is not difficult to create inclusive games, and there are a number of games that could be called inclusive. 10 ball, in which the goal is to have ten passes within the team without being interrupted by the opposite team, would be a typical inclusive game.

The problem is that most of these games do not combine the original idea of the game with inclusion. You can have a rule that says that you have to play to all players before its allowed to score. This would be an inclusive and strongly cooperative game. But the game would lose its direction and go in circles. The game loses its momentum and becomes a lot slower than the original game, because the players stop and look for teammates instead of looking for the goal. This would be an inclusive ballgame, but

without the direction and speed of football, basket or handball, and the modified game therefore would have lost the idea of the original game.

To work with inclusion and democracy in football is difficult, but interesting. It is difficult because football games sometimes become aggressive and some players may be selfish and want to keep the ball to themselves. Both being aggressive and showing little interest in passing to other players would be contradictory to inclusion and democracy.

Most of the invasion games are best played in homogenous groups. It is easier to actively include those who match your skills (Eiberg & Sigaard 2000, Ronglan, Halling og Teng 2009).

3. Method

The design was to play 4 short football matches in a row, and to count passes and ball touches in the games. The first game was closest to the original football play. All games consisted of two teams with 5 players each, and all games lasted three minutes. The goal was a bench lying on the floor and scoring was hitting the bench with the ball. These modifications were kept through all of the four matches. The 3 last matches were rebound games. Rebound games in football, and other “invasion games” (as basketball, handball, ice hockey, etc.), are games that require at least two players involved with scoring a goal. One player hits the bench (target) and another player in the attacking team has to reach the ball before the defence team.

Table 2. The design

The play	Game 1	Game 2	Game 3	Game 4
	Normal football	Rebound football	Rebound football	Rebound football
Time	3 minutes	3 minutes	3 minutes	3 minutes
Players	5 players on each team (10)	The same 5 players on each team (10)	The same 5 players on each team (10)	The same 5 players on each team (10)
Rules	Normal football rules Goal: Hit the bench	Normal football rules Goal: You have to take the rebound from the bench	Normal football rules Goal: You have to take the rebound from the bench	Normal football rules Goal: You have to take the rebound from the bench
Rules and Additional rules			Minimum 3 passes before you are allowed to score. Passes to the player you got the ball from are not counted	Min. 3 passes before you are allowed to score. Passes to the player you got the ball from are not counted

Rules and Additional rules				Give positive comments on different aspects of the game – “good pass”
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The pilot session starts with “normal” football. The next games were different rebound-football games with the same players on the teams. The second was a rebound game, the third was a rebound game with at least three passes before you are allowed to score. The fourth was a rebound game with at least three passes and only positive comments.

The rebound-games are more likely than normal games to include more players: indeed, one is dependent on other players to score. Rebound games have a direction and use the positive drive of the competition to make the game as similar as possible to the original, and to challenge the same technical skills. Rebound games promote cooperative competences and make it a more genuine team play. Players with high individual qualities understand that they need to pass to the less included players.

The engagement of PE student teachers in this experiment may have influenced the results, assuming that PE student teachers are more willing than the average pupil to be involved in ballgames. However, even amongst PE student teachers the level of experience and proficiency in football varies considerably. The involvement of PE student teachers in the study opened the possibility that their competence in adjusting traditional plays to promote democratic values were enhanced. The PE student teachers were central to this project because they would be able to learn to modify games and to learn by experience how the modified game works, but their responses are not a part of this paper. The students know “the Ballgame wheel” and were introduced to the principles of rebound-games that hopefully will enable them to reflect on their own practices as players and teachers.

The session started with the players handling the ball alone and doing different tricks, before they came together with a partner. The players were warmed up with a lot of ball touches each and a lot of passes before the pilot session started. This kind of warm up gives the participants good conditions for obtaining physical and technical skills (Corbin et al., 1994, Gjerset et al., 2006)

The idea was to test if ballgames are inclusive by complying rules that require involvement from more players than with normal rules.

In the analysis, I have chosen to look at interaction and inclusion through the players' practices (Lave & Wenger, Klafki 2002, Stidder & Hayes; 2013). As a measuring instrument, I count ball touches and the number of passes inside each team. In this I am supported by Eiberg & Siggaard (2000).

It is very difficult to have good inclusion if the teams are too big (players in the satellite). If you play football with 11 in each team, it would be very difficult to get many passes to each player during a game, therefore as a school and children’s activity

you should play with small teams (Halling et.al 2007, Ronglan, Halling and Teng, 2009, Jensen, 2010).

We were three observers that monitored the games and took notes and made a video. Two took notes, one for each team, another recorded the video. Unfortunately, we missed the video of the fourth and last game.

4. Results

When we count passes in each game, we observe that the number of passes goes up from the initial “normal” football game to the last rebound games. The column “Ball contacts” illustrates when players are not getting control over the ball or when players are accidentally hit.

Table 3. Results of Play 1 and 2

Play	1	Ball	Passes	Goals
Normal play		Contacts		
Team 1 red		27	19	3
Team 2		26	19	6
Play	2	Ball hits	Passes	Goals
Rebound game				
Team 1 red		23	19	1
Team 2		23	25	2

There are fewer goals in the rebound games than in the first game. This could mean that it is easier to score in a well-known game where you do not have to think about new ways of playing. When you are given new rules and ways to score you have to think about how to perform and you can't act on autopilot and do things the way you always have played football. This means the skills you have acquired during previous hours of football play need to be supplemented by conscious fulfilment of new requirements.

This will make it more difficult to score for the more skilled players, those who normally score most goals. They will have to look for other players to help them score, complicating the game in a way that resulted in fewer goals. It seems they have understood that they need to give away the ball more often, because the number of passes increases.

Table 4. Results of Play 3 and 4

Play 3 Rebound game minimum 3 pas	Ball Hits	Passes	Goals
Team 1 red	20	30	2
Team 2	19	27	2
Play 4 Rebound game Positive comments only	Ball Hits	Passes	Goals
Team 1 red		30	1

The rebound game rules assign a special task for the best skilled players to send more passes, because the game gives advantages to the team that play the ball and send passes to more players.

The game became slower as well, more players needed to be involved and the fact that you have to think most likely made it slower. They had not played a game like this before and the intuitive way of playing was not the best way anymore, because they needed to comply with new and to them unknown rules. This may have caused the games to be a bit slower. Presumably the game would speed up when the players became familiar with the rebound game.

In the second game there were fewer accidental ball hits. This might suggest that the play was more premeditated and thought through.

In the third game the players are given more rules, obliged 3 passes before scoring. For the most experienced players this means more thinking and a slower game. As the counting indicates, there were more passes and fewer accidental ball losses.

The lack of video tape from the fourth game displays that the only data source is my notes taken during the game. Due to the lack of videotape of the last game, I did not have the possibility to check accidental hits. The counting of accidental hits was the most difficult part and not easy to do live, because you had to decide so quickly, if it was on purpose or not, so we stopped doing it live after the first game. The counting of passes was easier, and comparing the notes with the video analyses, we ended up with the same total, which makes it plausible that the counting of passes is accurate in the last game as well.

Giving only positive comments seemed to be difficult for the players, that were indicated by noticeable less oral communication between the players. Other indications were that some utterances became a bit awkward, such as this: *"No, don't pass there...Ehh, OK, good play"*. When the player realized what he said was not a positive comment, he altered it into *"OK, good play"*. While this is a positive comment, his initial comment raises doubt about what he meant.

5. Discussion

The undertaking was to create different ballgames that in their nature encourage involvement and cooperation and therefore will be more inclusive and democratic than the traditional ballgames, and at the same time keep the idea of the play.

The number of passes goes up; which show that time with the ball is less for each player, and that the players are more often involved. This might indicate that the modified games are more including and have underlying values of equality and even freedom, and that the players are working with democratic values in practise.

When the players are given more rules it is natural that this slows down the game a bit, the play had still the characteristics of football, and the most experienced players understood, and took the message; send more passes and keep the ball for a shorter time. The play became more inclusive with shorter ball possession, because more players were involved. This also resulted in fewer accidental ball losses, which both teams gained from.

The results indicate that the applied modifications of rules, players, time and goal do promote inclusion. At the same time, the idea of the game is affected (the game slows down), but the direction is kept, and with longer matches, the initial challenge of adjusting to new rules, may be overcome, and the game may regain speed. One could expect a faster game when the players get used to the new rules, and will then again play more intuitively, because they know the game.

If the effects will be determined by frequency and intensity of participation and the degree of adherence over time, there will not be enough time in a three minutes' game to have lasting effects. But it will give a clue to whether the game is more inclusive than the normal football play. These games are of course not long enough to improve physical and technical skills or change the players' mentality, but if you play these games often (frequency), you will almost certainly increase the intensity. Then you have the possibility to work with both basic football skills and the mind-set of the players.

As a test on what kind of plays that actually could help bring the democratic mind-set into ballgames without giving up the intent of the original game this was a very interesting start. It seems that rebound games are more inclusive if you count the passes and accidental hits, but we might need other measures; such as time with ball for each player, or signs and gestures to see it even better. If democratic thinking and behaviour consist of equality, participation, involvement, community and the need for cooperation, these plays look like a good start to act democratic. But this study, of course, cannot show whether you will continue to act democratically, or predict what you would do in other situations. You would need more longitudinal research, and follow up in other areas.

It might be useful to reflect on how to react to foul play, not because the play was hard and rough, because the student teachers were all nice and tactful, but other players might not be the same. This could ruin the experience and the good will these modified

games are trying to build up. The rule “only positive comments” might hinder players to start with rough play. This rule could help players be more inclusive, but it seemed a bit difficult to abide by for the players. Some of them evidently need to learn this way of communicating and commenting, rather than saying, it was a good pass, when you obviously do not mean it. This indicates that this might be a necessary rule, just to help them learn the significance of it, and also to give positive comments during ballgames. To give positive and encouraging feedback is important to make more players feel included, especially those who have low self-confidence as ballplayers. A positive atmosphere during a ballgame will normally improve the game for all players, and it would make it easier to focus on the technical skills or other parts of the game you want to improve. As a teacher, you need to give positive comments to encourage pupils with what they do, and make them feel included, as a help to mastery.

If my actions reflect my values and beliefs more authentically than words, it is important to have activities and plays that are inclusive and democratic in their structure, and help players make decisions that are more inclusive than standard games. At the same time, you have the possibility to improve your standard football game because it is not too different from the original. The improvement of technical, tactical and physical skills is the core of the Physical Education, and should be an important part of every lesson, and if you manage to combine this with training of psychological and social qualities you will be able to develop the whole human being.

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Unfamiliar ways of thinking and practising in teacher education - Experiences by migrant teachers

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Abstract:

In Sweden, a growing number of students in teacher education have a migrant background. A specific group consists of those with a foreign teaching degree who wish to complement their studies to become eligible to teach in Swedish schools. Within Swedish teacher education, there is a lack of studies examining how migrant teachers perceive the Swedish educational system, how teaching and learning are understood and practised, and how these experiences can be related to migrant teachers' previous experiences. In the present study, migrant teachers' encounters with Swedish teacher education at four Swedish Universities were examined in relation to the notions of "unfamiliar ways of thinking and practising" to highlight ways of teaching and learning that are perceived as unfamiliar. Data in this study was drawn from a web survey completed by 228 respondents with a foreign teaching degree coming from 54 countries. Additionally, five focus groups and nine individual interviews were conducted. Furthermore, 30 reflective texts written by 15 participants were analysed. The results highlight the cultural embeddedness of Swedish teacher education and demonstrate how migrant students struggle with unfamiliar teaching and learning methods, epistemological understanding, examination practices and the roles and expectations from society or between teachers and students. To conclude, this research underscores the importance of situated reflexivity and awareness with intercultural experiences in mind, when designing teaching and learning, and supporting inclusion and equality. These findings and the way of identifying the unfamiliarity in teaching and practising may be applicable in other countries as well.

Keywords: teacher education, migrant teachers, ways of thinking and practising

1. Introduction and literature review

1.1. Teacher education where the local and global meets

In the age of increased globalisation and migration, national systems of education face challenges as the aspirations of national curricula based on national values and local cultural heritages, do not always match with those of migrant populations and the educational systems in which they have been brought up. The World Values Survey (www.worldvaluessurvey.org) shows the position of Sweden as an extremely secular, horizontal, individualistic country whereas the majority of the migrant flows come from other cultural traditions (<http://www.worldvaluessurvey.org/WVSContents.jsp>). Therefore, Swedish teacher education is an interesting case to investigate as to what migrant teachers experience as unfamiliar during their studies. To be able to adapt teaching and learning efforts, we need to understand migrant teachers' experiences when they meet a strong value-influenced education, such as the Swedish teacher education.

Moloney & Saltmarsh (2016) report on teacher education (TE) programs' lack of acknowledgement for cultural diversities. They emphasise that teacher educators should be aware of the cultural and linguistic profiles of their students in the same manner as new teachers are expected to understand the cultural and linguistic diversity in schools. Homogenization and generalisation are problematic for developing an intercultural education, where monocultural teaching is the prevailing approach. According to Norberg (2000), it is the teacher educators' competence, interest, and enthusiasm that predict if an intercultural perspective is included in courses or not. Research on intercultural education is often focused on language issues or school practice (Biggestans, 2015; Sandlund, 2010), and thus little is known about how migrant teachers experience their encounter with the ways of thinking and practising (WTP) and what they find as unfamiliar in a new teacher education. These issues are of great interest and importance since they have direct implications for equality and inclusion.

International students are often linked with the assumption that they perform less well academically or require special support from the institution, but the research literature shows a mixed picture of their achievement. However, Ryan & Carroll (2005) talk about shocks, the cultural one that everyone has heard about, and the academic one, where even successful students lose their knowledge about how to learn and succeed. Research done by Marton & Saljo (2005) shows that the design and instruction of the reading will impact the outcome and learning approach of the students.

Even though the literature shows a mixed picture, a cultural bias has been found in, for example, assessment methods where the coursework assignment and the examination penalise international students beyond the differences in ability levels. Cultural equality is a cross-disciplinary concern (De Vita, 2002).

1.2. Theoretical framework - Ways of thinking and practising

In higher education, unique traditions and practices (concerning teaching and learning) can be identified, and are often referred to as “Ways of thinking and practising (WTP)” (Kreber, 2009). WTP has a strong influence on which teaching strategies and activities are chosen and applied (Hounsell & Anderson 2009). WTP is not always obvious or visible; teachers teach the way they learned within a certain discipline, department, culture, etc. Within WTP, threshold concepts can be found within a subject (Meyer & Land, 2003). However, since the migrant teachers in this study come from various subject areas, specific threshold concepts may be difficult to investigate. In this article, we try to understand the WTP more broadly. Thus we introduce and identify “unfamiliar WTP”. When WTP is understood it may lead to a transformed understanding of knowledge, making evident how people think, perceive or experience phenomena within a discipline or more generally (Entwistle et al., 2002; Hounsell & McCune, 2002; McCune & Reimann, 2002). It is the university teacher’s pedagogical task, and of significant pedagogical importance, to reflect on and help students understand the ways of thinking and practice (Meyer & Land 2003; Meyer & Land, 2005; Meyer et al., 2010). The acceptance and understanding of this new way of thinking can become a tool to interpret others choices as well (Eatwell et al., 1998). Students must put a lot of time and effort into understanding and interpreting what is experienced as unfamiliar. In this study some unfamiliar WTP will be identified, emanating from the data material.

1.3. The aim of the study

Within teacher education, there is a lack of studies examining how migrant teachers perceive the new educational system, how teaching and learning are understood and practised, and how these experiences can be related to their previous experiences, practice, and understandings of teaching and learning. This study aims to explore and identify what unfamiliar WTP students with a foreign teaching degree meet while they are taking courses in Swedish teacher education.

The research question is:

Which ways of thinking and practising within Swedish teacher education are perceived as unfamiliar by migrant teachers?

1.4. Context of the study

1.4.1. Swedish society and education

The Swedish mandatory school system is characterised by a strong emphasis on fundamental democratic values. These values, defined by the Swedish Government, are the very core of the teaching and learning ideology that is mediated to the future teachers during teacher education programs. In the national curriculum, these basic values are described as “the fundamental democratic values our societal life is based on” (The Swedish National Agency for Education 2011a; 2011b; 2013). These values include imparting and establishing respect for human rights and recognising the equal value of all people and gender.

According to §8 and §9 in Högskolelagen [Higher Education Act, 1992:1434] (Ministry of Education and Research, 1992), university education shall develop the student's ability to make independent and critical assessments and to search for and evaluate knowledge at a scientific level. Further on, according to Högskoleförordningen [The Higher Education Ordinance 2014:1096 and 1993:100, Appendix 2] (Ministry of Education and Research, 2014), the system of qualifications and extended qualitative targets, the student must be able to critically discuss the students' knowledge with different groups and to be able to work independently. A student teacher must be able to show knowledge about the relationship between research, proven experience, and the teacher profession. In the Higher Education Ordinance, we can also read that the student teacher must show digital competence and use it critically in teaching and learning as well as consider the role of the digital environment in the pedagogical occupation.

1.4.2. Targeted teacher education for migrant teachers

Utländska Lärares Vidareutbildning [Further education for foreign teachers] started in 2007 as a government mandate offering additional training for individuals with a foreign teaching degree who wish to become duly qualified as a teacher in Sweden. The project participants are graduates from 90 countries, and more than 40 languages are represented. The project aims to utilise the competence of the migrant teachers and provide them with increased opportunities for employment in Swedish schools. Each participant receives an individual study plan ranging from 1-3 years. They take courses in the ordinary teacher education programs except for one specific course called: Att bli lärare i Sverige [To be a teacher in Sweden], worth 22.5 ECTS credits. During the course, migrant teachers identify competencies they already possess, modifications that are required for their new teacher role, as well as skills they need to add or abandon. The training includes school placement, giving the students the opportunity to put theoretical knowledge into practical use. Six Swedish universities participate in the training programme: Stockholm University, University of Gothenburg, Örebro University, Linköping University, Umeå University and Malmö University.

2. Methodology

2.1. Research design

In order to gain an increased understanding of unfamiliar WTP experienced by migrant teachers, a convergent mixed methods design was applied, including both quantitative and qualitative data (Creswell, 2015; Creswell, & Plano Clark, 2011). The focus of the present paper is on the qualitative results of the extensive data concerning unfamiliar WTP and the quantitative demographic background.

2.2. Population

The study targeted all actively enrolled students in the training programme, 465 in total, for the web survey. Furthermore, nine individuals were interviewed, and 25

participated in the focus group interviews. Fifteen students submitted personal reflection texts. The respondents were studying at four universities, which are de-identified in this study as University A, University B, University C and University D. Furthermore, two of the universities in the program were not able to participate in the study - one because of the very low number of migrant teachers and the other because of time issues. In total, the participants studied at teacher education programmes in 57 different countries/regions.

2.3. Ethics

The respondents were guaranteed confidentiality and integrity since informed consent was obtained at the beginning of the web survey and during the qualitative data collection. The web survey was sent through an online system, which made it possible to ensure confidentiality. All migrant teachers were informed of the study's purpose, and that it was voluntary to participate. They were also informed that they could withdraw from the study if they wanted to.

2.4. Data collection

A combination of four data collection methods – a web survey, individual interviews, focus group interviews, and participants' reflective texts – were applied to provide a rich source of data. All data collection methods covered the following themes: teaching philosophy, unfamiliar WTP and digital competence. In this paper, we concentrate on the unfamiliar WTP. The first author conducted all interviews and distributed the web survey.

Before the survey was sent to the migrant teachers, it was validated by two researchers at the Department of computer and systems sciences, the national leaders for the further education for foreign teachers, a dean for a mandatory school and two migrant teachers. The web survey was sent through an online system from University A. The questionnaire consisted of a total of 68 items, divided into four sections: demographic background, teaching philosophy, unfamiliar WTP and digital competence. The items were operationalised through a Likert-type scale of 5 points (Strongly Agree, Agree, Neither Agree or Disagree, Disagree, Strongly Disagree) and open-ended questions. The respondents answered open-ended questions such as what practices, unusual or not formerly encountered, have you met during your studies at the Swedish teacher education. Has something been problematic or experienced as alien compared to your former teacher education? At the end of the survey, respondents could tick a box, enter their email address, and give permission to be contacted for an interview or send a reflective text to the researcher. 228 out of 465 students answered the survey. In this paper, we focus on the demographic and the open ended answers concerning WTP.

Nine individual interviews and five focus group interviews were conducted – a total of 34 individuals. These semi-structured interviews further explored the migrant teacher's experiences with unfamiliar WTP. Interviews were conducted at the participants' universities and lasted between 40 to 70 minutes. All interviews were audio recorded. As an introduction to the interviews, the participants were shown the themes of the interviews, and the researcher asked clarifying questions if necessary

during the interview. The focus group method was chosen for its suitability to capture experiences (Cousin, 2009). In a focus group, participants can share and compare their experiences with each other. This interaction may reveal another kind of data that is not captured in individual interviews, elaborating on the phenomena together (Cousin 2009). The individual interviews provided more in-depth insights.

A number of reflective texts, $n=30$, were collected from 15 of the students. As a course assessment of the course “To be a teacher in Sweden”, students were asked to reflect on their teacher role and teaching in comparison to their former teacher education and work as a teacher in their former country. The purpose of this exercise was to allow the participants to formulate experiences, understandings, and insights they might have developed during their studies. A data collection summary is presented in Table 1.

Table 1. Summary of all the data collection activities

Data collection	Participating Universities	Former teacher education in:
<p>Survey Total 228 (out of 465) 49%: 12% male and 88% female</p> <p>University A $n=180$ of 380 (47%) University B $n=18$ of 30 (60%) University C $n=9$ of 15 (60%) University D $n=21$ of 40 (52.5%)</p>	<p>University A University B University C University D</p>	<p>Algeria, Argentina, Azerbaijan, Bangladesh, Belarus, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Central America, Chile, China, Costa Rica, Cuba, Egypt, Ethiopia, Finland, Georgia, Germany, Greece, Hungary, India, Iraq, Iran, Japan, Jordan, Kenya, Kosovo, Kurdistan, Latvia, Lebanon, Lithuania, Mongolia, Netherlands, Nicaragua, Pakistan, Palestine, Philippines, Poland, Romania, Russia, Serbia, Spain, South Africa, Syria, Taiwan, Thailand, Turkey, Ukraine, USA, Uzbekistan, Yugoslavia, Zambia</p>
<p>Individual interviews Total 9: male $n=3$ and female $n=6$</p> <p>University A $n=2$ University B $n=4$ University C $n=1$ University D $n=2$</p>	<p>University A University B University C University D</p>	<p>Hungary, Latvia, Canada, Nicaragua, Palestine, Philippines, Russia, Serbia, South Africa</p>
<p>Focus groups Total 5 groups: 25 teachers male $n=4$ and female $n=21$</p> <p>University A $n=3$ University B $n=1$ University C $n=1$</p>	<p>University A University B University C</p>	<p>Belarus, Bulgaria, China, Estonia, Hungary, India, Iraq, Iran, Latvia, Mongolia, Peru, Poland, Philippines, Russia, Ukraine</p>
<p>Reflective texts ($n=30$) Total 15 teachers: male $n=3$ and female $n=12$</p>	<p>University A</p>	<p>Balkans, Bangladesh, China, Germany, Hungary, Iraq, Iran, Kurdistan, Latvia, Lebanon, Serbia, Ukraine</p>

2.5. Data analysis

The survey contributed with background data about the migrant teachers as well as results from the open-ended questions about the unfamiliar WTP experienced in Swedish teacher education. For the quantitative data, SPSS was used. All of the interviews, semi-structured, were audio-recorded and later transcribed verbatim in Swedish. The data from the open-ended survey questions and the other qualitative data, interviews and reflective texts, were transferred into MAXQDA, a qualitative data analysis software, for further processing and analysis. A qualitative content-analysis was conducted. The transcribed material was read through several times to obtain an overall understanding. The coding was derived from the data. First, main categories were identified, originating from WTP experienced by the migrant teachers. Second, the unfamiliar WTP categories experienced by the migrant teachers were identified. In the third, and final, categorisation, the material was divided into main themes after the outspoken content. The evidence, qualitative themes and categories were presented as descriptive analysis.

3. Results

3.1. Demographic profile of respondents

An overview of the demographic profile shows that 228 out of the 465 migrant teachers volunteered to participate in the web survey (88% female and 12% male) resulting in a response rate of (49%). From the age span we can see that most of the respondents were between 32-38 years of age ($n=80$), then 39-45 ($n=56$), 45+ ($n=50$) and last, 25-31 ($n=36$). Continent-wise, the survey respondents, studied at teacher education programmes in Asia: $n=107$, Europe (not Sweden): $n=95$, South America: $n=12$, Africa: $n=8$ and North America: $n=3$.

The migrant teachers' years of (former) teacher education are as follows; 3-4 years ($n=96$), more than 5 years ($n=79$), 2 years ($n=36$) and graduate students ($n=8$). 129 of the teachers were educated for working as teachers in upper secondary school, 110 in secondary school, 79 in middle school, 51 in primary school, 18 in preschool, 8 in special education, 1 at recreation centres and 25 in other types of specialisations (special subjects or teachers for adults). Subject areas such as social science, nature science, language, mathematics, art, music, special education, preschool, gymnastics and sports and health, recreation centre, and other more country-specific subject areas, were represented in the study.

In the individual interviews, three male and six female teachers participated, who had studied at teacher education programs in nine countries. In the five focus groups, 25 migrant teachers, four male, and 21 female, had studied at teacher education programs in 15 countries. Reflective texts were gathered from 15 teachers, three male, and 12 female, who had studied at teacher education programs in 12 countries. In the areas of specialisation, the respondents in the qualitative data collections were educated for working as teachers in upper secondary school, secondary school, middle school,

primary school, preschool and special education. Subject areas such as social science, nature science, special education, gymnastics, sports and health, language (English, French, Russian, and mother tongue), literature, mathematics, art, music, computers and technology, psychology and others more country-specific, were represented in the study.

3.2. Unfamiliar WTP

From the qualitative analysis, three main areas (themes) were identified. These areas are “society and education” “teachers and students” and “teaching and learning.” Six Categories of WTP and 17 subcategories of unfamiliar WTP were found. A summary is presented in Table 2.

Table 2. Summary of themes and qualitative categories

Main theme	WTP	Unfamiliar WTP
SOCIETY AND EDUCATION	UNDERSTANDING SOCIETY AND ITS IMPACT ON EDUCATION	<ul style="list-style-type: none"> ➤ The societal impact on teacher education ➤ Content, knowledge, and competencies specific to teachers work in Sweden
TEACHERS AND STUDENTS	EXPECTATIONS OF RELATIONSHIPS AND ROLES	<ul style="list-style-type: none"> ➤ Being a student teacher in another country ➤ Expectations of the relationships and roles of teacher educators and migrant teachers
TEACHING AND LEARNING	WAYS OF GAINING KNOWLEDGE	<ul style="list-style-type: none"> ➤ Different kinds of knowledge ➤ Student-centered, self-directed learning ➤ Group-work, social learning
	COURSE LITERATURE	<ul style="list-style-type: none"> ➤ The number of books and articles ➤ Critical reflection ➤ Theory and practice
	EXAMINATION/ASSESSMENT/FEEDBACK	<ul style="list-style-type: none"> ➤ Blended examinations ➤ Process vs results ➤ Individual reflections ➤ Examination in groups ➤ Language, time and support
	NEW LEARNING ENVIRONMENTS	<ul style="list-style-type: none"> ➤ Use of group environments ➤ Digital, blended environments

3.2.1. Theme: Society and education

WTP: Understanding society and its impact on education

The societal impact on teacher education: Society oversees and makes decisions about an educational institution’s operations according to an overall plan. Migrant teachers described that they must fit their understanding of education into a broader framework. They had to contend with how the new educational system is constructed and what was expected, the relationship between teacher education and the school, new regulations, etc. The WTP in their former teacher education and how society impacts the educational system differed from the Swedish one. “I must immerse myself in the Swedish curriculum, the norms, and values of the society, to establish this in the classroom.” For some of them, this clashed with their former competency, and sometimes was not easily accepted. “I had lots of problems in the beginning. You

must be able to understand everything that is happening in the teacher education and the Swedish school system, how to think and relate to the former teacher education and what you are learning at the Swedish teacher education.”

Content, knowledge, and competencies specific for teachers' work in Sweden: Migrant teachers expressed that the Swedish system with its norms and values was sometimes difficult to understand and time to process the information was needed. New essential competencies must be added to the previous ones, according to the participants, skills that are useful for a teacher's work in Sweden. The respondents must understand their role as a teacher in a larger perspective, to reflect and transform into what society expects of them. Some respondents talked about a transformed teacher identity with additional skills. “I have gained a lot of competence, the knowledge that I didn't have before, for example how to work in a democratic way, write developing plans for each pupil in class... things that are essential for being a teacher in Sweden.”

3.2.2. Theme: Teachers and students

WTP: Expectations of the relationships and roles

Being a student teacher in another country: The relationship between teachers and students as well as what expectations they have for themselves and each other is culturally determined. In Swedish teacher education, there is a strong focus on the individual student and his responsibility and not on the university teacher, which some migrant teachers found frustrating. “As a student I want to have someone who says that now you should read these pages, someone who has control, here it is more independent,” “...to not have someone that is in charge and deciding over me, that is what feels a little difficult sometimes”. In Sweden, the teacher is seen more as a guide or a mentor than an authoritative central figure. “The teacher's work (in Sweden) is just to guide you somehow, and not teach you directly or help you looking for knowledge or put knowledge directly in your head. Here it is much more up to the student's responsibility.”

Expectations of the relationships and roles of teacher educators and migrant teachers: For some migrant teachers, teachers in their homeland were unapproachable authorities, not to be questioned. Thus, the Swedish teacher educator was experienced as a more approachable person with whom it is easy to have contact. “I think it is easier to have contact with the teachers (in Sweden) it was more distance between the teacher and the student in country X. It is better with a close relationship, It is more secure and safe.” For other migrant teachers, it was the opposite; the Swedish teacher educator was seen as someone who doesn't care very much about the individual. Accordingly, there are migrant teachers who said that in their homeland the teacher educator was one who stepped into the private sphere, visited their homes, etc.

3.2.3. Theme: Teaching and learning

WTP: Expectations of the relationships and roles

Different kinds of knowledge: How one learns and acquires knowledge in Swedish teacher education can be unfamiliar. The design of teaching and learning can be

different. "In country X I struggled to achieve the level of knowledge that the teacher demanded. Here (in Sweden) you struggle with the knowledge itself, not the information that the teacher demands. So, it is very different. Could I go back to the former kind of learning? That would demand quite a lot now when I am more aware of how you can learn."

Student-centered, self-directed learning: To be expected to participate in such an active way during teaching and learning activities were expressed to be unfamiliar. The amount of student involvement and the extent to which one is permitted to participate also varied. "The teaching is different (in Sweden)... you are expected to participate much more in the teaching, as a student. I am not used to this." This independent, self-directed way of gaining knowledge, was seen as a new way of learning that one must grow accustomed as a student teacher. "It was strange to me that a teacher-student was expected to be so independent when it came to searching for and processing knowledge. You have to obtain this way of learning, to work with the knowledge and the education yourself." More teacher-centered teaching was sought from the migrant teachers, and they were critical of this independent way of learning. "I think more guidance and structure is needed, something is missing; it is a (wrong) assumption that everyone can and wants to learn new things."

Group-work, social learning: Migrant teachers expressed a huge variation in the experience of working in groups in their former education. For part of the teachers, working in groups was included both in school and in their teacher education. Others used it in school but not in their teacher education. Lastly, some students have neither worked in groups in school nor their teacher education. "This was new for me. We never worked in groups in compulsory school nor at the university." "In country X you don't discuss in groups. The teacher conveys knowledge in the form of a lecture." Some expressed that group-work was something problematic before they learned how to work with it. "Group work is the toughest thing I have experienced at a Swedish university." "... strange with much group work and discussion." Although working in groups could be strange, stressful, unfamiliar and even problematic for some, others found it helpful in their learning process. "Unfamiliar was the common way of working in groups, study groups. I think this is very good because at my former teacher education we worked most individually. It feels a lot better to be able to discuss and work together. It makes it much easier for me, If I don't understand something, I can just ask and discuss, perfect."

WTP: Course literature

The number of books and articles: Many migrant teachers were critical of the amount of literature they were required to read/study/digest during a course. The number of books and articles in courses, compared to their former teacher education, seemed to be a common problem. Words like "big difference, shocking, much more extensive literature list" were common. Others questioned the purpose of reading so much at a general level. "Course literature: Big differences! For every course (earlier teacher

education) I didn't read nearly so much as during the study in Sweden." "...Lots of course literature, I was shocked, "I will never have time to finish this!"

Critical reflection: The course literature and how to learn from it appears to be something migrant teachers have strong opinions about. To just read, memorise, and repeat the course literature is not common. To read, memorise and understand is more used as a strategy. Critical reflection and analysis can be problematic since some migrant teachers come from an educational system where it is not appreciated. Sometimes punishment was connected to the criticising. Some migrant students experienced these WTP as hard to overcome psychologically. "Big difference when I came to the Swedish teacher education that one could research, analyse and critically think, explain in different ways. And it was a big difference I can say, compared to my education at country X... so it was a challenge for me." "I was also wary of showing my viewpoint since critical thinking was not promoted during my teacher education in country X."

Theory and practice: A strategy of reading, understanding and applying, and connecting new theories to reality leads to new tools in practice. Migrant teachers expressed this as a possibility to interpret and understand life in a new way. Research-based learning was also something unfamiliar, new for some. "In the beginning... I was not used to reflecting on course literature or connecting theory and practice." "When I studied in country X there wasn't nearly as much research as I now have in Sweden... here we should choose, analyse and write. "

WTP: Examination/assessment/feedback

Blended examinations: The use of blended examinations felt new, unfamiliar. "The examination methods are quite blended (in Sweden)." "There are written as well as oral examinations during the entire term. Both aspects felt new." "Here we have group examinations... In country X we had lectures, read the book and then an examination." Another unfamiliar area for some student teachers was the more quantitative aspect. It was stressful with the different kinds and the number of assignments. "...different examinations over the entire course, many assignments during the course... I was used to leaving in one big main assignment/paper."

Process vs results: Some of the examinations, assessments, and feedback methods were unfamiliar. One example is the WTP of promoting process and formative assessment and not only the result and summative parts. "Examination: much more emphasis on the end grade compared with Sweden" "... (Strange) that the development process is more important than the result."

Individual reflections: Individual reflections and opinions as part of an assessment or an examination was also unfamiliar. If a student criticised what the university teacher taught or something in the written material, they could get a lower grade. In Sweden, it is the opposite. As a student, one is required to critically reflect. Otherwise one gets a lower grade. "In my homeland individual thinking was not rewarded since one was always forced to adapt one's thinking to the teacher's opinions and conclusions. If one did not have the same opinion as the teacher one risked a worse grade or failing the

course"; "In Swedish teacher education, you must read more, write about what one thinks and reason more."

Examination in groups: Examinations in groups was unfamiliar and an object for criticism. The grading was not considered as fair. It was easy to hide and let others do the work. "Sometimes one can learn from others, but in certain cases, participants in the group can be passive and not so knowledgeable, then it is one or two students who take responsibility for the entire group, but in the end, everyone receives the same grade. That is a little unfair, I think."

Language, time and support: Language was naturally something problematic. The migrant teachers would like more time and support during examinations. More time for developing the specific teacher "work language" was requested as well. "It is not fair that the education has the same demands on us as on the Swedish teacher students when it comes to assessments and examinations. We need more language support, but I don't think the examiners understand this problem."

WTP: New learning environments

Use of group environments: The use of group environments enables a different kind of teaching and learning setting. "In country X we had a lot of written assignments that we handed to the teacher. Here (in Sweden) you have so many group rooms so you can discuss in groups and present for the teacher. I never did that in country X."

Digital, blended environments: Digital, blended environments are used in all teacher educations and experienced as unfamiliar. "The teaching and learning are different in Sweden; a lot of technology is used which I am not used to."

4. Discussion

Migrant student teachers are not a homogenous group and cannot be treated as such. For some migrant teachers, their former teacher education is quite similar to the Swedish one, but for others, there is a huge difference, or as Ryan & Carroll (2005) express it, they are in academic shock. According to the results, blending the new society's view of a teacher's profession, what is expected from them and specific knowledge and competencies for the new country is a complex task. The analysis of the results made the questions migrant teachers have regarding their identity as student teachers transparent, such as being a teacher in a new country, expectations from society, teacher educators and other students. It takes much time, energy and effort to understand how these relationships function. Sometimes, migrant teachers get frustrated, and this affects their motivation and learning efforts as well.

In this study, a mixed method approach was applied to be able to identify migrant teachers' unfamiliar experiences in Swedish teacher education. The results indicate that there are differences in WTP with respect to how migrant teachers perceive the new educational system, society and its impact on education, the relationship and role of teachers and migrant teachers as student teachers, and finally, how teaching and learning are understood and practised. Findings in this study show that a number of

the practices and traditions in Swedish higher education (referred to as WTP, Kreber, 2009) concern areas stipulated in the official laws and ordinances of Sweden. Such areas include being independent, critically interpreting and analysing, critically discussing with others, communicating and taking stands on certain issues, and showing digital competence (The Swedish National Agency for Education 2011a; 2011b; 2013; Ministry of Education and Research, 1992; Ministry of Education and Research, 2014).

Researchers studying values and their importance of social life in The World Values Survey (www.worldvaluessurvey.org), describe Sweden as an extremely individualistic, secular and horizontal country. Despite this, there is a long tradition of social learning, for example in groups, promoting democratic values and empowerment of citizens. This concept is identified by migrant teachers as unfamiliar. Some of the migrant teachers come from countries where education is influenced by a more authoritarian and hierarchical way of teaching and learning. This independent, self-directed learning as a way of gaining knowledge, gives them a feeling of loss, as though something is wrong.

During their education, migrant teachers have to weigh pros and cons connected to epistemology, learn about new teaching and learning methods, and blend them to become a part of their profession. Moloney & Saltmarsh (2016) mention teaching strategies effective for inclusive teachings like group work, differentiated tasks and assessment and communication. This might be a good way but is considered WTP that some of the migrant teachers found unfamiliar and problematic. To use it for inclusive teaching, the strategies must become a part of the migrant teacher's comfort zone. In the present study, examples of a transformed understanding of knowledge (Entwistle et al., 2002; McCune & Reimann, 2002) were found. One example could be seen in the theme "ways of gaining knowledge" where migrant teachers do not want to go back to the former kind of learning after becoming aware of how you can learn in a new way.

A critical analysis of the results shows the unfamiliar use of course literature. Of interest, therefore is the question, if migrant teachers are forced into a more surface-directed reading and learning, instead of promoting a deep approach (Marton & Saljo, 2005)? This is contradictable when the education is meant to scaffold the migrant teacher into deep critical reflections. Another issue is more psychological, supporting migrants to write in a way that would have given them a poorer grade in their earlier education. Previous studies have shown that there is a cultural bias in assessment methods, penalising international students in coursework assignments and examinations. Cultural equality is a cross-disciplinary concern (De Vita, 2002). This is mentioned by migrant teachers in this study. New types of examinations and the quantity of them etc. can be problematic and more support and understanding concerning their situation is desired by migrant teachers. We could argue for more creative solutions, for example more time during examinations, computer-assisted examinations or information seminars regarding how to write critically. However, the

digital-blended environments used in teacher education can be troublesome. Some migrant teachers would probably benefit from a digital introduction course.

An important finding that emerged is that the cultural embeddedness of teacher education has a great impact on WTP. It is not “just “education, teacher education itself is value-based and a tool for a society to transmit fundamental values to its individuals. In turn, the teachers transmit them to their pupils. This is one reason why education can promote inclusion and integration. Our results also seem to be applicable in other countries where teachers migrate as the adaptation process to the new is necessary for migrants all over the world. The findings show that being a migrant teacher and processing and constructing a new professional teacher identity is a vulnerable position in which to be. Some of the new teaching and learning experiences, such as the expectation of roles etc. will be something that a migrant teacher might have trouble accepting. For some, it can be challenging and for others, gladly accepted. Migrant teachers must integrate and transform competencies they already possess, make modifications, and further add or abandon some of them.

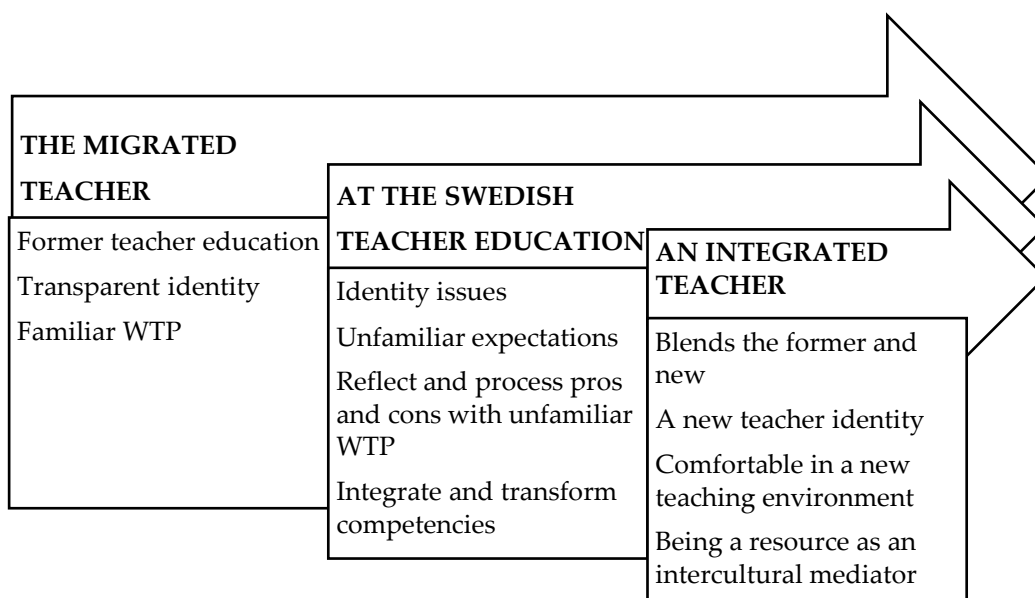


Figure 1. An overview of the process to become an integrated teacher.

Blending old and new experiences in teacher education will lead to a new teacher identity, see Figure 1, an integrated teacher. In other words, not being transformed into a Swedish teacher, but to a teacher with a deep knowledge base and competencies from different educational systems - an expanded teacher identity. This study makes it even more apparent that to enhance equality and integration, culturally sensitive WTP is something we need to further develop in teacher education. One can agree with the statement by Moloney & Saltmarsh (2016) that teacher education lacks the acknowledgement of cultural diversity, but that teacher educators must know more about it especially since migrant teachers need to understand this diversity when working in schools. A homogenisation of WTP is problematic in intercultural classes. Situated reflexivity and awareness with intercultural experiences in mind must be emphasised when designing teaching and learning. Since the teacher educators'

competence, interest, and enthusiasm predict if an intercultural perspective is included in courses (Norberg, 2000), there is a need to educate them, as well.

5. Conclusions

In this study, it was possible to identify areas of unfamiliar WTP that need attention. If migrant teachers come from a culture with similar WTP in their former teacher education, it is easier for them to adapt. For others, being a student teacher in a new country can be much more problematic. Transparent teaching and learning activities, assessments, examinations and more explanation of how education is impacted by society may decrease this troublesomeness. Both teacher educators and migrant teachers would benefit from further education about intercultural issues.

This study helps us to understand more about diversity and how to promote equality and inclusion in teacher education by first identifying unfamiliar WTP. Unfamiliar WTP will differ from country to country and will vary in different student groups. It will also change from time to time in a country since the development, values and how the educational system works change over different eras. The important thing is to identify them on a regular basis and design education based on the results.

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How student teachers view immigrants' positions in economic, political, and social life

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Abstract:

European schools and kindergartens are characterised by growing diversity. Students and children have different cultural backgrounds, but teachers and student teachers overwhelmingly belong to the dominant culture. This is a consequence of the rise in migration in many European countries during the last decades. Hence, student teachers should develop their multicultural awareness. In this article, we focus on student teachers' ideas about some multicultural issues, namely living conditions of immigrants in Norwegian society. Data was gathered in a longitudinal quantitative study using structured questionnaires. Based on samples of student teachers attending different educational programmes, the authors investigate how student teachers evaluate immigrants' economic conditions, political influence, and exposure to discrimination in Norwegian society. The findings show that the student teachers are quite aware of discrimination against immigrants, but they are not equally aware of immigrants' vulnerability when it comes to economic conditions or degree of political influence. To be able to give a meaningful multicultural teacher education, it is important to obtain data about student teachers' knowledge and attitudes regarding relevant issues. Our choices of learning tools will depend on the students' competence level.

Keywords: teacher education, multicultural education, attitudes

1. Introduction

In classrooms and kindergartens all over Europe, teachers face students with diverse backgrounds, among them children of immigrants. Today, nearly 17% of the population in Norway are immigrants or children of immigrants (Statistics Norway, 2017). To prepare student teachers for the task of managing diverse classrooms and kindergartens properly, it is essential to know their attitudes towards multicultural society in general and towards immigrants in particular. In this article, we discuss some aspects of student teachers' views on immigrants' positions in economic, political, and social life.

Multicultural awareness is a central concept in this context. It may be understood in different ways. One possibility is that it “involves openness to learning about differences associated with various cultures and being conscious of biases and assumptions we hold and the impact they have on individuals different from ourselves” (Gayles & Kelly, 2007, p. 194). Another, slightly different understanding, is that multicultural awareness:

consists of the attitudes, beliefs, values, assumptions and self-awareness necessary to serve students who are culturally different from oneself (Pedersen, 1988). Individuals may have an inaccurate or inappropriate awareness of culture (i.e. stereotypes, biases); those false attitudes and assumptions must be changed before multicultural development can continue (Pedersen, 1988; Pope-Davis and Dings, 1985; Sue et al., 1982). (Pope & Reynolds, 1997, p. 270)

We have previously discussed some problems regarding these definitions (Løtveit & Bugge, 2015). We have also emphasised the value of relating the concept to the larger conceptual construct called intercultural competence, particularly as it has been developed by Deardorff (2006). Still, as some scholars have pointed out, multicultural awareness as a concept may, so to speak, be too narrowly cultural. We need to approach it in a politically and socioeconomically critical manner. According to Antonio J. Castro (2010), “Critical multiculturalism strives to bring about the transformation of society to accomplish the goals of social justice by confronting and disrupting institutions and the structures of power that maintain disparities across race, class, and gender” (p. 199). Susan V. Iverson (2012) stated it even more succinctly when she pointed out that the stress on multicultural competencies (among them multicultural awareness) may in fact contribute to preserve social inequalities rather than to do away with them. She therefore addressed “the need to expand dominant conceptualisations of multicultural knowledge, awareness, and skills to develop equity-minded and privilege-cognizant practitioners who have the capacity to extend their awareness into action and advocate for social justice” (Iverson, 2012, p. 63).

In line with these considerations, the central theoretical concept of this article is critical multicultural awareness (Løtveit & Bugge, 2015). Critical multicultural awareness may be understood as an awareness that relations between people of different ethnic or cultural backgrounds not only involve cultural differences and similarities, but also differences and similarities in social status, economic conditions, and political power. In addition, it involves attitudes and actions that seek to counterbalance or offset systematic inequalities between majority and minority groups in these regards. It thus adds social, economic, and political dimensions to a concept (multicultural awareness) that may otherwise be regarded as purely cultural (Castagno, 2009; Castro, 2010; Iverson, 2012).

2. Immigrants’ positions in Norwegian economic, political, and social life

The theme of the article is student teachers’ views on immigrants’ economic conditions, political influence, and exposure to discrimination in Norway. Before introducing our study, we will present some recent studies about immigrants’ position

in Norwegian society. Are immigrants' economic conditions in Norway better than, similar to, or worse than those of the Norwegian population at large? The general answer seems to be that immigrants are worse off economically than the rest of the population. Certainly, there are significant income variations among different immigrant groups. Immigrants who have stayed in Norway for a number of years and who are not refugees or members of refugee families are usually better off than families with few years of residence in the country. In particular, their economic conditions are more favourable than those of refugee families. Nevertheless, immigrants' income is 77% of the average income in Norway. Among immigrants, 21% have stated that they found it difficult to make ends meet, while this was the case for only 6% of the population at large (Enes, 2017, pp. 209–210).

Do immigrants in Norway have much political influence, some political influence, or little or no political influence? This is a more difficult question to answer than the one above because it is more difficult to measure political influence than to measure income or other economic variables. The extent of immigrants' electoral participation and of their representation in the government, the parliament, and the municipal councils may count as indicators of political influence. Still, political influence can be exercised from or through other channels or arenas as well, for example through the state bureaucracy (the civil service), large-scale businesses, civil society organisations, including trade unions, employers' organisations, political parties and grass roots organisations, as well as mass media and social media. While our impression is that immigrants do not have particularly strong positions in any of these arenas, we have no knowledge of any recent or comprehensive study of immigrants' political influence in Norway. Thus, we may provide information about only some of the many possible indicators of political influence. The information we found, however, suggested that immigrants are not politically influential.

An official report from 2012 noted that there were few immigrants on the boards of directors of private or public companies. Immigrants did not take part in trade unions to the same extent as other employees, and they were under-represented in non-governmental organisations (Barne-, likestillings- og inkluderingsdepartementet, 2012, pp. 81–82). Immigrants' electoral participation was systematically lower than that of the overall population, in not only national, but also local elections. While nearly 80% of the qualified voters in the overall population took part in the national elections of 2013, only slightly more than 50% of the qualified immigrant voters did the same. For the local elections of 2015, the respective percentages were about 60 and 40 (Kleven, 2017). An official report from 2011 noted that there were virtually no immigrants in elected offices at the national level, but quite a number of them at the local level. The voters elected an immigrant to the national assembly for the first time in 2001. The second was elected in 2005 and the third in 2009. Conversely, in the local elections of 2007, immigrants with non-Western backgrounds were over-represented in some of the more densely populated municipalities (Kaldheim et al., 2011, p. 275). Still, in the last few years, immigrants have by and large been under-represented on most municipal councils, and not represented at all on a very large part of them

(Brochmann et al., 2017, p. 137). A rapid look at the newly elected national parliament (2017) in Norway shows that there were four representatives with immigrant backgrounds out of 169 representatives (Aftenposten, 2017).

In a survey carried out in connection with the local elections of 2015, respondents provided information about their participation in non-electoral political activities during the last four years. There were no significant differences between the respondents at large and immigrant respondents when it came to signing manifestos or petitions. In terms of taking part in actions, protest meetings, or manifestations, immigrant respondents indicated that they were slightly more active than the population at large. Somewhat fewer immigrants than other respondents answered that they had contacted local politicians, but somewhat more immigrants than the respondents at large said they contacted municipal or county administrations. More immigrants than other respondents stated that they had raised issues in political parties, trade unions, or other organisations. Thus, quite interestingly, in terms of non-electoral political activities, the participation of immigrants may be quite similar to that of the population at large (Kleven, 2017).

This, together with reports of overrepresentation of immigrants on certain local councils, may mitigate any impression that immigrants have no political muscle. Still, even if we do not have sufficient grounds for making definite conclusions, the overall picture that emerges from the data mentioned above is that immigrants, at best, have some and, at worst, have quite limited political influence in Norway.

Are immigrants discriminated against in Norwegian society? If so, to what extent and in what social contexts may discrimination take place? There are conceptual and methodical problems related to research on this theme. Still, in their summary of the research on discrimination against Samis, national minorities, and immigrants in Norway, Midtbøen and Lidén found sufficient grounds to conclude that discrimination against immigrants takes place in most areas of social life, such as in educational institutions, workplaces, the housing market, and health institutions as well as in other social areas. In a survey of immigrants' living conditions from 2009, more than 50% of the respondents answered that they had experienced discrimination in one or more social areas. Certainly, there were variations among the respondents. Men pinpointed discrimination more often than women, young immigrants more often than older ones, and immigrants from certain countries more often than immigrants from other countries. The authors underlined that a survey of the existing research literature deepened and confirmed these findings. One interesting finding they highlighted is that teachers often do not have the necessary competence to handle minority students' experiences with discrimination and racism (Midtbøen & Lidén, 2015).

In a recent survey of immigrants' living conditions, immigrant respondents answered that they had been treated unequally in the workplace, when applying for employment, in educational institutions, and in their contact with health services. Still, there were noticeable differences between their experiences in these social areas. Less

than 10% had experienced unequal treatment in contact with health services, while almost 60% had experienced the same when applying for jobs. Still, even among this last group, only about half of them regarded the treatment they received to have been due to their background as immigrants (Hamre, 2017). What these findings seem to suggest is that immigrants experience unequal treatment in many social areas, but that not all immigrants face discrimination or differential treatment in all areas or at all times.

3. Research questions

Above, we have looked at some recent studies of immigrants' economic and political conditions and their exposure to discrimination. In the following, we refer to this combination of conditions as immigrants' living conditions. Now, we turn to how Norwegian student teachers view these conditions. We analyse their answers to questions about immigrants' living conditions in relation to the number of years the students have been involved in teacher education and in relation to what study programme they participate in.

Teacher education in Norway shall, according to National Curriculum Regulations, prepare students for multicultural society. To the extent that teacher education institutions live up to this objective, we should expect students to have a better understanding of immigrants' living conditions after three years of teacher education than they had initially. In our context, this means that third-year students should be expected to demonstrate a higher degree of critical awareness compared to novice students. In addition to some compulsory subjects, Norwegian teacher students have the opportunity to choose between a number of non-compulsory subjects. Our study does not include any survey of which of these subjects may or may not include teaching about immigrants' living conditions.

The research questions are as follows: What do student teachers think about immigrants' economic conditions, political influence, and exposure to discrimination? To what extent is it possible to see changes or continuities between their responses from 2014 to 2017? Are there differences according to study programme?

4. Methodology

Data was gathered in a quantitative study using structured questionnaires administered to the same group of respondents at two different times, the autumn of 2014 ($N_1 = 388$) and the spring of 2017 ($N_2 = 268$). The longitudinal design allows us to study changes over time. However, we are not able to track the completed questionnaires on an individual level.

Questionnaires were administered during lecture time and collected immediately. At all occasions, one of the researchers administered the data collection. The questionnaire includes background variables (i.e., sex, age, parents' education, stream

and grades from upper secondary school), interaction with immigrants, attitudes towards immigrants, general ideas about cultures and cultural diversity, preferences about one's own future relations with immigrants, knowledge about immigrants' situation in Norwegian society, and views on some specific issues from the current debate on cultural diversity in Norway.

The respondents were full-time student teachers at a Norwegian teacher education institution. They attended the General Teacher Education Programme or the Kindergarten Teacher Education Programme. All the student teachers who started their study at this institution in 2014 were invited to participate in the study. At the time of this first collection of data, the respondents were all novice students. The second time, in 2017, they were approaching the end of their third year in teacher education. The response rates were 90% (2014) and 82% (2017). The response rates are high compared to other studies; this is important with respect to the significance of the findings.

5. Findings

In this section, we will discuss the respondents' views on immigrants' living conditions in 2014 and in 2017, seen in relation to the available research on the topic. A challenge in this regard, however, is that current research does not give unambiguous answers to all the questions we asked. What interests us most, thus, is the extent to which the students considered the possibility that immigrants may be in a weaker or more vulnerable position than the majority population – economically, politically, and socially. The first question to be analysed is how the students evaluated immigrants' economic conditions. The wording of the question is as follows: "What do you think about the economic conditions of immigrants in Norway?" The respondents were given the following answering alternatives: (a) "Better than those of most Norwegians"; (b) "About the same as those of most Norwegians"; and (c) "Worse than those of most Norwegians". The main impression is that there was nearly no change from 2014 to 2017 (Table 1). A slightly larger share of the respondents in 2017 (42%) than in 2014 (36%) claimed that immigrants' economic conditions are worse than those of most Norwegians, but the difference is small. Approximately half of the students (54% in 2017) answered that immigrants are living under the same economic conditions as most Norwegians. As shown above, this is not in accordance with recent studies. Only around 40% of the students maintained that immigrants are worse off than Norwegians are. Very few of the respondents believed that immigrants are better off than most Norwegians are.

Table 1. What do you think about immigrants' economic conditions in Norway? 2014 and 2017. Percentages.

	2014	2017
Better than those of most Norwegians	6	4
Same level as most Norwegians	57	54
Worse than those of most Norwegians	36	42
N	385	265

When analysed in terms of study programme, we find that kindergarten teacher students have changed their view on immigrants' economic conditions from 2014 to 2017. In 2014, one in three kindergarten teacher students held that immigrants' economic conditions were worse than those of most Norwegians. Three years later, this percentage had risen to around 40%. Among general teacher students, the view on this question is more stable. Both in 2014 and in 2017, the corresponding percentage was a bit more than 40%. Interestingly, the view of the kindergarten teacher students has become more similar to that of the general teacher students. This view is also more in accordance with the data on income and economic difficulties shown above. It could be of interest to explore reasons for this development, but we have no data suitable for such an analysis now.

Political influence is important to any group in society. What do the respondents think about immigrants' political influence? As seen from Table 2, the majority claimed that immigrants have "some political influence". Very few expressed a belief that immigrants have much political influence, while one out of five thought they have little or no influence. The overall picture that emerged from our discussion above is that immigrants, at best, have some and, at worst, have quite limited political influence in Norway. Hence, it may seem that most respondents answered more or less in accordance with available data. Still, we will discuss this finding more closely below. If we look at the responses in terms of the study programmes of the students, there are only small differences between kindergarten teacher students and general teacher students. In addition, there seems to be small changes over the last three years.

Table 2. What do you think about immigrants' political influence in Norway? 2014 and 2017. Percentages.

	2014	2017
Much political influence	9	7
Some political influence	72	74
Little or no political influence	19	19
N	386	267

The third and last theme to be analysed deals with student teachers' opinions about discrimination against immigrants. The relevant question in the questionnaire is as follows: "Are immigrants discriminated against in Norwegian society?" The response alternatives are seen in Table 3. Again, we see that the middle alternative is the most frequently chosen; in fact, about two-thirds of participants in both 2014 and 2017 felt that immigrants are being discriminated against "sometimes". However, in 2017, 31% expressed that there is much discrimination, which represents an augmentation compared to 2014. When we compare these results with the abovementioned studies on discrimination of immigrants in Norway, it seems that the respondents are largely in line with recent research. As already mentioned, immigrants experience unequal treatment in many social areas, but all immigrants do not face discrimination or differential treatment in all areas or at all times.

When analysing the data according to study programme, we find that the change from 2014 to 2017 mentioned above is due to the fact that the kindergarten teacher students to some extent have changed views from 2014 to 2017. In 2014, one in four kindergarten

teacher students claimed that there is much discrimination against immigrants. Three years later, one in three held this opinion. We do not see the same development among general teacher students; instead, their views on discrimination against immigrants are very stable over time. We are not able to tell why the two student groups differ in this respect. One reason could be that kindergarten teacher students get into closer contact with parents during their practice periods than the general teacher students do. If so, perhaps this gives them more insight into the everyday lives of the families, and perhaps this contributes to change their perception about the immigrant families' experiences with discrimination.

Table 3. Are immigrants discriminated against in Norwegian society? 2014 and 2017. Percentages.

	2014	2017
Yes, there is much discrimination	24	31
Sometimes	71	67
No, almost never	5	2
N	386	267

6. Discussion and conclusions

How may we interpret the findings shown above? Recent studies have indicated that immigrants on the average are living under worse economic conditions than the overall population in Norway. Still, a slight majority of the respondents in our study believed that immigrants are living under the same or even better economic conditions than most Norwegians. There are no significant differences between the responses of 2014 and 2017 in this regard. The fact that there are so small differences between the responses of the teacher students in 2014, when they had barely begun their study, and in 2017, when they had been studying for nearly three years, may indicate that their responses had little to do with their careers as student teachers at all. One interesting follow-up question may be whether the responses to the question of immigrants' economic conditions correlate with the students' responses to questions about personal contacts with immigrants or children of immigrants. There are very few immigrants or children of immigrants among Norwegian student teachers or among the respondents of this study. One possible way to understand the response of the majority, at least in part, might be that many teacher students have limited experiences of friendship or close contacts with immigrants or children of immigrants. If, in addition, they have not learnt about immigrants' economic conditions elsewhere, they might simply know little about it and therefore perhaps opt for the response that appears to be most neutral to them. Furthermore, from a student point of view, this may seem a reasonable answer as students with immigrant backgrounds have the same access to public study financing as the respondents have. In any event, there is little doubt that the responses of most of the student teachers to the questions about immigrants' economic conditions reveal an obvious lack of critical awareness.

With regard to the student teachers' views on the political influence of immigrants in Norway, there are no significant differences between their responses in 2014 and in 2017. A vast majority (81%) believed that immigrants have some or much political

influence, while almost 20% believed that they have little or no political influence. When it comes to research, it is more difficult to provide clear and well-documented answers about immigrants' political influence than about their economic conditions. When discussing some relevant data on immigrants' political influence above, we concluded that immigrants, at best, have some and, at worst, have little political influence in Norway. In this perspective, the student teachers' responses may perhaps seem somewhat too strongly bent towards the "some political influence" response at the cost of the "little or no political influence" option. Even if small, it is interesting that a minority believed that immigrants have much political influence. In total, this seems to suggest a need for strengthening student teachers' critical awareness concerning immigrants' political influence, even if this is less clearly the case than with respect to their awareness about immigrants' economic conditions.

When it comes to the question of discrimination against immigrants, there were some changes in the responses of the student teachers from 2014 to 2017. The share of students believing that there is much discrimination against immigrants increased, while the share of students believing that discrimination against immigrants takes place sometimes decreased. In the discussion about research on discrimination above, we underlined the complexities involved in researching this field, and we concluded that immigrants seem to experience unequal treatment in many social areas, but that not all immigrants face discrimination or differential treatment in all areas or at all times. Of the three areas discussed in this paper, this seems to be one in which the student teachers' critical awareness is best developed. The "sometimes" response to the question about discrimination seems to be in line with current research. Furthermore, the quite high percentage of respondents opting for the "much discrimination" response and the very small percentage believing that discrimination never or almost never takes place give a clear indication that discrimination is present in the consciousness of the student teachers to a larger extent than both immigrants' economic conditions and political influence.

From the analysis, it seems unclear whether the majority of student teachers have an overall picture of immigrants' vulnerable position. The three questions seen together give the impression that quite a few students see immigrants as a middle group in society. Hence, teacher educators seem to have a responsibility of teaching their students more in depth about the challenges immigrants face in Norway.

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Facilitating the development of prospective primary school teachers' understanding of the concept of ratio through discussion

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Abstract:

Research on prospective primary school teachers' (PPSTs') understanding of the concept of ratio and its application to everyday life has shown that this can be problematic for many student teachers. As the concept is important in the development of proportional reasoning, which underpins many areas of primary school mathematics, questions arise about the PPSTs' ability to facilitate its development for the children they teach. The "ATEE Ratio Project," started in 2011, has contributed to the research, chiefly using an instrument designed to elicit from individual respondents the meanings that they ascribed to ratio, the uses (both their own and other people's) of ratio that they identified, and the ways in which they represented the concept in particular by symbols and drawings – all measures of understanding. For the present study, the research instrument was utilised differently: as a stimulus to discussion (in "Think, Pair, Share" mode), with the aim of investigating if participants' understanding could be enhanced by this exercise. The work was undertaken in a Mathematics Education module with Professional Masters in Education students in one institution in Ireland, and focused in particular on usage in everyday life. This paper reports on the study, presenting and discussing the findings with reference to the previous Irish and international work. Initial findings suggest that embedding the concept in everyday life contexts helps facilitate PPSTs' understanding and application of ratio, and should therefore help in supporting the development of their own students' understanding of the concept.

Keywords: Ratio, applications, primary teacher education, relational understanding, "Think, Pair, Share", discussion.

1. Introduction

Ratio has long been recognised as an important concept in mathematics education; it is crucial in the development of proportional reasoning, which underpins many areas of school mathematics. Understanding ratio, hence being able to recognise its many applications and use it to solve problems, is therefore a key to successful progress in

mathematics. However, many school students have an imperfect grasp of the topic; moreover, some prospective teachers carry this limited understanding from their school days into their professional studies. This is the case especially for prospective primary teachers, many of whom did not study mathematics to high levels. Given the importance of appropriate content knowledge for teaching, this is likely to mean that the children whom they teach will in turn gain an imperfect understanding of ratio, and the problem will be perpetuated.

At the Association for Teacher Education in Europe (ATEE) Annual Conference in 2011, a group within one of the Association's Research and Development Communities (RDCs) initiated a project to investigate prospective teachers' knowledge with regard to ratio. An instrument was developed to elicit from individual respondents the meanings that they ascribed to ratio, the uses (both their own and other people's) of ratio that they identified, and the ways in which they represented the concept. Data were collected from four institutions in three countries; analysis of the data led to the identification of a tentative framework for further research. Since then, individuals within the RDC have collected more data within their own countries. From an early stage, it was recognised that there was potential for widening the scope of the study: for example, aiming not just to collect data but to enhance the prospective teachers' understanding by instigating class discussion around their responses to the questions in the research instrument.

The study described in this paper is in the latter category. In a Mathematics Education module with Professional Masters in Education students – prospective primary school teachers (PPSTs) – in one institution in Ireland, the research instrument was utilised as a stimulus to discussion, addressing the research questions:

- What personal uses and users did PPSTs identify for ratio?
- Does using discussion and application to real-life contexts facilitate PPSTs' understanding of the concept of ratio?

2. Literature review

The literature review addresses two areas. It provides an overview of research on teachers' knowledge, both in general and with reference to the ratio concept, and discusses the role of applications to real-life contexts in the teaching and learning of mathematical concepts. It then examines the project to which the present paper is a contribution.

2.1. Teachers' knowledge and the ratio concept

Teachers' knowledge of mathematics, and in particular their knowledge specifically for teaching the subject, has been studied extensively in recent years, with important work emerging from the 1970s. First, to be an effective teacher of the subject, a teacher requires what Skemp (1976) called relational understanding: knowledge that involves knowing both what to do and why, understanding a concept in relation to other concepts and how it fits into the wider mathematical landscape. So, to have a relational

understanding of ratio means to understand ratio and its relationship to fractions, division, decimals, multiplication, proportion, and so forth. Secondly, seminal work by Shulman (1986, 1987) distinguished content knowledge (CK) and pedagogical knowledge (PK) from pedagogical content knowledge (PCK), with the latter referring to that special knowledge of “the ways of representing and formulating the subject that make it comprehensible to others” (Shulman, 1986, p. 9). There are many aspects to this category of knowledge, including useful ways of representing ideas and concepts, and utilisation of powerful analogies, examples, demonstrations, and explanations. In this sense, the ability to apply in a real-life situation forms part of a teacher's PCK.

The relationship between the forms of knowledge is important. Ma (1999) pointed out that even high levels of PK cannot make up for ignorance (lack of CK) of a concept. More recent work has focused on attempts to measure attainment of CK and PCK, to determine the extent to which they are distinct, and where possible to examine their role in predicting the performance of students. For one cross-national study on preservice teachers, TEDS-M (Teacher Education and Development Study – Learning to teach Mathematics), findings indicate that some CK is necessary for PCK and that the two concepts, though distinct, are difficult to separate (Blömeke, Hsieh, Kaiser, & Schmidt, 2014). For a study based in Germany, COACTIV (Cognitive Activation), in which teacher scores could be related to those of their students, Rowland (2014, p. 97) summarised the findings as follows: “weak CK puts limits on the growth of PCK. However, teacher PCK (as measured by the COACTIV instruments) predicts student progress – in the German secondary setting – better than teacher CK.” Altogether, it can be said that the importance of teachers’ CK is affirmed as necessary although not sufficient for good teaching.

But the question remains: in specific terms, in what way exactly do we want primary school teachers to know about mathematics? One of the more complete explanations comes from Wu (2011). To *know* mathematics, he describes, is unambiguous in the sense that it is understood to mean how mathematicians know mathematics. He breaks this down into what it means to know a concept and what it means to know a skill. With respect to knowing the concept of ratio, this means knowledge of why it is needed as well as its role and context in the world. That is, we need ratio to compare values multiplicatively rather than additively, the latter being the case for subtraction. But teachers also need to be able to recognise *when* it is preferable to compare multiplicatively rather than additively. Problems involving ratio are not always as straightforward as, say, comparing the number of blue balls to the number of red balls or boys to girls in a class. This leads to the next sort of knowledge: the skill of using ratio. This involves the ability to use the procedure correctly in diverse situations, identifying when it is appropriate to apply such a procedure. Importantly, really to know a procedure means that the teacher should be able to prove that it is correct. Knowledge of ratio in this sense will ensure the necessary mathematical precision in teaching and also ensure teachers will have the ability to make mathematics both interesting and relevant for their students.

The development of appropriate knowledge and skill can be enhanced in various ways. The role of *representations* – graphical, tabular, symbolic and verbal – is noteworthy here; there is widespread agreement among mathematics educators on the importance of being able to provide multiple representations of concepts and to translate between them (Bossé, Adu-Gyamfi, & Cheetham, 2011; Janvier, 1987; Pape & Tchoshanov, 2001). The role of *applications* is also crucial. Knowledge of a diverse range of applications does not necessarily constitute relational understanding. Rather, having a relational understanding of mathematics (in particular, knowledge of the relevant school curriculum) ensures that teachers will have the ability to apply the concepts to a diverse range of situations (Skemp, 1987). This is because relational understanding is organic in quality and if teachers develop an appreciation for relational knowledge then they are more likely to continue to learn relationally and “actively seek out new material and explore new areas” (p. 10). Consequently, in order really to know mathematics, such an inquisitive attitude is necessary.

Ben-Chaim, Keret, and Ilany (2012) highlighted the key role of the topic:

The concepts of ratio and proportion are fundamental to mathematics and important in many other fields of knowledge... Conceptualization and comprehension of these concepts, not to mention skills and competence in using them, facilitate mathematic awareness. Even more importantly, these skills foster the ability to use relational reasoning, otherwise known as **proportional reasoning**, which is crucial to the development of analytical mathematical reasoning. (Ben-Chaim, Keret, & Ilany, 2012, p. 1 {emphasis in original})

However, studies dating back to the 1970s point to the problematic nature of the concept for school students. Comparatively recent summaries of research are provided by Livy and Vale (2011) and Ellis (2013), with the former paper also highlighting the low levels of correct responses to relevant ratio and proportion test items in their empirical study of prospective teachers. The cluster of papers produced for the ATEE Ratio Project (see below) provides further evidence that at least some prospective teachers have significant gaps in their understanding of ratio and their awareness of its applications.

With regard to classroom practice, Mochon Cohen (2012) asserted that textbooks make too rapid a move from emphasis on proportional reasoning to using the “rule of three” – hence, from development of the concept to the practice of skills. Likewise, in their study of Irish PPSTs, Oldham, Stafford and O’Dowd (2016) noted that skills are the main focus and there is very limited reference to applications. This provides a background for the study of Irish PPSTs described in the present paper.

In Ireland, the confusion around the ratio concept is not helped by the lack of attention it receives in the primary school curriculum (National Council for Curriculum and Assessment [NCCA], 1999a, 1999b; Stafford, Oldham, & O’Dowd, 2015) and many of the definitions in mathematics education textbooks. These texts include those for primary and secondary education, as well as those intended for mathematical knowledge for preservice and practising primary school teachers. For example,

Humphrey, Reeves, Guildea & Boylan (2011, p. 74) defines a ratio as “comparison between two similar quantities measured in the same units” while Suggate, Davis, and Goulding (2001, p. 79) define it as “comparison between two quantities, which are measured in the same units.” These are very typical of school textbook definitions, where there is no mention of a multiplicative comparison. These definitions, and others like them, are so loosely formulated that, were they not followed up with the typical types of examples involving ratio, they could be used to describe subtraction.

Although ratio is not emphasised in the Irish primary school mathematics curriculum, there is a strong emphasis on application of concepts in general (NCCA, 1999a, 1999b; Oldham et al., 2016). This application extends to a variety of contexts relating to both the physical environment and social interactions. Integral to this is the ability of the child to recognise the situations in which mathematics can be applied. The curriculum recognises the need to contextualise mathematics and as such one of its major tenets is the necessity to integrate with other areas of the curriculum, which creates and promotes boundless opportunities for application. Knowledge of application is also widely emphasised in Irish policy documents, particularly in relation to teacher knowledge. For example, a national strategy for improving literacy and numeracy states that such knowledge should be included in Initial Teacher Education courses as well as other forms of professional development for in-service teachers (Department of Education and Skills [DES], 2011). It notes that teachers need to be equipped with the necessary resources to develop their conceptual understanding as well as being able to apply this across a range of everyday applications.

2.2. The ATEE Ratio Project

As pointed out in the Introduction, the ATEE Ratio Project was instigated in 2011 at the ATEE Annual Conference. The work was undertaken by members of the Research and Development Community (RDC) “Science and Mathematics Education” with the intention that it would lead to an ongoing project under the aegis of the RDC (Berenson, Oldham, Price, & Leite, 2013). The original research questions were:

- a) What meanings do prospective teachers at primary and secondary levels in [specific institutions] 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?

For data collection, an instrument was designed to examine respondents’ CK by addressing their knowledge of both representations and applications, highlighted above as important features. It contained five questions:

1. What does the term “ratio” mean 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.

The intention was that it could be administered in ten to fifteen minutes, for example at the end of a lecture to prospective teachers of mathematics and science or prospective primary teachers. Data were collected in two institutions in the USA, one in Ireland and one (using a translation version of the instrument) in Portugal, and responses from 158 participants were analysed. Some provided rich explanations and illustrations, but the responses of others were relatively thin, and many referred only to occurrences of ratio that typically appear in middle school curricula rather than at more advanced levels. Overall, the findings offered evidence that some prospective teachers' CK was comparatively poor.

Further analysis of the responses especially to questions 1 and 4, using a grounded theory approach, identified three emergent themes for the meanings ascribed to ratio. These were: indication of two distinct variables (typically by naming comparison or relationship); reference to uses or applications or special types of ratio (such as rate, scale, or proportion); and focus on part-whole relationships (as in fractions and decimals). Responses in the first category, together with the use of (correct) multiple representations and reference to appropriate applications, were conjectured to be indicators of Skemp's (1976) relational understanding; this conjecture provides a possible theoretical framework for further studies. The findings were reported at the ATEE Annual Conference in 2012 (Berenson et al., 2013).

Some limitations in the original study were identified, and changes were made to the instrument and its usage for later work. Issues and changes over time were documented, for example by Oldham, Stafford, and O'Dowd (2015). First, attempts to ascribe different levels of understanding to individual participants, addressing research question (c), were not successful; the responses were too brief and in some cases too inconsistent to allow for reliable categorisation. Subsequent work has therefore focused on the CK displayed by the participants as a group, rather than on classifying the levels of understanding of individuals.

Stemming from the work done for the original paper, several studies were carried out by members of the RDC in their own counties (Amit, 2015; Fernandes & Leite, 2015; Leite, Fernandes, Viseu, & Gea Serrano, 2016; Oldham & Ni Shuilleabhain, 2014; Oldham et al., 2015; Oldham et al., 2016; Price, 2013, 2014a, 2014b, 2015; Stafford et al., 2015; Veiga, Fernandes, & Leite, 2017). Recent Portuguese studies have addressed the topic without using the research instrument; rather, they have collected solutions to specific exercises on ratio so as to examine skill as well as knowledge (Leite et al., 2016; Veiga et al., 2017). All the studies indicated that at least some prospective teachers had poor CK of aspects of ratio. Collectively, they highlight the need for a greater focus on developing understanding of the concept in teacher education courses.

3. Methodology

This section describes the methodology for data collection for the current (2017) Irish study. The wording of question 2 in the research instrument was modified slightly for this study to include a higher degree of specificity. The aim of this was to reduce misinterpretation of the questions and elicit the most relevant and meaningful responses from participants. For this paper the focus is on question 2, in order to determine the PPSTs' ascribed meanings and applications of ratio in everyday life context. The current instrument is as follows:

1. What does the term “ratio” mean to you?
2. a. When do you use ratios in **your** everyday life?
b. Who else uses ratios in their everyday life? Please provide examples.
3. How do you represent a ratio using mathematical symbols?
4. What representations – drawings, charts, graphs, words – might you use to explain ratio and show how it is used?

3.1. Sample

The participants were 34 graduate student-teachers preparing for primary teaching (4-12 year olds). Mathematics is just one of 14 curricular areas these PPSTs are required to teach, although there is a particularly strong focus on mathematics in recent years (for example: DES, 2015, 2016). The participants were in the second year of a two-year Professional Masters in Primary Education (PMEd) degree at the first two authors' institution. They have varied academic backgrounds (being graduates in many subjects) and varied levels of achievement in mathematics. As part of the PMEd degree, PPSTs take two mathematics modules. One of these is based on teaching methodologies and pedagogy (PK and PCK), while the other is focused mainly on content knowledge understanding (CK). In the first year of the degree, the PPSTs' learning of content was focused on the whole numbers and their operations. Ratio was not explicitly taught, although it may have been casually referenced during lectures.

3.2. Discussion and “Think, Pair, Share” as a methodology

It was decided to use collaborative discussion for data generation because this methodology allowed the researchers (the first two authors) to immerse themselves fully in the research process and “explore the ordinary talk and everyday explanations” of the participants (Cohen, Manion, & Morrison, 2000, p. 298). The researchers were mere moderators of the discussion, mainly observing and at times asking questions for clarification but being careful not to put leading questions while remaining cognisant of the fact that personal bias may impact on the validity and quality of the data. Observation of this kind allowed the researchers to construct real meaning from the discussion between the participants. Although not a narrative enquiry in the strict sense of the word, it did allow the researchers to capture participants' knowledge of ratio through their many years of “lived experiences”, both as students and more recently as educators, within the Irish education system (Clandinin, Pushor, & Murray Orr, 2007, p. 22).

This particular methodology was also selected because of its sound educational benefits. Discussion as a teaching methodology is rooted in social constructivist pedagogy, which is both promoted and practised in the researchers' institutions. Central to this approach is the idea of social interaction and Vygotsky's (1978) Zone of Proximal Development, or ZPD. In his research on the relationship between child learning and development, Vygotsky suggested there are two distinct levels of cognitive development in children. The first is what he termed the *actual* developmental level, defined as "the level of development of a child's mental function determined by independent problem solving" (p. 37). The second level of potential development was defined as "that which a child can achieve if given the benefit of support during the task. It is the ability to solve problems under the guidance or in collaboration with more capable peers" (p. 37). He proposed that there is always a difference between these two forms of development, one being individual and the other as collaboration within a group, and that this gap is an indicator of the cognitive functions that have not yet matured, but are in a type of "embryonic state" (p. 86). It is this ZPD that is critical for teaching and learning as it allows learners to reach their potential cognitive growth via collaboration with others. In this sense, ZPD is defined by Vygotsky as: "the distance between the actual developmental level as determined by individual problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 38). Although ZPD is typically referred to in relation to children's cognitive development, it is equally relevant to adult learners. For example, Taylor, King and Pinsent (2002) carried out a case study investigating how adult learners improved literacy skills through collaborative peer work, and how these collaborative practices aid learners in their journey through the ZPD.

From this perspective, learning is an inherently social process and it is this element of social interaction that helps children in progressing through the ZPD to reach their potential cognitive development. For this reason, the authors concluded that "Think, Pair, Share" as developed by Lyman (1981) was the best methodology to incorporate discussion in a natural and inclusive way. Discussion in this way also encompasses several of the core principles of the Irish Primary School Curriculum and Mathematics Curriculum (NCCA, 1999a, 1999b); therefore, the researchers felt it was necessary to model such teaching methodologies.

Finally, "Think, Pair, Share" gives students the opportunity to make sense of the mathematics they are engaged in (Reinhart, 2002). It problematises ideas and concepts, leading to an inevitable struggle which is necessary for real learning to happen. Additionally, collaborative learning through "Think, Pair, Share" is more effective for developing problem solving and critical thinking skills than traditional learning. Again, this is because the process makes knowledge problematic and contested which encourages students to critically discuss, clarify and evaluate peers' opinions (Lin, 2015). Throughout this process, existing ideas are used to make sense of new situations and in this sense new meaning is constructed by making links between new and existing knowledge. The process encourages new ideas, or old ideas presented in new

ways, which may be accepted, rejected, critiqued and/or re-evaluated by members of the group.

3.3. Data collection

The research was carried out over the course of two consecutive mathematics lectures in the first two authors' institution. During the first hour, the research instrument was administered at the beginning of the lecture. Participants were grouped into six groups of either five or six. "Think, Pair, Share" methodology was utilised and this involved the participants firstly taking approximately 10 to 15 minutes to complete the worksheet individually (Think). After this was completed, the participants were asked to discuss their work briefly with one other person within their group (Pair). Then, each participant was asked to share their work with the remaining members in the group (Share). Each group then created a mind map to represent their collective knowledge of ratio. The process culminated in a whole-class discussion. This discussion was generated by each group verbally presenting their posters to the other groups, who were encouraged to give critical responses. Of the two researchers present, one mediated the discussion while the other took notes based on participants' responses. After the group discussion, participants were given approximately ten minutes at the end of the first hour to write a reflection on how the "Think, Pair, Share" activity enhanced or did not enhance their understanding of the concept and application of ratio in everyday life.

It was decided to follow up the main "Think, Pair, Share" activity with a lecture focusing on relational understanding of ratio. This decision was made because it was anticipated that participants would have ratio fresh in their minds, may have some burning questions on the topic, and consequently may be more motivated to engage in the topic. Through this, further discussion was generated within and between the groups of PPSTs and the lecturer. Significant events were noted during this hour. PPSTs were again given an opportunity to reflect on the process.

3.4. Data analysis

For each part of Question 2, the data were separately studied and tallied by two of the authors and tentative categories were agreed. Categories chosen emerged from the data and were similar to those in previous studies (Fernandes & Leite, 2015; Oldham et al., 2015; Stafford et al., 2015; Oldham et al., 2016). The data were then coded independently, checked and reconciled. Broadening categories as per the previous studies helped with reaching agreement, while recognising limitations in the data. As some of these responses were difficult to interpret, reference was also made to the answers to the other questions (Questions 1, 3 and 4), as well as the PPSTs' reflections and notes from the group discussions to better ascertain what was intended. The same process of analysis was applied to the PPSTs' reflections. Reflections were grouped into those that found the "Think, Pair, Share" activity helped their understanding and applications and those that did not.

4. Results

There were 32 individual responses to the instrument.

4.1. Question 2a

In response to the question “When do you use ratios in **your** everyday life?,” PPSTs gave a range of answers (Table 1). For some categories, some PPSTs provided more than one example. The majority of PPSTs (87.5%) could provide at least one correct application, mostly cooking/baking, but many of those (60.7%) also gave an incorrect or incomprehensible application (Table 2). Problematic responses such as “filling the car with petrol,” “checking how long is left in class” and “time” were excluded as incorrect or incomprehensible. Four PPSTs provided no correct applications and at least 1 incorrect or incomprehensible application. Only 14 PPSTs (43.8%) could give more than one correct application; however, 5 of these also gave at least one incorrect or incomprehensible application.

Table 1: Categorised responses to question 2a: “When do you use ratio in your everyday life?”

CATEGORY	NUMBER OF EXAMPLES
Statistics/Surveys/Research	3
Dividing	7
Gambling/Betting/Racing	9
Other	10
Cooking/Baking	17
Incorrect/Incomprehensible	26

Table 2: Number of PPSTs giving correct/incorrect applications for question 2a

CORRECT	INCORRECT/ INCOMPREHENSIBLE	NUMBER OF PPSTs
0	0	0
	1 or more	4
1	0	2
	1 or more	12
2	0	6
	1 or more	4
3	0	3
	1 or more	1
Total		32

4.2. Question 2b

In response to the question “Who else uses ratios in their everyday life? Please provide examples,” (Table 3), “teachers” was the most common answer, followed by “professional jobs”. Many more of PPSTs could provide multiple applications for ratio (81.25%) for this question (Table 4) than the previous question, with the majority (75%) able to provide 3 or more correct applications. Only 4 PPSTs gave just one correct application. Problematic responses such as “children,” “workers” and “parents dividing dinners between family” were excluded as incorrect or incomprehensible; however, only 5 PPSTs gave such answers.

Table 3: Categorised responses to question 2b: “Who else uses ratios in their everyday life?”

CATEGORY	NUMBER OF EXAMPLES
Everyone	2
Statisticians/Surveys/Analysts/Researchers	3
Incorrect/incomprehensible	6
Mathematicians/ Scientists	9
Builders/Construction	10
Cooks/Bakers/Chefs	12
Bookies/Betting/Racing	13
Others	13
Professions	18
Teachers	19

Table 4: Number of PPSTs giving correct/incorrect applications for question 2b

CORRECT	INCORRECT/ INCOMPREHENSIBLE	NUMBER OF PPSTs
0	0	0
	1 or more	0
1	0	3
	1 or more	1
2	0	3
	1 or more	1
3	0	11
	1 or more	1
4	0	4
	1 or more	0
5	0	5
	1 or more	2
6	0	1
	1 or more	0
Total		32

4.3. Reflections after the “Think, Pair, Share” discussion

Most PPSTs (75%) responded that the “Think, Pair, Share” discussion enhanced their understanding of the concept of ratio and its application to real-life contexts. Many

commented that the discussion opened their minds to a wider range of applications of ratio in their everyday lives and how it is used in other people's lives. One illuminating response is shown in Figure 1.

“...enhanced my understanding of ratio as it allowed me to take my prior knowledge and the prior knowledge of other students in the group and pool it together to form a broader, more detailed understanding of ratio, and when and how to apply it to everyday life.”

Figure 1: PPST reflection

While PPSTs were initially unsure about their own knowledge and confused after the first class, most reported that the exercise helped build on their understanding and knowledge of ratio and most commented on the benefits of hearing one another's ideas. Some positive reflections are shown in Figure 2.

“it got me thinking more about the topic”
“it stimulated opinions and discussion among us”
“similar ideas give confidence”
“being challenged enhanced ideas”
“ it gave an insight into the depth at which ratio is involved in everyday life”

Figure 2: PPSTs' reflections – positive

The other 25% of PPSTs said they felt more confused about the concept of ratio after the “Think, Pair, Share” exercise. Relevant reflections are shown in Figure 3.

“left me more confused about the topic”
“left us in limbo”
“made the concept of ratio more complicated”

Figure 3: PPSTs' reflections – negative

4.4. Reflections from the follow-up class

PPSTs' reflections after the follow-up Relational Understanding class were also predominantly positive, with only 2 still showing confusion (Figure 4). Many commented that having the class immediately after the “Think, Pair, Share” exercise was particularly helpful.

"I now feel more comfortable with what ratio is and answering questions related to ratio."

".. the follow up class helped build on my understanding and knowledge of ratio and I felt much more confident after this class."

"... gave us the answers to the questions we were trying to make sense of in the first session. It allowed us to talk through things in a guided way."

"... follow up class addressed all of the questions from the previous class and gave opportunity to ask further questions."

"More confused. Didn't really clarify if we were right or wrong."

Figure 4: PPSTs' reflections after the follow-up class

5. Discussion

Initial results indicate that many PPSTs had limited understanding of the application of ratio in a real-life context, both for themselves and others. This supports findings from previous studies of the ATEE Ratio Project, cited above. The categories identified by PPSTs in this study were similar to those in previous Irish and international studies (Stafford et al., 2015). "Teachers" was the most popular answer, higher than for previous groups probably due to the fact that they had already completed one year of their teaching degree. Horse racing was again a popular category, perhaps reflecting the importance of horse racing in Irish culture. The findings of this study also suggest that the use of "Think, Pair, Share" and discussion as methodology can be beneficial for facilitating PPSTs' understanding of the concept of ratio and that embedding mathematical concepts such as ratio in everyday context can also be useful for their understanding. This should therefore help them in supporting the development of understanding of the concept for children in their classes in the future. The discussion allowed lecturers to gain a deeper understanding of the PPSTs' applications than using the instrument alone, and is also good for debate around meaning and helping to bring misconceptions and confusion in PPSTs' understanding to the forefront. However, findings also highlight the importance of the follow-up lecture after the discussion with teacher input to solidify understanding. The collaboration between the mathematics teacher educator and mathematics educator on this research also supports the call by Leite et al. (2016) for the need for mathematics teacher educators and mathematics educators to work together "to foster the development of PPST content knowledge of ratio" (p. 95).

It should be highlighted that the researchers' decision to give no input into the "Think, Pair, Share" methodology was useful for PPSTs only because they had already studied ratio during their primary and post-primary education. The resulting confusion was a necessary by-product of the methodology, which ultimately ensured the maximum effectiveness of the follow-up class. It is hoped that learning, or re-learning as the case may be, a concept in this way will help to minimise the effects of Lortie's (1975)

apprenticeship of observation in future mathematics classrooms. On the other hand, it would not be appropriate to use a purely “discovery learning” type methodology like this for a topic that PPSTs have not studied previously.

It is necessary to acknowledge limitation of the study: The group nature and hence seating arrangement for the exercise may have resulted in PPSTs sharing answers during the “Think” phase of the exercise. Some PPSTs put a question mark after their entry suggesting they were not confident of their answer. As the PPSTs in this study have undergraduate degrees in a wide range of subject areas and many have already worked in those fields, areas of the PPSTs’ undergraduate degree subjects may have also influenced work related responses.

6. Conclusion

This study sought to answer the questions: “What personal uses and users did PPSTs identify for ratio?” and “Does using discussion and application to real-life contexts facilitate PPSTs understanding of the concept of ratio?” The categories of uses and users identified by PPSTs in this study were similar to those of previous studies in the project. However, many PPSTs had difficulty with providing multiple correct applications for ratio in their own lives suggesting that work needs to be done on helping PPSTs understand how ratio and other mathematical concepts are useful in their everyday lives. Further analysis of all of the data is necessary to give a fuller picture of the results. The findings suggest that “Think, Pair, Share” discussion has potential for use as a methodology in the introduction of other mathematical concepts to PPSTs. As this is a small scale study, it needs to be replicated on a larger scale to ascertain if the findings are applicable in other contexts.

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Prospective primary school teachers' use of the ratio and proportion concepts when solving a map-based task

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Abstract:

The concepts of ratio and proportion are used in several school disciplines as well as in many everyday situations. However, research suggests that people can hardly conceptualize them. This paper aims at characterizing prospective primary school teachers' use of ratio and proportion in an everyday situation. A questionnaire was used to collect data from 81 prospective primary school teachers attending an undergraduate programme at a Portuguese university. The questionnaire included a map-based task which requires participants to compute: i) a distance on the map, given the real distance; ii) the real distance, given the distance on the map; iii) the ratio between two map distances, given the real distances. The first two questions require the use of proportional reasoning and the third one requires the use of the ratio concept. Results suggest that the participants in the study drew mainly on the rule of three and performed better when computing the real distance and the distance on the map than when computing the ratio between distances. Their most frequent mistakes had to do with reduction of units of length, calculations, incorrect use of the rule of three and conceptualization of ratio as a difference between distances. Thus, prospective primary school teachers showed a limited ability to use the concepts of ratio and proportion in the context of a map-based task. This paper adds to previous research, as it gives insights on whether or not prospective primary school teachers are well equipped to teach these concepts in relation to everyday situations.

Keywords: Ratio, proportion, prospective primary school teachers, maps.

1. Introduction

Since 2007, in Portugal, initial teacher education takes place over two stages. Firstly, student teachers must obtain an undergraduate degree (180 ECTS, six semesters), which provides the prospective teacher with relevant content knowledge in the area(s) he/she is qualifying to teach in the future. A national law (Law 79/2014, June 14th) fixes

the training components and the minimum number of credits per component that each student teacher needs to complete to qualify to enter the second stage of initial teacher education. As required by the same law, the second stage of teacher education consists of a master's programme, focusing on general education studies, specific teaching methodologies, content knowledge and supervised teaching practice in schools. For all but two initial teacher education areas, these master's programmes are 120 ECTS, that is, four semesters long. Again, the law referred to above settles the minimum number of credits per training component. The knowledge base acquired during initial teacher education may become increasingly systematic and coherent as the teacher gains practical experience (Ponte, 2012), given that it is constantly enriched and refreshed through continuing professional development.

Hence, initial teacher education programmes foster the development of key dimensions of teacher's professional knowledge, which Shulman (1986) refers to as content knowledge, general pedagogical knowledge, curricular knowledge and pedagogical content knowledge, among others. This paper focuses on prospective teachers' content knowledge. According to Shulman (1986), content knowledge includes not only knowledge of the content to be taught, but also knowledge of its organisational structures, both substantive and syntactic. This means that teaching a given content requires much more than being familiar with the facts and the concepts to teach. As Shulman (1986) argued, it is not enough for a teacher to know that something is *like that*. Rather, the teacher must know *why it is like that*, so that he/she can have theoretical support for the statements he/she makes before his/her students and for distinguishing key ideas from peripheral information without conveying wrong messages to students.

Since 2013, the Portuguese 1st cycle of basic education (grades 1 to 4) syllabus increased the emphasis on some mathematical concepts including the fraction concept. As it was argued in another paper (Fernandes & Leite, 2015), a stronger emphasis on fractions has additional requirements with regard to 1st cycle teachers' training, as they teach mathematics (among other curriculum subjects) at this school level. Hence, they need to master concepts related to fractions, as it is the case of ratio and proportion.

In fact, nowadays, 1st cycle mathematics syllabus (MEC, 2013) do not acknowledge the ratio concept as a topic on its own even though they associate it with fractions. It assumes that a ratio is a comparison between two quantities. Hence, ratio appears explicitly or implicitly associated with several mathematical concepts, namely with the concepts of rational number, proportionality and similarity.

As far as the 2nd cycle of basic education (grades 5 and 6) syllabus (MEC, 2013) is concerned, the ratio concept is associated with the concept of non-negative rational numbers as well as with the operations involving fractions. This syllabus also mention the concept of proportion and they suggest it to be related to directly proportional magnitudes. As it is a concept that develops slowly (Sánchez, 2013), proportion is expected to be further studied during the 3rd cycle of basic education (grades 7 to 9). Therefore, 9th graders are expected to be able to solve problems involving proportions.

Furthermore, topics like variables and functions begin to be addressed at the same time (from 7th to 9th grade).

As Ball, Thames and Phelps (2008) have put it, teacher education programmes should foster prospective teachers' development of both common knowledge and specialized knowledge of the themes that compose the school curriculum. However, some themes are more complex and hard to master than others. This may be the reason why some prospective teachers feel comfortable with natural numbers but are unable to work with the diverse representations of non-negative rational numbers (Fernandes & Leite, 2015; Leite, Fernandes, Viseu, & Gea, 2016). A consequence of this is that they are also unable to work with ratio and proportion properly. Ratio and proportion are interrelated concepts, as the latter can be conceptualized as an equality between two ratios. Besides, in addition, ratio and proportion are useful conceptual tools for the learning of other Mathematics concepts and to working in several school disciplines as well in many everyday situations.

This paper aims at characterizing prospective primary school teachers' use of ratio and proportion in an everyday situation. The situation has to do with getting information from a map, which is something that citizens have to do quite often for different purposes and that teachers should teach their students how to do.

Thus, this paper follows previous research carried out by members of the Research and Development Community on Science and Mathematics Education. That research focused on describing prospective teachers' representations of ratio (e.g., Fernandes & Leite, 2015; Oldham, Stafford, & O'Dowd, 2015) and on comparing prospective mathematics and science teachers' representations of the concept that is at stake (Berenson, Oldham, Price, & Leite, 2013). These studies collected data with a similar research instrument addressing ratio representations and use. Leite et al. (2016) concentrated on prospective primary school teachers but they used a different instrument to investigate participants' knowledge of ratio and their ability to interpret and compare ratios in two different contexts. Therefore, they used a new instrument to collect those data. The research reported in this paper adds to previous research as it concentrates on the relationship between ratio and proportion in an everyday situation and uses a new instrument, which is consistent with the research objective requirements.

2. Concepts of ratio and proportion

The concept of ratio has been given different meanings (Clark, Berenson, & Cavey, 2003; Lamon, 2007). Actually, three definitions can be found in the literature: i) a relationship part/whole, which is related to measurement, ratio and operator and fosters the development of the concept of unit of measurement and equivalent fractions; ii) a quotient, which has to do with rates and is useful to compare, add, and subtract fractions; iii) an operator that integrates multiplication and division of fractions.

Whatever the meaning given to it, the concept of ratio is associated with the concept

of rational number, which is in turn associated with the concept of proportionality. However, understanding rational numbers is not the same as understanding proportionality even though rational numbers have a proportional nature. In fact, in each class of equivalence, relative to a rational number, each element is a constant multiple of the other. For example, in the class $\{1/2, 2/4, 3/6, 4/8, \dots\}$, that shows the rational number $1/2$, we can illustrate the relationship just mentioned as follows: $2/4 = 1/2 \times 2/2$; $3/6 = 1/2 \times 3/3$; $4/8 = 1/2 \times 4/4$; ...

Consequently, proportional reasoning requires the understanding of the nature of rational numbers, namely through proportions. Proportions intervene in two types of problems: i) the comparison problems that involve four values (a , b , c and d) and two ratios between them (a/b and c/d) so that an order relation ($<$, $>$ or $=$) is established between the fractions showing the ratios; ii) the unknown value proportion in which three of the four values of a proportion are given and the missing one (the fourth value) is to be computed. To illustrate the first type of problem, one can think about having two sweetened solutions and being interested in knowing which one is sweeter or whether they are equally sweet. To illustrate the second type of problem one can think about two equally sweet solutions for which we have three data and need to compute the fourth one.

Proportional reasoning is a central theme in the syllabuses from several countries including Portugal (MEC, 2013; NCTM, 2000). Due to its complexity, Lamon (2007) suggests that proportional reasoning should be developed from:

structural relationships among four quantities (a , b , c , d) in a context simultaneously involving covariance of quantities and invariance of ratios or products; this would consist of the ability to discern a multiplicative relationship between two quantities as well as the ability to extend the same relationship to other pairs of quantities. (p. 638).

The scalar and functional relationships are both critical and structural relationships. Thus, they will be illustrated through the following concrete example.

Suppose that Julia has used 7 m of fabric to make 5 dresses. How many metres of fabric would she need to make 15 dresses?

This example involves a direct relationship between two spaces of measurement. There is a linear functional relationship between the values of the two measurement spaces and a scalar operator, which transforms quantities of the same kind (Figure 1). As Figure 1 shows, the functional relationship is given by the linear function of the following equation $f(x) = 7/5 x$ and the scalar relationship has a factor 3. In both cases, the answer is that Julia would need 21 m of fabric to make 15 dresses. However, it should be noted that the functional relationship enables the computation of the amount of fabrics, in metres, that is necessary for making a certain number of dresses. This offers it a larger power when compared with the scalar relationship.

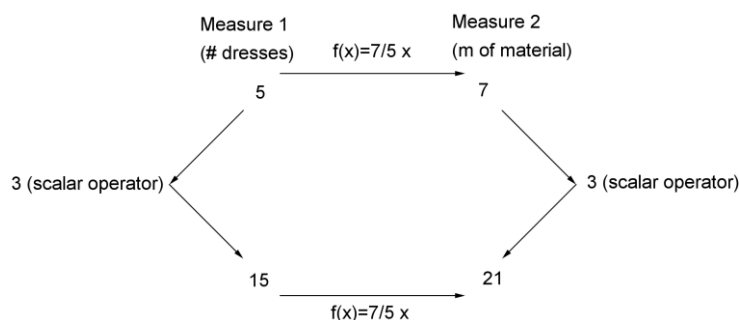


Figure 1. Scalar and functional relationships relative to example 1.

To Livy and Vale (2011), the language associated with ratio and the variety of situations in which this concept is used may be a cause for confusion when working with ratios. This is especially important when the original word for ratio is also used with other meanings, as it happens in the Portuguese language (Berenson et al., 2013). It may also be reinforced by the fact that textbooks often provide applications of the concept in question, which require solely its use without fostering its relationship with other concepts (Lo, Cai, & Watanabe, 2001). By doing so, they do not offer opportunities for the students to integrate the ratio concept with other concepts with which it is related.

This way of approaching the concept may be at least in part responsible for the limited knowledge that primary school teachers have shown on the ratio concept, which leads to an undifferentiated use of fraction, ratio and proportion (Livy & Vale, 2011). In addition, teachers' lack of knowledge about ratio may also be a consequence of the fact that teacher education programmes take for granted that prospective teachers already master the concept and therefore do not focus on it, neither from a content knowledge nor from a pedagogical content knowledge perspective.

Livy and Vale (2011) analysed two items in which prospective teachers showed many difficulties with about 10% correct answers only. One of these items concentrated on square centimetres to square metres conversion; the other one required the use of a scale to convert a map distance of 6cm to the real distance 75km. In the scale item, prospective teachers' errors were mainly due to the following strategies: incomplete solving procedure, as they did not complete the solving process; incorrect measurement unit conversion, especially when large number ratios were involved which seem to have led them to ignore one or more places in between units; use of additive thinking, that is use of addition or subtraction instead of multiplication when dealing with proportions or rules of three; incorrect interpretation of the scale, as students assumed a 1:1 (map distance to real distance) ratio instead of a 6(cm):75(km) ratio that would correspond to a 1(cm)/12,5(km) (and simply multiplied one by six and converted the result to kilometres). It should be noticed that the so-called rule of three is an educational tool usually used to verbalize a proportion ($\frac{a}{b} = \frac{c}{x}$) with an unknown term, for example x . That rule adopts a different disposition of the four terms and is normally presented as follows: $\begin{matrix} a & - & b \\ c & - & x \end{matrix}$. The unknown value is: $x = (c \cdot b)/a$.

Ilany, Keret and Bem-Chaim (2004) concluded that research activities dealing with

tasks that are familiar to prospective teachers and that require the interrelated use of the key concepts that are involved in the ratio definition improves their content knowledge, as well as their pedagogical content knowledge. Therefore, it seems necessary to uncover prospective teachers' conceptual difficulties with regard to the concepts of ratio and proportion, so that teacher educators can design strategies able to develop their student teachers' conceptual understanding of these concepts and to help them to design appropriate strategies to teach the concepts that are at stake to their future students.

3. Methodology

To attain the objective of this study data were collected from 81 prospective primary school teachers who were near to completing their first degree on Basic Education from a Portuguese University. This degree is required by the Portuguese law mentioned above to enter one of the master's programmes, which are necessary to become a 1st cycle (grades 1 to 4) and/or 2nd cycle (grades 5 and 6) schoolteacher. Students attending the undergraduate programme on Basics Education have different background on Mathematics from secondary school (grades 10 to 12) and all of them had already taken a few Mathematics courses at the university, as required by the Portuguese law, to be able to teach this subject in the future. However, they had not formally learned about the ratio and the proportion concepts in their undergraduate programme. The age of the participants ranged from 20 to 34 years old, with a mean of 22 years. This mean is about one year above the expected age for students attending the 3rd year of studies on Basic Education. Most of them were female, as could be expected bearing in mind the school level that is at stake. Actually, there is a widespread belief that teaching, especially at the lower school levels, is a female profession. Unfortunately, this belief is consistent with reality, as shown by a recent Eurydice report (European Commission/EACEA/Eurydice, 2015).

Data were collected through a face-to-face questionnaire including a map-based problem task with three questions. The first two questions (question a) and question b)) bear some similarities with tasks used by Livy and Vale (2011) and they require the use of the proportion concept; the third one (question c)) requires the use of the ratio concept. Figure 2 shows the English version of the task, which mentions places that were familiar to the Portuguese prospective teachers.

Imagine the map of Portugal drawn on a 1:500000 scale, being cm the measurement unit.

a) What is the distance between two places on the map, if their real distance, in straight line, is 40km?

b) What is the real distance, in a straight line, between two places, if their distance on the map is 5cm?

c) The real distance between Braga and Vila Nova de Famalicão is 19km; the real distance between Braga and Oporto is 57km. What is the ratio between the two distances on the map?

Figure 2. Task used to collect data.

Prospective teachers' answers were content analysed per question, following a four steps procedure. The objective of the first step was to identify correct and incorrect

answers; the objective of the second step was the development of a set of *a posteriori* categories for correct and another one for incorrect answers, based on the strategies used by the students to answer the question; the third step aimed at classifying the answers based on the sets of categories that were previously developed; the fourth step was devoted to the computation of absolute and relative frequencies per category of answer, for correct as well as for incorrect answers. In the next section, the categorization of the answers will be illustrated by selected answers. The author of a selected answer will be identified by a code composed of PPST (which stands for prospective primary school teacher) and a number (from 1 to 81) which refers to the number assigned to the participant in the study that provided the selected answer.

4. Findings

4.1. Overview of prospective teachers' performance

Table 1 shows prospective teachers' performance on the three questions that required them to use proportion and ratio to compute a distance (on the map and in reality) or a ratio of distances on the map.

Table 1: Prospective teachers' performance (N=81)

Type of answer	a) Distance on the map		b) Real distance		c) Ratio of distances on the map	
	f	%	f	%	f	%
Correct	44	54	52	64	26	32
Incorrect	33	41	22	27	36	44
Don't answer	4	5	7	9	19	24

The majority of the participants in the study answered correctly questions a) and b) but not to c). However, whatever the question, the results are not good for a group of prospective teachers, as they will be required to teach the concepts that are at stake soon. Participants that do not master the concepts properly cannot be expected to anticipate and/or understand their future students' difficulties with those concepts nor to teach them properly.

As far as questions a) and b) are concerned, prospective teachers were asked to compute a distance on the map and in reality, given the real distance and the distance on the map, respectively. To answer these questions, students should recognize the proportion between the ratio given by the map scale (provided in the problem situation) and the ratio between the distances on the map and in reality. When doing so, they would come across with a problem in which they would need to find the unknown value in the proportion, which they could calculate from the three known values in the proportion.

Question c) asked participants about the ratio between two distances on the map, after giving them the real distances. The existence of a proportionality between distances on the map and distances in reality means that the ratio between two distances on the map is equal to the ratio between the two corresponding distances in reality. Thus, prospective teachers could calculate the unknown ratio from the real distances that were given to them in the problem situation. However, their low performance on this

question indicates that most of them did not use this strategy, as it will be shown in the next section.

4.2. Strategies used by prospective teachers with correct answers

Table 2 shows that participants used a reduced number of strategies to reach correct answers. In addition, it shows that the rule of three was the strategy used by almost all prospective teachers that gave correct answers to questions a) and b). These two questions are similar in terms of both cognitive demand and problem solving strategy. Hence, the adoption of similar approaches was expected.

Table 2: Prospective teachers' strategies to attain correct answers

Strategy	a) Distance on the map (n=44)		b) Real distance (n=52)		c) Ratio of distances on the map (n=26)	
	f	%	f	%	f	%
Rule of three	41	93	49	94	16	54
Proportion	2	5	2	4	3	11
Unitarian value	1	2	1	2	---	---
Ratio	---	---	---	---	9	35

Figure 3 shows how PPST10 used the rule of three to answer question a). This participant started by taking the scale of the map and to reduce cm to km. Afterwards, he/she used the rule of three to compute the distance on the map (which is 8cm).

Handwritten work for Figure 3:

$$500000 \text{ cm} = 5 \text{ km}$$

$$x = \frac{1 \times 40}{5} = 8 \text{ cm}$$

Conversion table:

cm	—	km
1	—	5
x	—	40

Figure 3. Resolution of question a) through the rule of three (PPST10).

Proportional reasoning was used by a smaller number of students (table 2) to answer questions a) and b). They knew three values and were asked to compute the fourth value, which they did, based on a proportion. Figure 4 shows PPST57 proportion-based strategy to solve question b). Based on the fundamental property of proportion, this PPST concluded that the real distance between the two places is 25km.

Handwritten work for Figure 4:

$$\frac{1}{500000} = \frac{5 \text{ km}}{x}$$

$$x = \frac{5 \times 500000}{1}$$

$$x = 2500000 \text{ cm} = 25 \text{ km}$$

A distância real entre as duas localidades é de 25 km.

Figure 4. Resolution of question b) through proportional reasoning (PPST57).

The unitary value strategy was used by a prospective teacher in question a) and by another one in question b). He/she has noted that 1cm on the map stands for 5km on reality. Then, he/she divided 40 by 5 (in question a, Figure 5) and multiplied 5 by 5 (in question b) to attain the answers to both questions.

$$1:500000 \text{ cm} \rightarrow 1:5000 \text{ m} \rightarrow 1:5 \text{ km}$$

$$1 \text{ cm do mapa} \text{ s\~{a}o } 5 \text{ km} \rightarrow \frac{40 \text{ km } 15}{8}$$

R: As duas localidades ficam a 8 cm do mapa

Figure 5. Resolution of question a) through the unitary value strategy (PPST15).

As far as question c) is concerned, it should be noted that it got the lowest number of correct answers (table 2) and the rule of three was the most used type of reasoning. From the real distances, they computed the distances on the map based on the rule of three and afterwards they computed the ratio between distances. Figure 6 illustrates this type of reasoning. PPST64 computed the distances on the map, in cm, that correspond to the real distances that is 19km and 57km. Afterwards, he/she computed the ratio of those distances (19/57).

$$\begin{array}{l} 5 \text{ km} - 1 \text{ cm} \\ 19 - x \end{array} \quad x = \frac{19}{5}$$

$$\begin{array}{l} 5 \text{ km} - 1 \text{ cm} \\ 57 - x \end{array} \quad x = \frac{57}{5}$$

$$\text{Raz\~{a}o} = \frac{19}{57} = \frac{19}{57} \times \frac{5}{57} = \frac{19}{57}$$

R: A raz\~{a}o entre as dist\~{a}ncias no mapa \u00e9 de $\frac{19}{57}$.

Figure 6. Resolution of question c) through the rule of three (PPST64).

Prospective teachers who used ratio-based reasoning started by computing the ratio between the real distances provided, and they implicitly assumed that the ratio between distances on the map is equal to the ratio between real distances. The answer of PPST25 illustrates this type of reasoning (Figure 7).

$$57 / 19 = 3$$

A raz\~{a}o entre as duas dist\~{a}ncias no mapa \u00e9 a mesma que na realidade: 1/3. Assim, a dist\~{a}ncia de Braga a vila nova de Famalic\~{a}o \u00e9 1/3 do que \u00e9 de Braga ao Porto.

Figure 7. Resolution of question c) through the ratio strategy (PPST25).

This prospective teacher wrote that the ratio between the distances on the map is equal to the ratio between the real distances. Understanding that the relationship between the distances remains the same shows a deeper understanding of proportionality and avoids calculations that can easily originate mistakes.

Finally, it should be noted that prospective teachers who used proportion-based reasoning used a proportion instead of a rule of three to compute the distances on the map. Afterwards, they computed the ratio required as illustrated in Figure 8.

(x) Beaga → V. P. Farnalicao = 19 km = 1900000 cm
 (y) Beaga → Porto = 57 km = 5700000 cm

$$\frac{1}{50000} = \frac{x}{1900000}$$

$$x = \frac{19 \cancel{000000}}{\cancel{50000} \cdot 10} = 3,8 \text{ cm}$$

$$\frac{1}{50000} = \frac{y}{5700000}$$

$$y = \frac{57 \cancel{000000}}{\cancel{50000} \cdot 10} = 11,4 \text{ em}$$

Razão
 $11,4 : 3,8 = \underline{\underline{3}}$

A razão entre estas é 3. A distância entre Beaga e Porto é 3 vezes maior que a distância entre Beaga e V. P. do Farnalicao.

Figure 8. Resolution of question c) through the proportion based reasoning (PPST54).

4.3. Difficulties and mistakes made by prospective teachers that gave incorrect answers

Prospective teachers' incorrect answers were content analysed in order to identify the difficulties that they reveal and the mistakes that their authors made. Figures given in table 3 show that the most frequent mistakes have to do with inadequate use of conversion of measurement units (question a), inappropriate use of the rule of three (questions a) and b)), inadequate calculation of a difference between distances, as well as difficulties in completing the resolution process.

Table 3: Prospective teachers' mistakes in incorrect answers

Difficulties and mistakes related to...	a) Distance on the map (n=33)		b) Real distance (n=22)		c) Ratio of distances on the map (n=36)	
	f	%	f	%	f	%
Use of measurement units	19	58	6	27	5	14
Use of the rule of three	9	27	9	41	3	8
Calculation of difference of distances	1	3	---	---	17	47
Finish resolution	3	9	2	9	11	31
Make calculation	1	3	5	23	---	---

Figure 9 shows an example of prospective teacher's mistakes relative to units conversion when answering to question a). This answer shows that PPST12 converted 40km to dm, instead of converting it to cm (the unit of the scale).

$$x = \frac{200.000}{1 \times 100.000} = \frac{200 \cdot \cancel{000}}{\cancel{100} \cdot 1000} = 0,2 \text{ dm}$$

$x \text{ km} \xrightarrow{100 \cdot 1000}$
 \downarrow
 $\text{dm} \xrightarrow{200 \cdot 1000}$

$10 \quad 100 \quad 1000 \quad 10.000 \quad 100.000 \quad \dots$
 $\text{km} \quad \text{m} \quad \text{dm} \quad \text{cm} \quad \text{mm} \quad \dots$
 $10 \text{ km} = 100.000$

Figure 9. Mistake on conversion of units when solving question a) (PPST12).

In the same question, six participants in the study used the rule of three and reached

the value 8 but they assumed that it was 8km instead of 8cm. Hence, they showed difficulties in discriminating the different measurement units (namely, km and cm) involved in the rule of three.

Mistakes on the use of the rule of three have two causes: one is due to the incorrect interpretation of the scale of the map; the other is due to the incorrect placement of data in the rule. A consequence of the latter is that the correspondence between the values that are at stake (cm and km) is incorrect. Figure 10 illustrates this mistake using PPST66 answer to question b). This prospective teacher interpreted the scale incorrectly as he/she wrote that 1km—500 000cm; he/she should have written that 1cm on the map corresponds to 500 000cm on reality so that 1cm corresponds to 5km.

Handwritten work for Figure 10:

$$1 \text{ km} \text{ --- } 500 \text{ 000 cm}$$

$$x \text{ --- } 5 \text{ km}$$

$$x = \frac{5 \times 1}{500 \text{ 000}} = 0,0001 \text{ km} = 1 \text{ cm}$$

∴ Ficam a uma distância real de 1cm

Figure 10. Mistake on the interpretation of the scale when solving question b) (PPST66).

The errors relative to the difference of distances appeared mainly on question c). The bigger incidence of errors in question c) may be explained by the fact that prospective teachers were questioned about a comparison of distances. It may happen that these prospective teachers did not perceive the usefulness of the ration concept and used the difference of distances instead. Figure 11 shows an answer based on this type of mistake. It shows that PPST02 started by computing the differences between the real distances and afterwards, used the rule of three to compute the distance on the map.

Handwritten work for Figure 11:

$$57 - 19 = 38 \text{ km}$$

$$38 \text{ km} = 380000 \text{ cm}$$

$$\begin{array}{l} 1 \text{ --- } 500000 \\ x \text{ --- } 380000 \end{array} \quad \frac{1 \times 380000}{500000} = 76$$

Figure 11. Mistake due to the comparison of distances when solving question c) (PPST02).

Other students, instead of using the rule of three, computed the distance on the map based on proportional reasoning while other students stopped just after calculating the difference between distances and took the result as the answer.

Question c) was the one with more incomplete answers. Prospective teachers computed the distances on the map from the real distances given to them and completed the process without computing the ratio between those distances. Figure 12 illustrates this type of difficulty through the answer of PPST23.

Braga a Vila Nova de Famalicão → 19 km
 Braga ao Porto → 57 km

$$\begin{array}{l} 1 - 5 \\ 2 - 19 \end{array} \quad x = \frac{1 \times 19}{5} = 3,8$$

$$\begin{array}{l} 1 - 5 \\ 2 - 57 \end{array} \quad x = \frac{1 \times 57}{5} = 11,4$$

Figure 12. Incomplete answer to question c) (PPST23).

This prospective teacher uses a rule of three to compute the distances on the map between Braga and Vila Nova de Famalicão and between Braga and Oporto but he/she did not compute the ratio between the distances obtained. The remaining prospective teachers in this category, either computed the distances on the map followed by two ratios between the distance on the map and the real distance or they simply converted the distances given from km to cm.

Finally, the computation mistakes are mainly due to calculation errors on basic operations. In addition, they were not as frequent in the different questions as it would be expected based on the fact that the calculations required were very simple.

5. Conclusion and implications

Prospective teachers showed better performances in questions a) and b) than in question c). The former questions asked them to compute distances, namely a real distance and a distance on the map. This is a demand that they are familiar with as students, as it has to do with some geography tasks that they were required to learn in their Social Sciences and Geography courses. Consistently, their lower performance on question c) may be due to the fact that they are not used to compute ratios between distances. These results seem consistent with the idea put forwards by Berenson et al. (2013) that prospective teachers tend to use the ratio concept in a very practical way and do not show a deep understanding of its meaning.

With regard to the reasoning underlying correct answers, the rule of three was the most frequent reasoning strategy. Prospective teachers' adoption of this strategy may be a consequence of their experiences as learners, as the rule of three is a widespread reasoning tool among different disciplines. However, it should be stressed that some researchers (Lamon, 2007; Lesh, Post, & Behr, 1988) argue that using this rule is a rote procedure, which does not provide evidence of proportional reasoning.

As far as the prospective teachers' difficulties and mistakes are concerned, some of them may have to do with inattention (e.g., incorrect unit conversion, incorrect use of the rule of three, incomplete resolution) while others may result from insufficient understanding of the ratio concept, which they seem to conceptualize as a difference between distances. Together with the large number of participants that did not answer question c), these results seem to be in line with those obtained in a previous study carried out by Oldham, Stafford and O'Dowd (2015) that suggested a superficial mastery of the ratio and proportion concepts.

The results of this study reinforce two ideas. One of them has to do with the need to make sure that key concepts that prospective teachers will teach in the future are either already mastered or taught to them explicitly. Of course, this does not mean that teacher educators should introduce those concepts to their student teachers. Rather it means that teacher educators need to find ways of asking prospective teachers to talk about and use those concepts and to promote their conceptual change when necessary. Besides, it should be emphasized that concepts do not stand alone (Paul & Elder, 2002). Rather, they belong to and acquire meaning within conceptual networks, which in turn develop as learning goes further. Therefore, the concepts of ratio and proportion should not be approached in isolation. In fact, they should be approached together with concepts that have some kind of relationship with them (namely fraction, rational number, rule of three, etc.) so that learners can achieve a deeper and more accurate understanding of those concepts and be better equipped to teach them in the future.

The other idea has to do with the fact that concepts need to be approached in diverse settings and for different purposes to widen their perceived range of applicability and usefulness. Besides, to increase their meaningfulness to the learners, whatever their school level, concepts need to be approached in a contextualized way (MacDonald & Lowrie, 2011). This helps the learner to perceive the usefulness of the concepts in academic settings but and moreover in everyday settings.

Finally, even though the focus of this paper was on content knowledge, the results also suggest that prospective teachers' pedagogical content knowledge on ratio and proportion needs to be analysed and developed. Prospective teachers that show limitations on content knowledge cannot be expected to have good levels of pedagogical content knowledge. Therefore, most of the prospective teachers that participated in this study cannot be expected to teach these concepts to their future students properly. As "teacher educators are central to ensuring the quality of the learning of preservice student teachers" (Leite et al., 2016, p. 891), they need to find ways of helping prospective teachers' to overcome their scientific shortcomings with regard to the concepts of ratio and proportion.

Despite the fact that the study focused on single programme and that results come from a limited number of questions, the findings may be useful for teacher educators engaged in mathematics and in mathematics education courses, as well as for teacher educators of other subjects within the scope of primary school initial teacher education undergraduate and master's programmes. All of them should pay more attention to apparently simple concepts whose mastery cannot be taken for granted, and whose application needs to be explicitly fostered in both academic and daily life contexts.

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Effects of a training workshop on action-oriented environmental education in biology student teachers' professional development

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Abstract:

This research was designed to analyse the effects of a training workshop on action-oriented environmental education for sustainability (EEfS), in the professional development of biology student teachers, to promote high school students' environmental action competence. Therefore, a training workshop (48h) with biology student teachers (n = 12) was conducted. Data was collected through an initial and final interview to trainees, logbooks of trainees and the researcher and material produced by the trainees. The content analysis of the interviews showed that the workshop had a positive impact on increasing the action-oriented knowledge and skills of these student teachers to carry out action-oriented EEfS, and what most of them valued more in their professional development was to increase their content knowledge and general pedagogical knowledge. Therefore, despite the limitations of this study, it is possible to conclude that the action-oriented methodology was effective in the promotion of these student teachers' professional development. The main implication of these results is the efficiency found in this methodological alternative in EEfS for these university students, suggesting the importance of introducing it in the biology student teachers' training in the future.

Keywords: environmental education for sustainability, biology student teachers, action-oriented learning, action competence.

1. Introduction

Environmental education for sustainability is a topic of relevance and priority in the discussions of various governmental and non-governmental institutions, due to the many broad and global environmental issues such as climate change, anthropic pollution and the extinction of species, which are addressed as factors that negatively modify the environment, influencing the relationships experienced by living beings, and compromising the continuity of species, including the human species.

In Brazil in 2011, more than 94% of schools worked in environmental education (EE), and in the southern states this occurred on an average of 97% of schools (Pereira &

Guerra, 2011). Although data show an increase in EE in the pedagogical praxis, it is necessary to critically analyse whether the educational approach is adequate in providing a true construction of conscious, critical and participatory citizens. In this research, each individual will learn action-oriented knowledge (biological, social, economic and historical) and use this knowledge to understand environmental problems and act with the aim of exercising active and responsible citizenship in order to solve them, taking into account the interaction between the environmental, social and economic dimensions (Vilaça, 2016). In this sense, it is also important to consider the particularities of the States in the construction of the individual proposals of each school for EE which should be appropriate to the context where the school is inserted and to its real needs, being necessary that EE ceases to be marginalized within education as advocated by the Ministry of Education Guidelines of Australia (Chapman, 2004).

Therefore, this research was designed to understand the effects of a training workshop on action-oriented EE for sustainability (EEfS), in the development of biology student teachers' professional knowledge and competences to develop high school students' environmental action competence. More specifically, among the various dimensions analysed, this paper aims: i) to characterize the evolution of biology student teachers' action-oriented knowledge during an action-oriented in-service teacher training programme in water sustainability; ii) to describe the perceptions of biology student teachers about their professional development during the training.

2. Literature review

Speaking about environmental education (EE) and education for sustainable development (ESD) in Brazil, as in any developing country, requires firstly clarifying the understanding of the duality between EE and ESD, a controversy that wins adherents for both parts, being the theme of different studies that explore this conceptual dilemma. This duality also requires a more refined reflection in the sense of sustainability. The characteristics of ESD defined by Tilbury (1995, 2011), are those identified by Giordan and Souchon (1996) for EE, namely holism, interdisciplinarity, clarification of values, integration of critical thinking and active learning. Sauvé (1997) refers to these different currents, emphasizing that SD is the most ambitious EE objective, giving rise to the term 'Environmental Education for Sustainable Development'.

Arima, Konaré, Lindberg and Rockfeller (2005) argue that "ESD should not be equated with EE. EE is a well-established discipline that emphasizes man's relationship with the natural environment, ways to conserve it, preserve it, and properly manage its resources" (p. 46), displaying a discourse that defends an identity proper to ESD, yet different from EE, arguing that SD places EE within a broader context of sociocultural factors and political issues of equality, poverty, democracy and quality of life. Hesselink, Kempen and Wals (2000) report the perception of EE and ESD from the participants of the 1999 Pan European Expert Meeting on Sustainable Development

and EE, most of whom with experience or academic training in EE, where four perspectives were perceived: 1) those who see ESD as the new generation of EE, which include topics on ethics, equity and new ways of thinking and learning; 2) those who see ESD as part of EE; 3) those who see EE as part of ESD; and 4) those who argue that ESD and EE share characteristics, but ESD is more comprehensive. The authors also conclude that most experts attending the event supported the perspective where ESD is viewed as an evolution of EE (Perspective 1), but also emphasizing that some participants, despite perceiving ESD as an evolutionary process, opposed the concept of SD advocated in the Expert Meeting, and preferred to talk about sustainability education. Mogensen and Schnack (2010), in light of the literature, confirm different perspectives of ESD and EE, explaining that "some claim that ESD is a different discipline from EE (Hopkins & McKeown, 2003), some argue that ESD is replacing EE (Tilbury & Cooke, 2005), while others that ESD is considered a new paradigm in education (Sterling, 2001)" (p.62).

According to Barbieri and Da Silva (2011) in Brazil these perspectives were observed in 2004 through a survey of 1,740 participants in the Fifth Brazilian Forum on EE in Goiânia, where 77% thought that it would not be convenient to change the name of EE to ESD, and showed a strong rejection of ESD. On the other hand, of those who supported the change (23%), 65% justified that ESD involves social and economic issues, not just the ecological ones, 22% thought that this change would represent a natural evolution and 10% mentioned that this change would represent international trends, carrying financial support. These authors confirm that, in fact, many conceptions of EE already incorporate economic and social dimensions according to the perspectives of sustainable development. Therefore, it is indifferent, according to them, to speak about EE or ESD in Brazil.

The United Nations General Assembly, recognizing the importance of water in Environmental Education for Sustainability proclaimed the period 2005-2015 as the International Decade for Water, a source of life. The main objective of this decade is the greater focus on water-related issues at all levels, as well as the implementation of water-related programmes in order to achieve the internationally agreed goals on water issues contained in Agenda 21, the Millennium Development Goals and in the Johannesburg Implementation Plan. Water is a question that involves many actors and therefore has to be considered as a political problem that requires the creation of inclusive and representative deliberative arenas for horizontal democratic communication among all citizens involved (Herrera, 2005). During this decade, the World Water Council, whose mission is to promote awareness, political commitment and action on critical water issues at all levels (World Water Council, 1996), held Forums every three years (2006, 2009, 2012, and 2015) to address water and sustainability issues, understanding water as a shared common good, and therefore, requiring participatory decision making. In December 2010, the United Nations General Assembly declared 2013, the 'United Nations International Year of Cooperation for Water'.

Interdisciplinary knowledge contributes to the promotion of substantial changes in lifestyles and living conditions, but its importance is linked to the construction of environmental action-oriented knowledge that will strengthen the self-confidence and commitment of students to change their values, attitudes and behaviours, or those of their society, related to solving environmental problems, thus developing their action competence (Vilaça, 2008). For Jensen (2000) action competence is a complex competence that must be actively acquired, and not just an ability that is simply passively received. Mogensen and Mayer (2005) agree with Jensen's emphasis on the importance of students to carry out individual and collective actions as part of their learning process. The development of action competence and the realization of actions are only possible through critical education. To speak about critical education does not mean educating 'for the opposition' or 'negation' of existing conditions, but on the contrary, it means educating to promote interest in analysing the structures, conditions and prerequisites underlying the emergence of the problem (Jensen & Schnack, 1997). Jensen (2000) emphasizes that first of all, even before any action can be taken, there must be awareness on the part of the actors regarding the problem. In this perspective, to be characterized as environmental actions, the activities should be oriented to make real changes on the causes of the environmental problem that is being worked on. Jensen and Schnack (1997) argue that activities such as a trip to a natural area are valuable and productive activities, to the extent that they help to motivate and acquire knowledge, however for activities to be characterized as actions, they should be directed to solve the problems identified. The mere act of acting within the conception of environmental education, such as the separation of garbage, does not generate in the student the actual awareness of the behaviour carried out. Therefore, it is crucial that students first build their action-oriented knowledge (consequences and causes of the problem and strategies to eliminate the causes of the problem), because if they do not investigate this interdisciplinary knowledge, they will not be able to understand the problem and act competently in its resolution.

3. Methodology

Research design

This study was approved by the Research Ethics Committee (CEP) in Brazil and respected all ethical principles in human research. Due to the research problem, a training workshop including eight face-to-face sessions (24 hours) at the university and eight sessions in the work context (24 hours) was planned, implemented and evaluated (Table 1).

Table 1. Synthesis of the type of classes and contents of the biology student teacher training

Session	Type	Strategies
1 2 hours	TP	<ul style="list-style-type: none"> Classroom discussion using a PowerPoint presentation on the concepts of: environment, sustainable development, ecosystem, biotic and abiotic factors; EE, ESD; riparian forest and regional aquatic organisms.

		<ul style="list-style-type: none"> • Discussion in small group on the 4R's policy (Reduce, Reuse, Recycle and Repair), with a final sharing of the conclusions by the groups.
2 /3 6 hours	TP	<ul style="list-style-type: none"> • Classroom discussion, with images and key concepts (PowerPoint presentation), on the historical view of EE, ESD and EE for sustainability. • Sequential exploration in small groups, followed by presentation of the conclusions of the groups in class, of the didactic games (McKeown, Hopkins, Rizzi, & Chrystalbrid, 2006) on community dynamics to maintain the sustainability of natural resources.
4 4 hours	TP	<ul style="list-style-type: none"> • Creation in small groups of visions regarding the sustainable community in which they want to live in the future, and final sharing of ideas in the class. • Class discussion on how action-oriented education for sustainable development can be operationalized. • Discussion in small groups to create sustainability goals for the community. • Elaboration in small groups, followed by class sharing, of a field exit guide to identify the surrounding environmental problems.
5 3 hours	OC	<ul style="list-style-type: none"> • Fieldwork to carry out the activities planned in the previous session. • Discussion in small groups about what to do in the post fieldwork.
6 3 hours	TP	<ul style="list-style-type: none"> • Jigsaw in small groups, followed by a final sharing of ideas, on how the aquarium can be used at school to promote the development of student action competence. • Construction of an aquarium, by the group, using a laboratory protocol.
7 3 hours	TP	<ul style="list-style-type: none"> • Discussion in small groups on how to plan the intervention of each group of biology student teachers with the students of high school. • Discussion in small groups on logbooks, as tools for (self) supervision.
8 3 hours	TP	<ul style="list-style-type: none"> • Presentation and discussion of the results of the questionnaires applied to the high school students and the implications of these results for the planning of the educational project. • Small-group planning of the "Action-Oriented Water and Environmental Education for Sustainability" Project.
24 hours	High School	Implementation by teachers of the project in the school context with the supervision of the first author.

Note: TP - Theoretical-practical; OC – Outdoor classroom

The participants were voluntary biology student teachers (n=12). An initial interview, previously validated regarding the biology student teachers' conceptions on different aspects, namely in water sustainability action-oriented knowledge (What are the problems, their consequences and causes, and strategies to resolve them) was applied by the first author. This dimension in analysis included the following leading questions: What are the environmental problems that we can find in the city of Cruz das Almas and surroundings? What problems can we encounter related to water? What are the consequences of pollution of rivers and lakes identified in the city? What are the causes of pollution of these rivers and lakes? What are the actions you can take to solve these problems?

At the end of the training, the same interview to complement the data collected during the training process to evaluate, among other aspects, the evolution of the biology student teachers' action-oriented knowledge, was carried out by the first author. This interview also included the student teachers' perceptions regarding their professional development, as a new dimension that was analysed through the following question: What was the most important professional knowledge you developed during the training? Why? Their answers were coded using Shulman's categorization (2005) for the basic knowledge of teachers, as shown in table 2.

Table 2. Subcategories for the basic knowledge of teachers, characteristics and some citations of interviewees

<i>Subcategories</i>	<i>Characteristics</i>	<i>Citations of the interviewees</i>
Content knowledge	Knowledge about the content to be taught	"I learned concepts... there were several that as a biology teacher I would not be able to teach" (Final Int. 6)
General pedagogical knowledge	Knowledge on principles and strategies of class management and organization that transcends the scope of the subject	"I even learnt the process [...] of planning a project exchanging ideas with high school students ... to feel like a teacher, do you know?" (Final Int. 4)
Knowledge of the curriculum	Knowledge regarding a special mastery of materials and programs	It was not addressed by the interviewees
Pedagogical content knowledge	The main link between matter and pedagogy that constitutes teachers' own special form of professional understanding	"I learnt some strategies, which I will use as a teacher" (Final Int. 7) "I loved learning how to teach, associating theory with practice" (FI2)
Knowledge about students	Knowledge about students' characteristics and learning, where the monitoring of the individual is as important as that of the group	"The training helped me a lot in dealing with the class, how to communicate with the student, respect their knowledge ... I found it cool to work in the classroom with the students" (Final Int. 1)
Knowledge about educational contexts	Knowledge on the functioning of a group or class, school or the community management	"I understood the importance of knowing how the school organization works, the dynamics of the school" (Final Int. 7)
Knowledge about educational aims		It was not addressed by the interviewees

During the training, data was collected on the same aspects through the logbooks of the trainer (first author) and the biology student teachers, and materials produced by the biology student teachers. In order to meet the objectives of this paper, only data collected through the initial and final interviews will be presented and discussed. All interviews were transcribed in full and analysed in a mixed category system (Bardin, 2014), with two independent researchers performing the coding. When there was no

consensus after the sharing of interpretations, the response was not considered. To reduce the data, the frequency and percentage found for each subcategory will be presented and, to deepen the analysis of the most relevant aspects of the interviews, some excerpts will be presented. In these excerpts, to maintain the anonymity, a number will be assigned to the interviewee and it will be indicated if it corresponds to the initial (Initial Int.) or final interview (Final Int.).

Participants

The selection of the sample was intentional (Gall, Borg, & Gall, 1996), since students were selected as members of the Institutional Scholarship Program (PIBID) because they had already experienced in some way, the teaching through the programme. All the students were invited under these conditions and 12 accepted to be part of this study. The majority of participants were female (80%) and had a mean age of 23 years old (minimum = 19, maximum = 32, SD = 4.16). More than half (60%) was in the first half of the undergraduate course (1st to 5th semester), foreseen in the pedagogical plan of the course with eight semesters.

4. Results and discussion

Evolution of biology student teachers' action-oriented knowledge during an action-oriented in-service teacher-training workshop in water sustainability

Identification of problems related to drinking water. The three main problems identified were the lack of water supply via public sources (67%), wastage by population (25%) and contamination of water sources and / or groundwater (25%) (Table 3).

Table 3. Environmental problems related to water in the city of Cruz das Almas and surroundings (n = 12)

Environmental problems related to water	Initial interview		Final interview	
	f	%	f	%
Lack of supply via public supply	8	66.7	7	58.3
Waste by population	3	25.0	3	25.0
Contamination of water sources / groundwater	3	25.0	7	58.3
Sedimentation of water sources	1	8.3	4	33.3
Poor water management for agriculture	1	8.3	0	0
Low water quality via public supply	1	8.3	3	25.0
Floodplain / flooding	1	8.3	0	0
Factory effluents released into the environment without treatment	1	8.3	0	0
Deforestation	0	0	1	8.3
Unruly urban growth	0	0	1	8.3
No response given	1	8.3	0	0

Of all the other problems identified, only one individual indicated 'poor water supply quality', stating that itchy skin after bathing is a general complaint felt by colleagues. We noticed that the lack of water supply was the most cited. This reference is related more correctly to a consequence than to a problem, showing that before the training, it seems that the discernment of the biology student teachers about the causes and

consequences was low. Some documents such as the Belgrade Charter (UNESCO-UNEP, 1975) and the final document of the Tbilisi Conference (United Nations, 1978) have guided EE to the need for individuals to develop the capacity to understand environmental problems.

In the final interview, the problems related to water were more equitably referred to, with new perceptions appearing possibly stimulated by the new critical environmental observation developed. Deforestation (8%) and 'disordered urban growth' (8%) were adequately noted as water-related problems, albeit indirectly. Another issue that deserves to be highlighted is the lack of water supply via public supply, which is less perceived as a problem in the final interview, later seen as a consequence of other environmental problems, again corroborating the evolution in criticality about the facts and clarification about what the problems are, their causes and their consequences. The table above also indicates that the problem of public health, pointed out in the first interview due to the poor quality of water via public supply, rose to 25%.

Consequences of the pollution of rivers and lakes in their region. It was observed in the initial interview that half of the biology student teachers mentioned 'Loss of biodiversity' (50%), in which both animals and plants have become extinct, possibly because of other interposed consequences also referred to as 'Equilibrium of the ecosystem (33%) and 'Eutrophication / Pollution of water bodies' (17%) (Table 4).

Table 4. Consequences of the pollution of rivers and lakes identified in the city of Cruz das Almas and surroundings (n = 12)

Consequences of water pollution	Initial interview		Final interview	
	f	%	f	%
Public health	5	41.7	3	25.0
Lack of water supply	4	33.3	7	58.3
Equilibrium of the ecosystem	4	33.3	1	8.3
Loss of biodiversity (animal / vegetable)	6	50.0	6	50.0
Eutrophication / Pollution of bodies of water	2	16.7	0	0
Sedimentation	1	8.3	1	8.3
Economic loss	0	0	6	50.0
Less use of public spaces	0	0	2	16.7
No response given	0	0	1	8.3

The second most frequent consequence was 'public health' (42%). It is well known that water is a disease transmission vehicle representing 65% of hospitalizations in Brazil (Brazil, 2005).

The 'lack of water supply' appeared again as a consequence (33%), but in this case the understanding was that part of the population makes use of rivers and ponds as a direct source of water for various uses. However, before the training, the identification of the 'sedimentation' (8.3) as a consequence of pollution, leading to a change in the water capacity of rivers and lakes, and contributing to the consequences already mentioned was stated (Loss of biodiversity, Eutrophication, Imbalance).

After the training, the awareness that the pollution of rivers and lakes leads to a 'lack of water supply', almost doubled among the respondents, reaching 58%. This lack of water was indicated both in its unavailability by the public system, as previously mentioned, as well as in the unavailability of drinkable water in the water table, therefore in artesian wells and other aquifers, as narrated by interviewee 3 after the training:

The water, being polluted will first have to be treated if it is to be used directly ... besides what is going to be lacking there is the availability of safe drinking water, which is scarce, so if we dirty the available water, it will be even more difficult to offer...

The awareness that 'biodiversity loss' is a consequence of pollution continued unchanged, as was reported by half of the biology student teachers. However, 'economic loss' went from no reference to 50%, in addition to the mentioning of 'less use of public spaces' (17%), reinforcing the link between society, the environment and the economy (ONU, 2002) promoted during the training.

This evolution in perceptions of biology student teachers was also confirmed by the connections they made between environmental issues that were not so visible. For example, the link between river and lake pollution with the overburden of the public health system that emerged in the interviews, was related to a economic burden for the state, as well as harming the citizen. 'Sedimentation' was once again referred to by biology student teacher 6 at the end of the training, but it was noted that unlike his first reference, he also concomitantly mentioned biodiversity loss, lack of water supply and economic loss, all interconnected under the same axis and with a logical sequence of events, corroborating the evolution of critical thinking.

Causes of the environmental problems identified. Before the training, the most commonly reported cause of the pollution of bodies of water of their region was 'Improper waste disposal' (42%) (Table 5), as illustrated in the following statements: "[...] people throw a lot of trash on the river's edge, a lot, but a lot. I think this contributes to water pollution" (Initial Int. 8); "People throw a lot of trash on the slopes ... and this garbage falls into the pond" (Initial Int. 11).

Secondly, the biology student teachers reported that 'lack of information' (33%) and 'lack of basic sanitation' (25%) cause people to pollute rivers and ponds. The 'lack of awareness' mentioned by two interviewees, was understood as a conscious act that leads to pollution even when individuals know the causes of water pollution, however they do not give them due importance.

Table 5. Causes of the pollution of rivers and lakes identified in the city of Cruz das Almas and surroundings (n = 12)

Causes of pollution of rivers and lakes	Initial interview		Final interview	
	f	%	f	%
Lack of individual awareness of the population	2	16.7	3	25.0
Lack of information by the population	4	33.3	3	25.0
Lack of basic sanitation	3	25.0	5	41.7
Use of agrochemicals in the surrounding plantations	1	8.3	0	0
Unruly urban growth	2	16.7	1	8.3

Incorrect garbage disposal	5	41.7	10	83.3
Deforestation - riparian forest	0	0	4	33.3
Bad use for other purposes (bathing animals)	0	0	1	8.3
No response given	1	8.3	0	0

The 'disordered urban growth' was mentioned by two interviewees, as is clearly elucidated in the following speech:

I think it is ... disorderly population growth, like, people start building near aquatic sites, springs ... not just build, but with that they dump their waste in the vicinity, and this causes the pollution of the rivers. (Initial Int.4)

Another perception that deserves attention, although it was mentioned only once, was the 'use of pesticides in the surrounding plantations' as a cause of water pollution, especially when we know that the macro region under study has a strong tendency for agriculture, namely for the production of oranges (*Citrus* sp.), manioc (*Manihot esculenta*) and tobacco (*Nicotiana* sp.), and it is not an unusual practice to use agrochemicals for sanitary control in order to maintain family-based farming (Silva, Nunes, Lima, Silva, Almeida, & Oliveira, 2014). Thus, we realized that there was an understanding of how pesticides used in agriculture have impact on water quality. This perception was observed in the extract below:

[...] Here there is a lot of planting, I believe that the use of pesticide is intense ... you use it on the spot, but then the rain comes and it ends up dragging; and the final destination of the rain is the river bed or the infiltration into the soil ... polluting the water table. (Initial Int.3)

It is noted that the topography of the city under study favours surface runoff, potentiating the cause of pollution of surface water bodies.

Strategies that contribute to solving the environmental problems identified. We asked the biology student teachers about actions they would consider possible to reduce the pollution of the above-mentioned aquatic ecosystems. Table 6 lists the proposals that emerged in the interview before and after training, being 'awareness / education' the most referred to action before the training (42%).

Table 6. Strategies to reduce river and lake pollution identified in the city of Cruz das Almas and surroundings (n = 12)

Strategies	Initial interview		Final interview	
	f	%	f	%
Awareness / education	5	41.7	11	91.7
Educate to change behaviours	3	25.0	4	33.3
Punishment for transgressed laws	2	16.7	2	16.7
Action-oriented projects on water sustainability	1	8.3	5	41.7
<i>Direct actions</i>				
Decrease bath time	9	75.0	7	58.3
Use bucket for general services, rather than hose	6	50.0	7	58.3
Close the tap between uses	7	58.3	8	66.7
Reuse of water for other purposes	4	33.3	8	66.7
Check / repair leaks	4	33.3	1	8.3
Decrease water use	2	16.7	0	0

Collect Rainwater	1	8.3	2	16.7
Wash clothes / dishes in larger quantities at one time	0	0	3	25.0
Use of organic products	0	0	2	16.7
<i>Indirect actions</i>				
Influence governments to change public policies on water consumption and treatment	4	33.3	2	16.7
Distribute leaflets	2	16.7	2	16.7
Collective actions to promote water sustainability	2	16.7	1	8.3
Disseminating research on the consequences of unsustainable water consumption	2	16.7	1	8.3
Promote citizenship	0	0	2	16.7
No response given	1	8.3	0	0

'Awareness' was frequently mentioned by those interviewed who argued that people should have a basic knowledge and because of this, there is the need to reinforce this knowledge and to promote the importance of its application in practice, reflecting on the general well-being of the environment and society. This strategy was followed by 'Influence governments to change public policies on water consumption and treatment' (33%), which shows that the subjects believed that it is a strategy to obtain more effective actions of the municipal board to solve the problems posed by the river and lake pollution, such as lack of basic sanitation (25%). They referred to this fact because in the city where this research was carried out, until the last census, there was no installed sewage network (IBGE, 2008), which still continued until 2016, being reported by the respondents as a lack of effectiveness of management efforts in the last three years. This leads the biology student teachers to want to charge governments with a sustainable pro-environment action.

'Educate to change behaviour' was mentioned by 25% of the biology student teachers because they thought that some individuals who practice harmful acts do not realise the consequences of their actions, as exemplified in the statement of biology student teacher 3 before the training: "[...] is to work with those who plant, to show that there are other alternatives for the use of pesticides ... to try to make the person change his/her behaviour." Let us remember that behavioural changes without reflection, under a moralizing character, often fails to solve the problems (Jensen & Schnack, 1997; Jensen & Nielsen, 1996; Vilaça, 2016).

The strategy of 'Disseminating research regarding the consequences of unsustainable water consumption' was also mentioned by two biology student teachers, because they argue that when the direct reflexes of the harmful acts are explained to the population, a greater awareness is promoted. This idea is expressed in the answer transcribed below:

First doing an analysis and showing the results ... I see many requests to not pollute, but I see that people do not care ... maybe because they lack the necessary knowledge. [...] Then I think that doing a local analysis ... showing what problems those behaviours can cause ... the diseases that could be caused [referring to water pollution] ... or that could be contracted ... for them to be sensitized. (Initial Int.7)

They also mentioned 'Collective actions to promote water sustainability' (17%) for the removal of garbage or cleaning of the aquatic environment that must start from the

willingness of the participants themselves in order to have the power to achieve effective behavioural changes (Jensen, & Schnack, 1997). In the same way, the distribution of leaflets was mentioned by two of the biology student teachers, but they did not believe in this strategy, as we can see in the following answer:

[...] Speaking for myself, I'm not a hypocrite, I do not read poster, leaflets. I really do not read ... and I do not know if this is a habit of the population, but it does not hurt to try, right? (Initial Int.8)

The proposal of 'Punishment' was also mentioned in the initial interview (n= 2). Only one biology student teacher refers to a sequence of strategies that can be interpreted as an approximate idea of an 'action-oriented project', as we can infer from the following words:

[...] the people are criticizing, but how could I contribute? I join them, so ... before I take action, make them understand the causes, and understand a little what causes ... and what is the best way to do it, right? It's ... to think in other strategies to make that big idea happen. (Initial Int.11)

At the end of the training it was understood that there was a great evolution in the understanding that, regardless of the strategies to be used, 'Awareness / education' was considered the most effective way to promote changes to reduce river and lake pollution (92%), followed by 'Educate to change behaviours' (33%) and 'Action-oriented projects' (41.7%). As can be seen in Table 6, the number of individual direct actions mentioned above leading to a reduction in water consumption increased after training, namely: 'use buckets for general services, rather than hoses' (50.0% *versus* 58.3%); 'Close the taps between uses' (58.3 *versus* 66.7%); 'Reuse of water for other purposes' (33.3% *versus* 66.7%).

The action that was highlighted in the initial interview was 'Decrease bathing time' (75%), motivated possibly by the massive television campaign promoted by the Federal Government in 2016, as a consequence of the great rainfall that the Northeast and Southeast of Brazil experienced in the first half of the year. Secondly, 'Close the tap between uses' (58%) emerged, being perceived as an important way to promote water economy, which is sometimes not perceived by the population. Another practice reported by half of the biology student teachers was 'Use buckets for general services, instead of hoses', contributing to the reduction in consumption, since inverse behaviours are mentioned by the subjects, as can be observed, for example, in the following statements:

[...] Today we see people washing cars with an open hose ... they think the water shortage is very far away, in São Paulo. (Initial Int.9)

[...] Even my neighbour, every day washes the sidewalk with water from the hose. It is not that she can't wash, but she can, for example, use the water she used in the washing machine from the last wash ... (Initial Int. 11)

First is car washing, motorcycle... staying hours with a hose washing instead of using a bucket. Washing the front of the house with a hose ... (Initial Int. 12)

Other behaviours referred to in the initial interview were 'Check / repair leaks' (33%) and 'Reuse of water for other purposes' (33%) and fixing small leaks, which according

to WWF-Brazil (2006), can save up to 3200 litres of water in one day, which can supply a family of four for almost a month. On the other hand, the reuse of water was more closely associated with the effluent of washing machines, since in Brazil there is no predominance in the use of dishwashers, not even the use of bathtubs for bathing. Collecting rainwater was reported only by a biology student teacher, a practice that has great potential in places with a high rainfall index, such as in the research region, but which receives low incentive, since the Government concentrates its efforts in the semi-arid region of Bahia (Brazil, 2016), which was reflected in the low perception in other regions as a way of minimizing consumption through public supply or surface sources.

Turning to the final interviews, in a comparative sense, the action of 'Reuse of water for other purposes' and 'Closing the tap between uses' increased greatly (67%) followed by 'Decrease bath time' and 'Using buckets for general services, rather than hoses' (58%). This inversion may be justified by the perception that some changes in forms of behaviour have already been made explicit in the media lately and others, less explicit, should be promoted because they are less practiced. This was discussed in the training under the view that the Brazilian people have in the last decade, acquired a new purchasing pattern, where the use of household appliances, such as the washing machine, has been increasing in households (Mariano, 2013), but the perception of the consumption of water and the possibility of water reuse, possibly do not accompany this growth.

Likewise, we can imagine that the supply of piped water to a growing share of the population, especially in interior regions that previously did not have an extensive water supply system, sometimes leads to the overuse of water supply. Thus, after the training we noticed a better level of knowledge about the new actions that should be promoted to achieve the desired standard of sustainability.

On a smaller scale, but also importantly, after training, new suggestions for actions to be promoted emerged, most notably 'Washing clothes / cooking in larger quantities at a time' (25%), followed by 'Use of environmentally friendly products' and 'Promote citizenship', both with 17%. Such suggestions demonstrated that the training promoted new perceptions on how small changes in habits and / or attitudes can contribute to saving water because the amount of water used to wash twice as many dishes or clothes is less than double what is needed. In addition, with the technological advances, new products were developed reducing the need for several rinses after washing, even with more conscious production processes under the environmental bias, reducing the ecological footprint. Technology also assists in the optimization of home appliances, where technologically advanced washing machines greatly reduce the consumption of soap and water to wash the same amount of laundry (O Globo, 2014).

In relation to the promotion of citizenship, the biology student teachers reported the concern for the good of the general public, for example, when seeing a leak in the public supply system and then reporting it immediately to the competent body. Such

conduct may seem obvious, but according to the interviewees it is not as common a practice as it should be, making it necessary to promote.

Overall, these results show that the action-oriented knowledge of these biology student teachers evolved positively.

Perceptions of biology student teachers about their professional development

After the training, the biology student teachers were questioned about the most important knowledge that they had acquired. All considered the 'Content Knowledge' as the main knowledge acquired, referring specifically to the content of biology / ecology applied in EE (Table 7).

Table 7. Perception on the most important professional knowledge developed after the training (n = 12)

Knowledge	f	%
Content knowledge	12	100
General pedagogical knowledge	7	58.3
Pedagogical content knowledge	5	41.7
Knowledge about students and their characteristics	1	8.3
Knowledge about the educational contexts	3	25.0

In addition, 'General Pedagogical Knowledge' was emphasized by 58% of the participants, referring to the learning developed to plan and manage student behaviour, and evaluate a project, among other things. Also, references related to the 'pedagogical content knowledge' (42%), as expressed in the following excerpts of the interviews, were observed:

[...] let me see something else I learned ... the same activities, which I learned, I'll use some in other contents. (Final Int.7)

I learned how to use play activities and how good these are. (Final Int.9)

I learned to conduct activities in EE, to better fix learning (Final Int.1)

'Curriculum knowledge' did not emerge in the responses to any of the biology student teachers as learnt knowledge, in part because several biology student teachers mentioned that the EE curriculum was well treated by the curricular subject of EE which is part of the Master's degree course, especially the curriculum proposed by the Ministry of Education, the Environmental Education Program of the Educational System and the State Education Secretariat. It is noted that the Municipality has not recently presented any project or programme focused on EE in the area of education (through the Education Department) or even society (through the Environment Secretariat). In the school studied, the EE approach in the Political Pedagogical Project (PPP) was not clear and the PPP did not refer to the cross curricular character of EE, as recommended by the Law of Bases (Brazil, 1996) and National Curricular Parameters (Brasil, 1998).

Regarding the educational context, 25% of the biology student teachers said they knew about it by dealing with the school management and administration, but also by understanding the characteristics of the community and its culture (8.3%). The

teachers' sense of belonging to the school community was demonstrated at the end of the training by the greater commitment of the biology student teachers with the local environmental problems.

5. Conclusions

The training workshop had a positive effect on these biology student teachers' ability to identify problems related to water sustainability and in their knowledge regarding the consequences of environmental problems that evolved to better distinguish the consequences of the causes of the problems. Likewise, after the training workshop, they increased their knowledge about the indirect consequences and therefore, providing the biology student teachers with a greater understanding of the issues related to the pillars of sustainability, such as economy and society. The most frequent consequence was related to the problems with public health and the understanding that environmental problems lead to a lack of water supply that was repeated by the trainees as an important consequence of pollution of rivers and lakes, demonstrating a connection of the anthropic action with the availability of drinking water. This understanding progressed with the training because they improved their awareness of the economic consequences in the form of economic and social losses, and in the form of a low use of public spaces. Knowledge about the causes of environmental problems evolved, firstly, because at the end of the training they understood the differences between consequence and cause and, secondly, because they identified as the main causes, the lack of awareness and lack of information of the population. They also increased their knowledge regarding economic and social causes. The most common cause of river and lake pollution was the incorrect disposal of garbage, followed by a lack of basic sanitation.

The possible actions to reduce water consumption perceived by the biology student teachers increased after the training workshop, being among the most cited 'closing the tap between uses' and 'water reuse for other purposes'. It was also noticed that indirect actions emerged after training, linked to technological solutions such as the 'use of ecological products', both referring to products that require less water for washing, and the use of equipment that saves water based on their technological development. To reduce pollution of rivers and lakes, most of the biology student teachers after the training workshop, believed in education / awareness, having more than doubled the support for the strategy when compared to the initial moment.

The training also showed that what most of the biology student teachers valued more in their professional development was to increase their content knowledge and general pedagogical related to the EEfS. These teachers also highlighted the methodological / technical skills and the personal / interpersonal skills as the most important skills acquired during the training.

Therefore, despite the limitations of this research, namely the small number of participants, which does not allow generalization of results, even in very similar contexts, and the fact that they are volunteers, which can always influence the results

since they are more willing to be motivated to learn and participate, one of the main implications of the results of this study is to show the importance of including action-oriented environmental education in the initial training of these biology student teachers at University in order to promote their critical and reflective thinking and democratic education.

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Associations of students self-reported efficacy beliefs towards mathematics education on completion of their first year in initial teacher education

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Abstract:

Recent changes in the landscape for primary initial teacher education (ITE) in Ireland prompted the first stage of this longitudinal design-research study on Mathematics Education which sought to establish a model of teaching and learning based upon iterations of research upon practice (Borko, Liston, & Whitcomb, 2007).

The challenge was to design a research led undergraduate Bachelor of Education (B.Ed.) mathematics programme of study that would focus on the development of students' efficacy, and more particularly in Year 1, on students' knowledge of and approaches to the teaching of Measures and perceived implementation of same on their first teaching placement in schools.

This first phase of the study gathered students' views retrospectively on the B.Ed. 1 programme, and explored their perceptions of the skills and abilities they possessed whilst teaching mathematics on School Placement.

The entire cohort of 430 first year ITE students were invited to participate in an online questionnaire based upon Enochs, Smith and Huinker's (2000) mathematics teacher efficacy beliefs instrument (MTEBI) with a small number of more open questions pertaining to the particular content of the first year programme.

This paper presents an analysis of the responses to the questionnaire and the implications for future research. While the response rate to the questionnaire was disappointing (40 questionnaires completed from 430 students invited) some preliminary findings include moderate self-efficacy scores across the MTEBI subscales, many students' inclination to draw from research-based resources in planning, and a specific lack of self-efficacy relating to the use of manipulatives.

Keywords: Design research, mathematics education, student teacher efficacy

1. Introduction

In September 2016, two colleges of education, St Patrick's College and the Church of Ireland College of Education were incorporated into Dublin City University (DCU) as part of a major national reform of initial teacher education (ITE) in Ireland. The reform was carried out under the auspices of the Department of Education and Skills (DES), as recommended by an International Review Panel into the structures of ITE globally that support best practice (DES, 2012).

The incorporation resulted in a combining of two student-intake streams, and two academic teams. We, the research team and authors of this paper, welcomed the challenge of redesigning our undergraduate pre-service teacher education programme by combining elements of both previous programmes, and drawing on research in the field.

The module was researched and designed with respect to the requirements stipulated by the Teaching Council (2017) which were to:

1. offer a rationale for, and clearly define the conceptual framework;
2. identify the principles, beliefs and values underpinning the programme;
3. provide evidence of how the aims of the programme link to the conceptual framework;
4. describe how the key themes will be revisited over the course of the programme.

Therefore this paper reports on the conceptual framework that guided the research design of the first of four modules of the reconfigured Mathematics Education programme within a four-year B.Ed. degree and the perceptions of the ITE students following completion of same. The module was delivered to 430 undergraduate student teachers, over a 12 week semester. Subsequently the students engaged in a School Placement that consisted of nine weekly one-day placements and a block placement of two weeks at the end of the academic year. Having completed both the module and the placement, students were invited to complete a questionnaire, the details of which are outlined in the methodology section. In this paper we present and discuss the students' responses to the questionnaire, and identify considerations for the design of Module 1 of the four-year Mathematics Education programme. To do so we draw from literature relating to initial teacher education, and teacher efficacy beliefs, and situate our research within the Irish context.

2. Literature review

This literature review synthesises the literature which informed our design for teaching and our research methodology. In the first instance, the conceptual framework underpinning the study is discussed. Subsequently, literature pertinent to mathematics education in ITE is explored.

In the research and design of the Mathematics Education programme of study, consideration was given to the well-established and much developed notion of what

constitutes the kind of knowledge needed for teaching mathematics, namely both subject matter knowledge (SMK) and pedagogical content knowledge (PCK) (Shulman, 1986). However, research has consistently shown that in order to better prepare students to be resilient in navigating school cultures, in particular at the early stages in their career, and to implement in practice the kind of pedagogical strategies advocated in university, there is an explicit need to address teaching efficacy from the outset (Dellinger, Bobbett, Olivier, & Ellett, 2008).

2.1. Conceptual framework

The conceptual framework that underpins this research, and our teaching approach, is that of developing ITE students' efficacy in relation to the teaching and learning of mathematics in the primary school classroom. In general, self-efficacy beliefs are apparent in how we think, feel, motivate ourselves, and thus in how we behave (Swars, 2005). Furthermore, self-efficacy denotes how we perceive our own personal capability to accomplish certain levels of performance (Bandura, 1997). Teacher efficacy builds on the concept of self-efficacy and comprises two conceptual elements. The first construct is that of personal teacher efficacy which concerns a teacher's perception of his/her personal effectiveness and ability to teach. The concept has been the focus of research in European contexts (e.g., Capara, Barbaranelli, Steca, & Malone, 2006) and in recent years, research into teacher efficacy has gained momentum internationally (Klassen, Tze, Betts, & Gordon., 2011). Studies have consistently shown that a teacher's impressions of mathematics and their own self-assurance or self-efficacy in their mathematical competency are essential criteria for effective teaching (Ma, 1999). This is also true in relation to ITE students' mathematics in which self-efficacy is highly correlated to confidence in teaching mathematics (Bates, Kim, & Latham, 2011). The second construct addresses teaching outcome expectancy, which is a teacher's belief that effective teaching can result in quality learning outcomes for all children regardless of a child's background, aptitude and learner disposition (Swars, 2005; Enochs et al., 2000).

What makes this conceptual framework so vital is the positive correlation between teachers with a high level of efficacy and the qualities necessary for the successful teaching and learning of mathematics. These include the likelihood that these teachers will employ strategies that promote mathematical understanding such as problem-solving, math talk and guided-discovery learning rather than a more transmission model that relies heavily on applying procedures by rote and exhibits an over-dependence on the use of textbooks (Enochs et al., 2000; Swars, Smith, Smith, & Hart, 2009). Furthermore, Bandura (1997) suggests that it is important to address efficacy beliefs from an early stage in a student teacher's career as this can have long-term effects on their self-efficacy development and also, once perceptions of efficacy are established, they can be highly resistant to change.

2.2. Approaches to mathematics education in ITE

In this section, we present literature which informed the design of our programme. In this cycle of the longitudinal design research study, we focused on the first module

encountered by students in Year 1 of a four-year B.Ed. programme. The module comprised 20 contact hours, including two plenary lectures and nine two-hour workshops. Content was designed to support students in interrogating their preconceived ideas of mathematics as a subject to be taught and learned, in order to facilitate them in engaging with multiple and progressive methods of supporting mathematics learning (Kennedy, 1997). Swars et al. (2009) highlight the challenge facing ITE in foregrounding teaching for understanding, and state that for many students a “paradigmatic shift” (p. 47) is necessary to move beyond replication of a transmission method of mathematics teaching. Alongside content relating to students’ perception of mathematics teaching and learning, this first module also sought to develop students’ SMK and PCK within the content area of Measures (Shulman, 1986). Developing students’ SMK presents many challenges for teacher educators as Aubrey (1997, p. 160) writes, “Whilst knowledge of learning and teaching and classrooms increases with experience, knowledge of subject content does not.” Therefore, in order to address this problem, the programme design has to afford the students experiences that might challenge their SMK and to address shortfalls in same as students’ lack of SMK is often manifested by physical and psychological symptoms of high anxiety when it comes to teaching mathematics in the classroom (Friel-Myles, 2012).

Burghes (2012) shows that having a favourable attitude to the teaching of mathematics may help in some way to compensate for teachers with lower levels of SMK. Attitudes that align with a positive outcome expectancy are associated with a more creative, problem solving approach to mathematics. For ITE students, acquiring the skills associated with PCK, emphases are placed on transforming their SMK into powerful pedagogical experiences for their learners. Nevertheless, Williams and Lockley (2012, p. 42) state: “the academic construct of PCK is the recognition that teaching is not simply the transmission of concepts and skills from teacher to students but rather a complex and problematic activity that requires many and varied on the spot decisions and responses to students’ on-going learning needs” and is heavily reliant on a high level of outcome expectancy that all children are capable of being “expert learners” of mathematics (CAST, n.d.).

The design focus on Measures was not chosen at random. National studies of mathematics attainment in Ireland have shown that children attending Irish primary schools have found measurement to be a relatively challenging strand of the curriculum. In 2014, a National Assessment of Mathematics and English Reading (NAMER) researched the attainment of 8000 Irish children across four content areas of a) Number and Algebra, b) Shape and Space, c) Measures, and d) Data (Shiel, Kavanagh, & Millar, 2014). NAMER 2014 found that among the 4000 children attending 6th class³ who were assessed, 42% of the Measures test items were answered correctly, in comparison with 63% of Number and Algebra items, 62% of Shape and

³In Ireland children attend primary school for eight years, typically from the age of four or five. The classes are referred to as junior infants, senior infants, and 1st through to 6th class, with children typically aged eleven or twelve years at the beginning of 6th class.

Space items and 63% of Data items. Stephan and Clements (2003) caution that children's understanding of measurement concepts may lag behind that of number because of teaching approaches that prioritise procedural fluency above conceptual understanding. It is a priority therefore in preparing teachers to teach in Irish primary schools that we foreground conceptual understanding and equip students with skills and resources to support children's developing understanding within the content area of Measures.

The research module contained theory relating to children's developing understanding of measurement, and focused on identification of the attribute, units of measurement, instrument of measurement, accuracy and comparison as core concepts of measurement (Haylock, 2011). Attended to in particular detail were the subcategories of Measure comprising length, area, weight (mass), capacity, time and money. Existing research within the Irish education system has highlighted excessive use of commercially produced textbooks, and raised concerns about their impact for classroom practices (Eivers et al., 2010; Conway & Sloane, 2005). Students were guided, therefore, towards research-based resources to support children's conceptual understanding, and practical activities with rich mathematical content were modelled during workshops.

3. Methodology

The methodology employed was that of design research. This process encompasses four discrete stages; *design*, *enactment*, *analysis* and *redesign* (Borko, Liston, & Whitcomb, 2007). In this section, a brief overview of the design and enactment stages are given. Following this, the research methods employed to facilitate *analysis* of the influence of the mathematics education module and students' experiences of School Placement are described.

The *design* stage comprised of planning content and delivery of the B.Ed. 1 module. As highlighted above, planning for the course was predicated upon a strong theoretical base, and combined the knowledge base of both pre-existing courses and the Irish Primary School Mathematics Curriculum (PSMC) (Government of Ireland (GoI), 1999). The *enactment* phase involved facilitating seminars where the students encountered problem-based learning tasks on Measures which provided opportunities for mathematical exploration, consideration of possible pathways in learning, and sample classroom activities. Core concepts of Measure (attribute, units, instrument, comparison and accuracy) were also addressed (Haylock, 2011). During the semester, the students were required to collaboratively prepare a lesson and to enact this lesson in class using a team teaching approach. Constructive feedback was provided by lecturers, and sought from peers following which each student wrote an individual reflection essay which was assessed.

The *analysis* stage of the research, which is the primary focus of this paper, sought to evaluate the impact of the research module by focusing on the students' teacher efficacy beliefs during their first experience of teaching mathematics in classrooms. In

the semester following delivery of the module students spent one day a week on placement in a school followed by an intensive two-week block. Students' teacher efficacy beliefs were investigated through the voluntary completion of an online questionnaire based on the Mathematics Teacher Efficacy Beliefs Instrument (MTEBI) questionnaire developed by Enochs et al. (2000) with a small number of more open questions pertaining to the particular content of the first year programme. The primary purpose of this analysis is to inform the redesign or refinement of our Mathematics Education modules so that the iterative cycle begins anew. Previous research has shown that ITE students' sense of efficacy increases during the initial stages of Mathematics Education courses but tends to decline by the end of programme (Utley, Moseley, & Bryant, 2005). Therefore, it is important to initially determine the ITE students' efficacy and to re-design the programme year-on-year to ensure that problematic areas are identified and addressed.

In the following section we outline the steps we took in administering the questionnaire, and draw attention to the methodological decisions we made, including ethical concerns, issues relating to our sample, and the MTEBI questionnaire.

3.1. Ethics

Prior to inviting students to reply to the questionnaire, we considered the ethical implications of surveying students who had studied our modules. Clarke and McCann (2005) draw attention to the power dynamic implicit in the lecturer-student relationship, and caution that such a dynamic has implications for the notion of informed consent. Students on the education programmes in our university would not be viewed as a 'vulnerable' population in that they are academically capable, healthy adults, and normally their participation in such a study would be considered of low ethical risk. However, the ability of students to refuse consent in this context could potentially be hindered by their perceived need to maintain a positive relationship with their lecturer. The students, whose views were vital to this research, had completed one module taught by the research team, and wherein we also assessed their work. All students will engage in further modules over the next three years, to which we will contribute. Furthermore, a proportion of students will potentially encounter at least one of the research team on School Placement in which supervised visits are assessed. We endeavoured therefore to establish distance between ourselves and invitations to the students to engage in the questionnaire, and a third party managed all communications with the students regarding the research questionnaire. In the invitation to participate students were guaranteed anonymity, informed that the survey data would be collected anonymously, and advised that participation was voluntary and not monitored, in line with the recommendations of Clarke and McCann (2005). While this strong ethical stance ensured that our research would have no negative implications for our student cohort, the distance achieved between us and the students hampered us in motivating students to participate, and the response rate achieved was disappointing.

3.2. Sample

We invited all 430 students who had engaged with the programme to complete the questionnaire. Further detail pertaining to the questionnaire is presented in section 3.3 below. The students were in their first year of undergraduate study on a B.Ed. programme. Entry to this programme is competitive and based upon the students' results in state examinations on leaving secondary school at around the age of 18. The cohort invited to participate in this study obtained results within the top 15% of all students completing secondary level education in 2017.

Only 40 of the 430 students completed the questionnaire. In the analysis and findings presented in this paper we describe the responses of the students who participated, but these findings could not be said to be generalizable to the student population who engaged with the module. We suggest however that this preliminary stage of the research sheds some light on the experience of some students and in a similar manner to qualitative research the findings may be "transferable" and at the very least, we can consider the findings as a pilot in order to scale up the research process in the forthcoming academic year (Marshall & Rossman, 2011, p. 76).

3.3. The questionnaire

We compiled a questionnaire with two components: a) questions relating to the Mathematics Education module on Measures undertaken and the respondent's experience on School Placement, and b) the MTEBI questionnaire of Enochs et al. (2000). Questions relating to the research module asked students what class level they taught on School Placement, the number of mathematics lessons taught, the number of lessons taught from the Measures strand of the curriculum, the student's perceived level of preparedness and the resources the students drew from.

The MTEBI was developed as a mathematics-specific teaching efficacy instrument for use with preservice teachers (Enochs et al., 2000). It is well validated and has been used in multiple cohorts internationally (Matney, Panarach, & Jackson, 2013; Swars, 2005). There are a total of 21 items on the MTEBI with 13 items on the Personal Mathematics Teaching Efficacy (PMTE) and 8 items on the Mathematics Teaching Outcome Expectancy (MTOE) subscale. Each item has five response categories on a Likert Scale ranging from strongly agree to strongly disagree. Therefore, the minimum score on the PMTE is 13 and extends up to a possible 65 where the subscale scores range from eight to 40 on the MTOE as shown on Table 1.

Table 1: Subscales of the MTEBI

<i>Subscale</i>	<i>Number of items</i>	<i>Minimum score</i>	<i>possible</i>	<i>Maximum possible score</i>
Personal Mathematics Teaching Efficacy (PMTE)	13	13		65
Mathematics Teaching Outcome Expectancy (MTOE)	8	8		40

Many items are written in the future tense which allows the ITE students to reflect on hoped for or prospective beliefs rather than being hindered by lack of experience at this preliminary stage in their professional development as a teacher. Items on self-efficacy contain both positive and negatively worded statements. Sample items include:

Self-efficacy: I will continually find better ways to teach mathematics.

When a learner has difficulty understanding a mathematics concept, I will usually be at a loss as to help the learner understand it better.

Outcome expectancy: When a learner does better than usual in mathematics, it is often because the teacher exerted a little extra effort.

The two subscales are independent and are distributed randomly which further adds to the validity of the MTEBI (Enochs et al., 2000). The results were collated using Excel and were analysed separately.

4. Analysis

As our research focus is on the design of our programme in order to support and develop students' proficiency in teaching, our analysis of the data collected through the questionnaire was structured around three focus questions: a) at a practical level, did the students draw from the resources we recommended; b) in general do our students believe that will teach effectively; c) what elements of the students' self-efficacy are most or least concerning for us as teacher educators. In this section we will deal with each of these questions in turn, preceded by an overview of the opportunity the students had to enact the content covered in the research module.

4.1. Enactment of module content

As mentioned above, the content of the research module was focused on the teaching of Measures. Measures is one of five content strands of the Irish PSMC, the other strands being Number, Algebra, Shape and Space, and Data (GoI, 1999).

Of the 40 participants in this survey, 28 taught Measures on the School Placement that immediately followed their engagement with this module. Table 2 contains the number of Measures lessons taught for the cohort, compared with the number of mathematics lessons taught by students on all other content strands.

Table 2. The number of Measures lessons taught by the research participants on the School Placement immediately following their engagement with the research module.

<i>Number of lessons taught</i>	<i>Measures (number of students)</i>	<i>All other content strands (number of students)</i>
0	12	16
1	1	6
2	3	2
3	10	4
4	6	8
5	4	2
6	2	1
>6	2	1
Mean	2.7	2
Median	3	4
Total	107	80

As can be seen from Table 2, students taught more lessons from the Measures content strand of the curriculum than from all other strands combined (107 Measures lessons and 80 lessons from the content strands of Shape and Space, Number, Data, and Algebra). One student taught no mathematics lessons, and of the 39 students who did teach mathematics lessons, 11 students taught no Measures lessons, while 15 students only taught Measures. Among the 28 students who taught Measures, the mean number of Measures lessons taught was 3.8.

Typically, when students undertake School Placement they have limited choice in the topics that they cover, but are expected to cooperate closely with the classroom teacher, and adhere to his/her long term planning for the class. Over years of supervising students on School Placement, we had anecdotally observed a preponderance of Measures lessons on students' initial School Placement and this observation was a further motivation for focusing on Measures in Year 1 of the 4-year B.Ed. programme. The strong tendency of students to teach Measures lessons was therefore not surprising. Equally, considering the low response rate to the questionnaire, students who did not teach Measures may have been disinclined to respond if they felt that their School Placement experience was not as closely connected to their Mathematics Education module as it may have been for other students.

Within the Irish PSMC, the Measures strand is organised into six strand units focusing on the measurement of Length, Area, Weight (Mass), Capacity, Time and Money. Table 3 contains the number of lessons taught for each Measures strand units.

Table 3. The number of lessons taught by the research participants relating to each Measures content area

	<i>Length</i>	<i>Area</i>	<i>Mass</i>	<i>Capacity</i>	<i>Time</i>	<i>Money</i>
Total number of lessons taught	24	3	28	16	16	29
Average number of lessons per student	1.1	0.1	1.2	0.8	0.7	1.1

As can be seen from Table 3, a reasonable number of lessons were taught by the cohort on each strand unit other than Area. Within the Irish PSMC the strand unit of Area is introduced in 2nd class. On students' first School Placement they are required to teach a junior class⁴, and many students would not have had the option of teaching lessons involving the measurement of area. Considering that 28 students taught Measures lessons and that 107 lessons were taught across a variety of strand units, we considered it worthwhile to explore how well prepared the students felt they were to plan and deliver these lessons.

4.2. Student perception of preparedness and use of recommended resources

Within the questionnaire, the students were asked questions relating to their perception of preparedness for the teaching of Measures on School Placement, and also the resources they drew from. This is an important factor as a teacher's sense of efficacy can be partly influenced by their judgement of the resources and constraints in relation to the specific context that they teach in (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). In other words, a teacher's perceived access to mathematics resources as well as their perception of their preparedness for teaching mathematics on School Placement may lead to teachers' efficacy judgments regarding their ability to teach mathematics (Bandura, 1997).

In Figure 1 we present the student responses to questions relating to preparation for teaching:

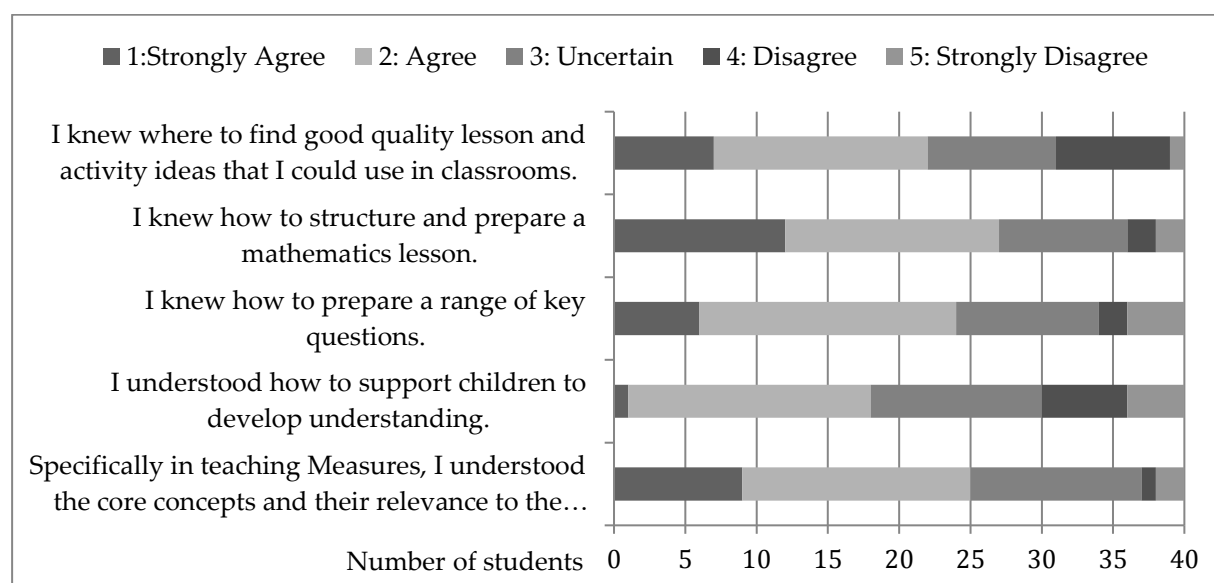


Figure 1. The students' responses to questions relating to preparedness for the teaching of Measures

⁴ Junior class refers to junior infants, senior infants, first class and second class.

We designed these statements with an underlying hierarchy of complexity, beginning with locating lesson activities, progressing to structuring a lesson, preparing key questions, supporting the development of understanding, and understanding the key theoretical aspects of the mathematics of measurement. This hierarchy may be visible in Figure 2 in the gradual decline of certainty as students responded to statements 2, 3, and 4. With regard to the fifth statement, the students responded positively with 25 of the 40 indicating that they agreed or strongly agreed with the statement. It is possible that the wording of this statement focused solely on understanding, and if it had referred to enactment of the understanding the students' response may have been less positive.

Mindful of the tendency of teachers to revert to traditional teaching methods within a short time of completing their initial teaching education, we felt it pertinent to alert the students to research based teaching manuals that they might draw from throughout their careers (Kennedy, 1997). As highlighted above, during seminars we emphasised moving beyond school textbooks and drawing from such teaching resources, for example teacher handbooks, and websites. Figures 1 and 2 contain the responses of students to the questions relating to preparedness and resources.

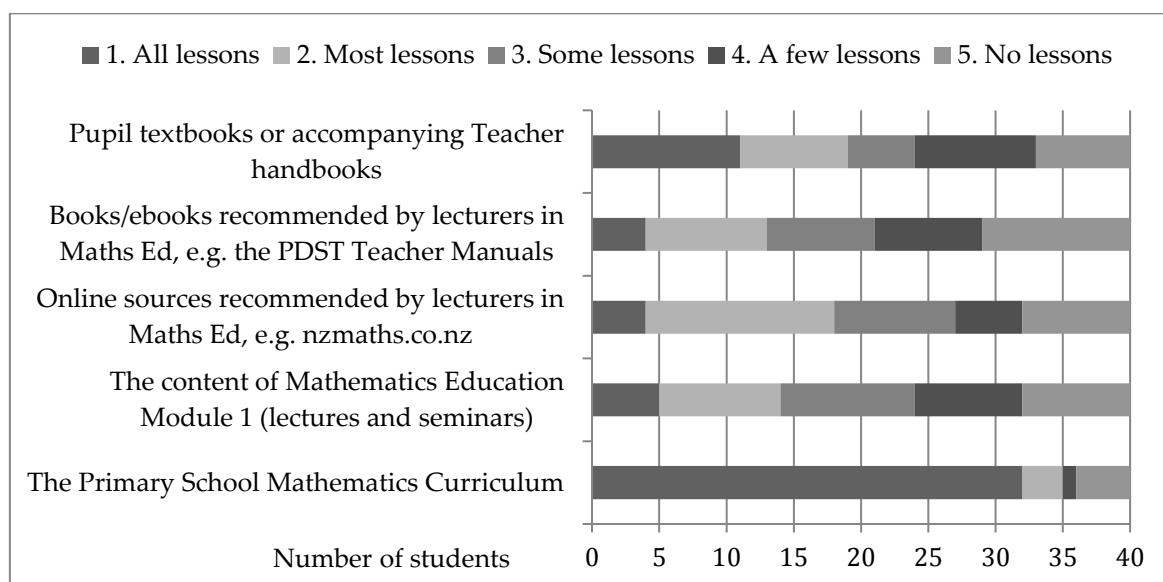


Figure 2. The students' responses when asked how often they drew from specified resources during School Placement

While DCU students are strongly encouraged across all subject areas of the B.Ed. to draw from research based texts recommended in seminars and lectures, they face multiple pressures within the School Placement structure. As guests in a teacher's classroom, they need to show deference to the teacher's methods, and this at times includes eschewing the guidance of their university lecturers. That said the responses of students to this question relating to how often they drew from specified resources was encouraging. Almost all students drew from the Irish PSMC (35 of 40) in all or most lessons. While only five students indicated that they drew from the content of the research module in all lessons, 32 of the cohort of 40 responded that they drew from university course content in at least a few lessons. Findings were similar for

online sources and books recommended by lecturers, with only a few students indicating that they did not draw from these sources at all. Combining the responses relating to course content and recommended sources, most students indicated that they drew from one or other of these research based sources for some lessons with only three students indicating that they never drew from them, and two additional students indicating that only drew from them in planning 'a few' lessons.

4.3. Student efficacy beliefs: an overview

Overall the results of the MTEBI indicate that average students' self-efficacy scores (2.39) and outcome expectancy belief scores (2.54) hover around the midpoint of the Likert Scale (see Table 4).

Table 4. Overall results on the Mathematics Teaching Efficacy Beliefs Instrument

	<i>Overall responses Mathematics Teaching Efficacy Beliefs Instrument (MTEBI)</i>	<i>Personal Mathematics Teaching Efficacy Belief (PMTE)</i>	<i>Mathematics Teaching Outcome Expectancy (MTOE)</i>
Average	51.35	31.025	20.325
Max	79	52	34
Min	37	18	13
Mode	51	31	17
Max possible	105	65	40

As mentioned previously, the items on the two subscales are distributed randomly throughout the MTEBI and were analysed separately. Therefore a more in depth analysis is provided in the next section to rationalise the responses.

4.4. Personal mathematics teaching efficacy belief (PMTE)

Research has demonstrated links between effective teaching and teachers' self-efficacy beliefs and confidence in their own mathematical competency. Teacher efficacy is pertinent to our programme design as teachers with high levels of efficacy have been shown to be more likely to be confident in teaching mathematics and to employ inclusive teaching strategies with flexible goals, methodologies, resources and assessment practices that promote mathematical understanding (Bates et al., 2011; Enochs et al., 2000; Swars et al., 2009; CAST, n.d.). The responses to the five positively worded PMTE items as on Figure 3 below exhibited a high level of self-efficacy with the exception of one item which states that "I know how to teach mathematics concepts effectively" in which only 15 of the 40 participants responded that they either agreed or strongly agreed with this statement. It is not surprising that students exhibited low efficacy on this item considering that this is only their first year of the four year programme in which the students have engaged with the concept of teaching Measures alone.

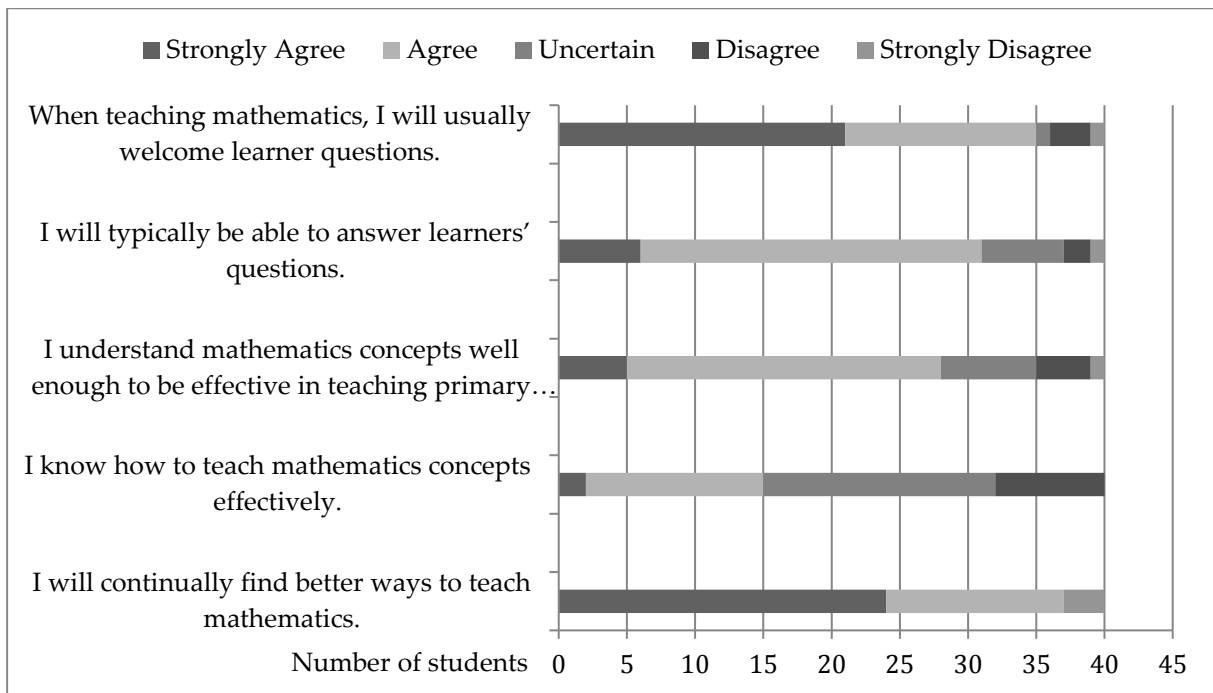


Figure 3. Responses to the five positively worded Personal Mathematics Teaching Efficacy items

The eight items in Figure 4 below were negatively worded. These responses were reversed in the overall scoring system to produce a consistent value for those producing high scores having high PMTE and vice versa. For the purpose of this analysis, the responses have not been reversed and are grouped together into three categories; those who strongly agreed or agreed: those who were uncertain: and those who either disagreed or strongly disagreed.

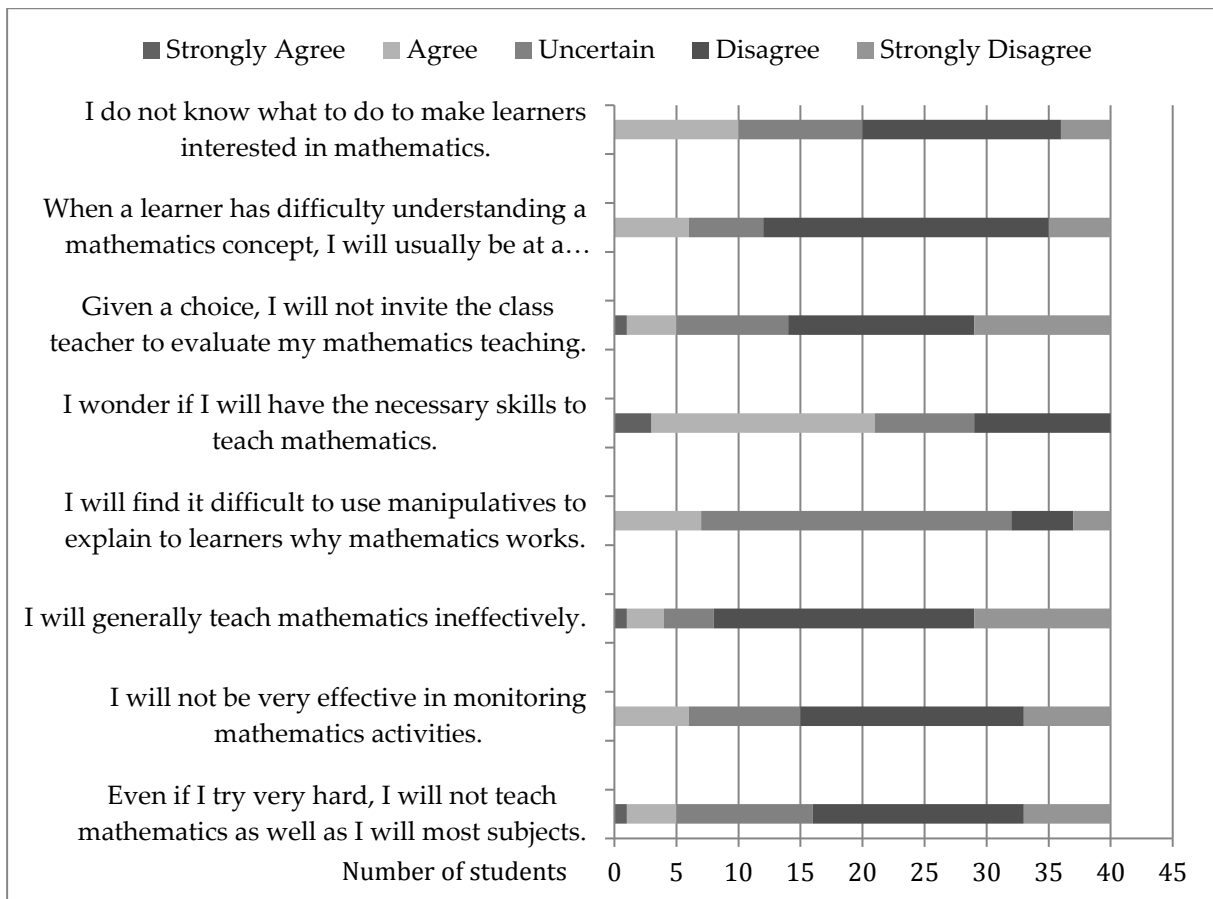


Figure 4. Responses to the eight negatively worded Personal Mathematics Teaching Efficacy items

There is a low sense of PMTE in three items. Nearly three-quarters of respondents believe that they may not possess the skills necessary to teach mathematics and half of the respondents believe that they have a difficulty making mathematics engaging for the learners in their classrooms. As mathematics educators, it is of interest to us whether these beliefs are general beliefs about teaching or whether they are specific to mathematics teaching. Klassen et al. (2011) discuss the affordances and constraints of domain specificity in teacher efficacy research and this is one example where comparing the mathematics teacher efficacy beliefs with the general teacher efficacy beliefs of the same students might illuminate subject-specific issues.

Of note, only 20% of responses (8 students) indicated that they would not find it difficult to use manipulatives to support the teaching of mathematics with understanding. This has direct implications for the research team in the design of the programme to ensure that manipulatives are embedded in the teaching and learning of mathematical concepts.

4.5. Mathematics teaching outcome expectancy (MTOE)

The second construct which contributes to teacher efficacy is teaching outcome expectancy. This relates to whether a teacher believes that effective teaching can result in quality learning outcomes for all children regardless of a child's background, aptitude or disposition (Enochs et al., 2000). This construct has particular relevance in mathematics education where mathematics has been recognised as a 'gatekeeper' and

notions of fixed ability and related pedagogical practices such as ability grouping have long been identified as problematic (Boaler, Wiliam, & Brown, 2000).

There is some contradiction in the responses to items on the MTOE scale. It appears in Figure 5 below that ITE students believe that when the mathematics grades of learners improve, then this is due to the effectiveness of teacher. However, the corollary is not true. That is, that underachievement is not a reflection on teacher's effectiveness.

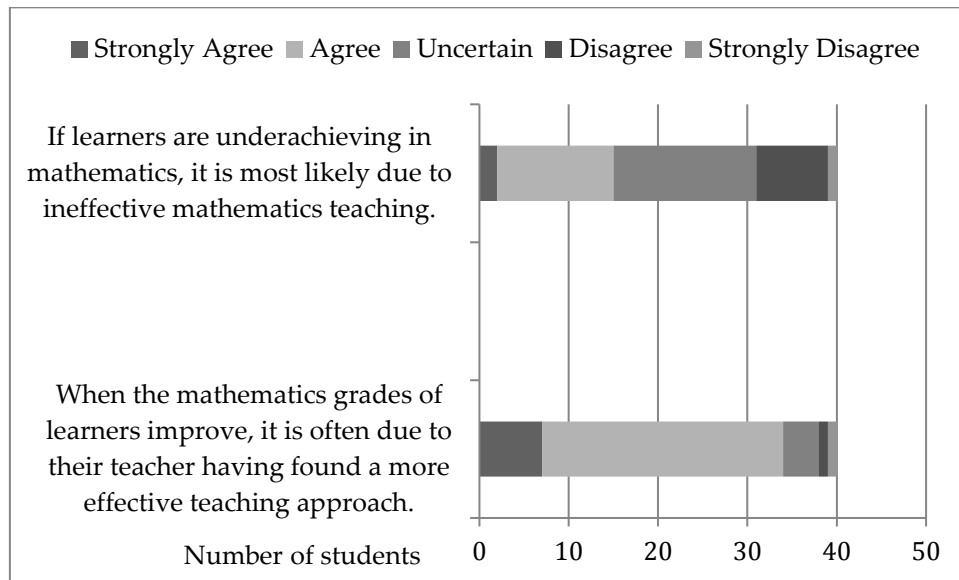


Figure 5. Learner's achievement in mathematics as a consequence of effective teaching

It is also interesting to note that there were fairly consistent responses to four further items from over half of the participants to the statements that suggest a positive correlation between teacher efficacy and learner achievement as in Figure 6.

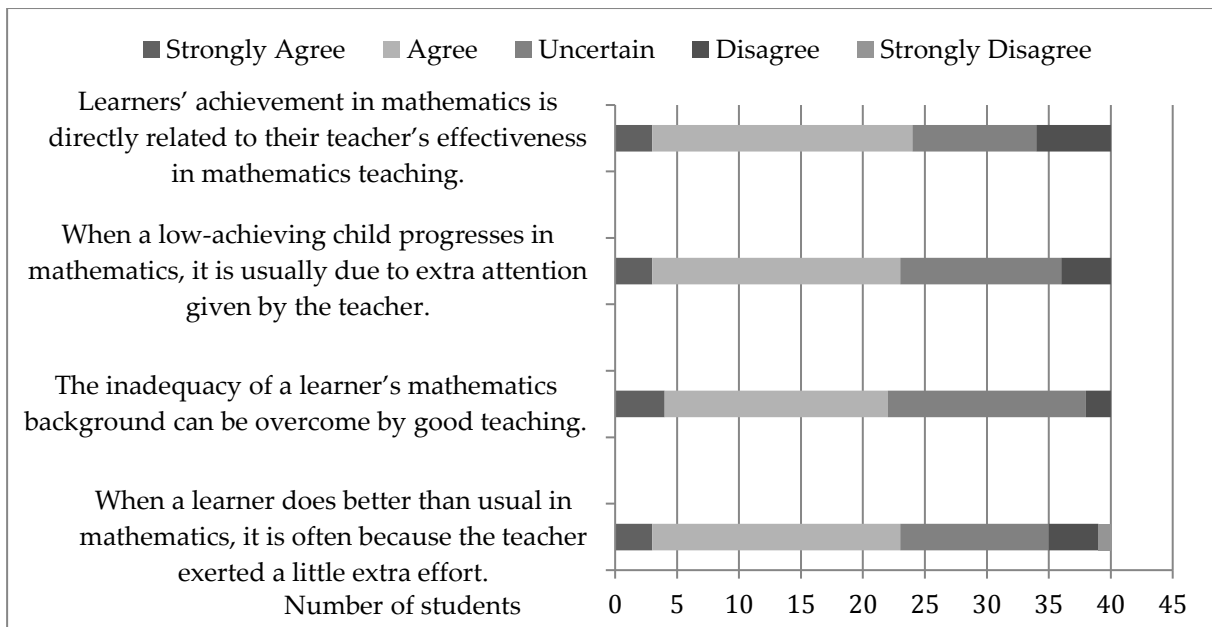


Figure 6. Learner's achievement in mathematics as a consequence of teacher efficacy

However, in response to a further two items on outcome expectancy, it is noted that the majority of participants did not believe that the teacher is responsible for a child's interest or performance at school. No one strongly disagreed with either of these

statements. As above, it would be informative to compare these domain-specific findings with consideration of general teacher-efficacy beliefs.

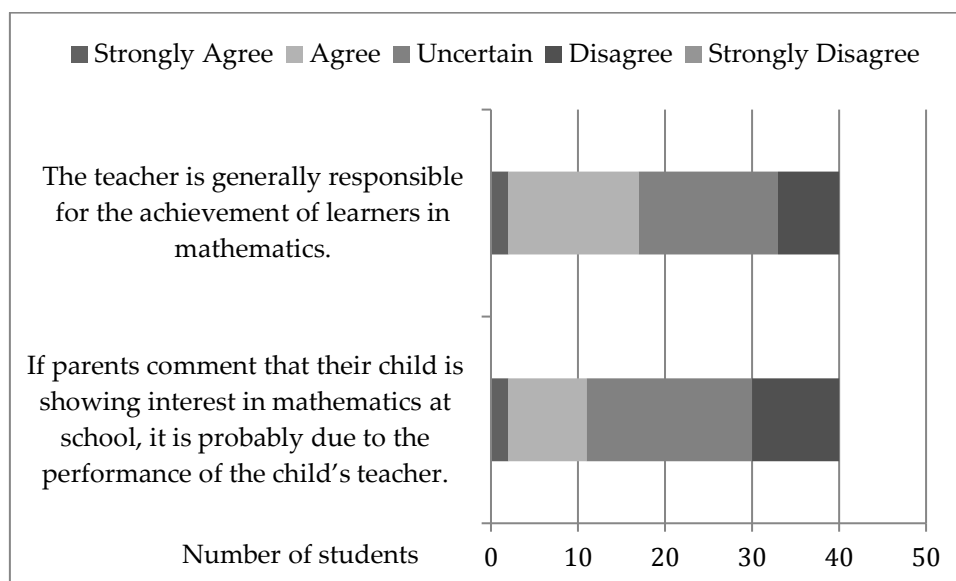


Figure 7. Learner's achievement in mathematics as a consequence of the teacher

5. Discussion and conclusion

This research was initiated as a proactive response to a major reform of the structures of ITE in Ireland to support best practice (Teaching Council, 2017). We are undergoing an iterative process of design research with the intention of investigating and refining the Mathematics Education modules undertaken by students on our undergraduate B.Ed. programme (Borko et al., 2007). This first phase of the research involved the design of a module on Measures for 460 first year ITE students. Students' perceptions of the module and their mathematics teacher efficacy beliefs were investigated using an online questionnaire based on Enochs et al. (2000) MTEBI. All 430 students were invited to complete the questionnaire but only 40 did so. Despite the low uptake, the analysis gives insight into the experience of some students and offers future potential for scaling up.

The results of this first phase indicate that students' scores on the MTEBI were moderate for both PMTE and MTOE. Overall, average students' scores tended towards the midpoint of the Likert Scale for both subscales but while the responses to the five positively worded PMTE items generally exhibited a high level of self-efficacy, responses to three of the eight negatively worded statements appear to contradict this. The students' responses to questions relating to their capacity in preparing for teaching were encouraging; while their self-efficacy relating to children's conceptual understanding or 'effective' teaching was less assured. Many students expressed determination to "find better ways to teach mathematics" and demonstrated this commitment in drawing from a variety of research-based sources in their teaching. However, nearly three-quarters of respondents reported believing that they may not possess the skills necessary to teach mathematics. Of particular interest was the students' lack of self-efficacy regarding the use of manipulatives in explaining how mathematics works to children. Only 20% of responses indicated that they would not

find it difficult to use manipulatives to support the teaching of mathematics with understanding and half reported that they have difficulty making mathematics engaging for learners. Some contradictory results also arose on the MTOE subscale. Students responses appear to suggest that they believe increases in pupils' mathematics achievement are due to the effectiveness of the teacher but pupil underachievement is not a reflection on teachers' effectiveness. Responses also suggest that the majority of respondents did not believe that the teacher is responsible for a child's interest or performance at school. In total, 32 respondents stated that they drew from the course content in at least a few SP lessons. While caution is necessary regarding interpretations of these findings, they raise important issues for programme design. Currently, we have designed and taught the first module of a four-module programme. The questions that guide us at present relate to students' current efficacy beliefs, students' perceptions of the module and how prepared they felt to teach Measures on School Placement. Interrogation of students' perceptions of SP was included because early career experience has been shown to have a powerful influence on perceptions of efficacy and efficacy levels have been shown to be malleable at this career stage (Woolfolk Hoy & Burke Spero, 2005).

This first phase provides the necessary context for both scaling up the research and considerations for the design of the second year programme. It is crucial that a minimum response rate of 25% to the online questionnaire is achieved in order to establish the baseline efficacy of the current cohort of first year students. It is also anticipated that in order to acutely analyse the effectiveness of the first year programme, qualitative data will be obtained. To this end, the same cohort of students will be invited to participate in a semi-structured focus group interview (Freebody, 2003). In these interviews, we propose to discuss issues arising from the MTEBI analysis as well as students' experiences of teaching mathematics on SP and their perceptions of the (dis)connections with the taught research module using an adapted interview protocol by Swars (2005). It is intended that thematic analysis (Braun & Clarke, 2006) of transcripts will be undertaken. We further intend to track these students as they progress through the BEd programme. In this way our design-research study aligns with recommendations by Klassen et al. (2011) who call for more qualitative, longitudinal studies which explore sources of teacher efficacy. Our aim is more than simply an evaluation of our ITE programme (Adler, Ball, Krainer, Lin, & Novotna, 2005). We expect that the questions and conjectures which will arise at various points during our longitudinal research will inform theories of teacher learning as well as improvements in our teaching practice (Borko et al., 2007).

6. Acknowledgements

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Self-evaluation of competence for teaching Music by the students of Class Teacher Studies

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Abstract:

This paper describes the study conducted in the Republic of Croatia during the 2012/13 academic year. The participants of the study were fourth year students of the class teacher studies (N = 307), who evaluated their own competence for teaching music. The goal was to determine if the music course syllabi at the class teacher studies develop the appropriate competences required by the students to teach music in primary education. The research study showed that the students are mostly unaware of how low their competences are, and consequently they assigned high marks to their competence for teaching music courses in primary education, for the general teaching performance and for each specific topic. The students have emphasized the need for more practical training, primarily regarding playing instruments and singing, and they pointed out the course Teaching Methods for Teaching Music as the key course for training future teachers to teach music. The musical competences of primary education teachers cannot be determined in any other way than from the perspective of the lesson plan and programme of the primary school music courses. At the class teacher studies learning music must follow the path from practice to theory.

Keywords: class teacher studies, student competences to teach music, primary education

1. Introduction

Research conducted in the USA (Groff, 1962), Australia (DeVries, 2011; Hocking; 2009; Kane, 2005), Canada (Hanley, 1993), Serbia (Stošić, 2008), England (Altun, 2005), and Turkey (Altun, 2005) demonstrated that teacher education students do not feel competent enough to teach music in primary education. In the USA, Groff (1962 according to Buckner, 2008) examined the opinions of students studying to become primary education teachers regarding their competence for teaching music. It is surprising that as much as 38 percent of the students, after they attended and passed their music courses, stated that they will not be successful in teaching music courses. DeVries (2011) determined that the amount of time dedicated to music courses during class teacher studies affects whether the primary education teacher will teach music or allow a specialist teacher to do so. Hocking (2009) pointed out that students studying to become primary education teachers demand more practical activities as part of their

music courses. A similar opinion is also held by Kane (2005), who stated that music course syllabi must be based on practical musical knowledge and skills that must be adopted through teaching methods for teaching music, which will later be adopted by the students in their own classes. Hanley (1993) stated that music skills should first be developed in students, later the students should be trained to connect the musical theory with practice, and they should also be trained to teach on their own. Stošić (2008) determined that there is an imbalance between the primary school music course syllabus and the actual practical results achieved by the teachers in their classes. Based on his research, Altun (2005) suggested that teacher education faculties should put in more effort when it comes to educating students on music, because most of them never learn how to teach music.

In the Republic of Croatia music courses in primary education are taught by primary education teachers who are also teaching other mandatory courses. A specialist music teacher may take over music courses in the fourth grade. In primary education, the topics of music courses include *singing, playing instruments, listening to music, and musical games* (*Course Plan and Programme for Primary School, 2006*). That is why a primary education teacher should know and be able to implement the stated topics, and they should also be able to accompany their own and singing, as well as the children's, with a music instrument (piano, guitar ...). The students should acquire the stated competence during their class teacher studies (*Study Programme for Primary Education Teachers, 2005; Integrated Undergraduate and Graduate Five-Year University Study Programme for Schoolteachers, 2005*).

2. Methodology

As part of this paper, a research study was conducted in the Republic of Croatia during the 2012/13 academic year. The goal of the study was to determine how the teacher education students are evaluating their own competence regarding teaching music. The research study included 307 students from the fourth year of the class teacher studies of the *Faculty of Teacher Education in Osijek* (N=71) and its attached *Studies Located in Slavonski Brod* (N=25), as well as the students from the *Faculty of Teacher Education, University of Zagreb* (N=130) and its *Departments in Čakovec* (N=58) and *Petrinja* (N=23). The survey questionnaire contained 12 *open-end, closed-end, and combined* questions. Most of the survey participants were female and their age was between twenty and twenty-four. In order to check if there are any differences between the students we conducted a one-way analysis of variance, the post hoc analysis (*Scheffe test*), χ^2 test, nonparametric *Kruskal-Wallis test* and a series of *Mann-Whitney tests*.

3. Results

In the first question of the questionnaire we wanted to explore how prepared do the fourth year students from the five class teacher studies in the Republic of Croatia (Osijek, Slavonski Brod, Petrinja, Čakovec, and Zagreb) (N = 307) feel regarding

teaching music. The study participants evaluated their preparedness on the scale from one (lowest) to five (highest mark).

Table 1. Self-evaluation of fourth year students regarding their preparedness to teach music courses

Preparedness of students for teaching music courses		
Mark	f	%
1	1	0.3
2	2	0.7
3	26	8.5
4	161	52.4
5	117	38.1
Total	307	100.0
Average mark 4.27		

Most of the students feel very well and excellently prepared for teaching music courses. As many as 161 study participants (52.4%) believe that they are very well prepared for teaching music, and 117 study participants (38.1%) believe that they are excellently prepared. Only 29 students (9.5%) evaluated their preparedness with a mark lower than four. The average value of student self-evaluation is 4.27.

We will comment on these results a little bit later, once we see how the students evaluated their preparedness for specific course topics and their preparedness to play a backing instrument.

In the second question the students were asked to evaluate in the same manner how prepared they feel for *playing a backing instrument (piano/synthesiser/guitar/accordion), playing percussion instruments, singing, musical games, and listening to music*. The results are shown in tables 2, 3, 4, 5, and 6.

Table 2. Self-evaluation regarding preparedness for playing instruments

Preparedness for playing a backing instrument		
Mark	f	%
1	5	1.6
2	9	2.9
3	59	19.2
4	132	43.0
5	102	33.2
Total	307	100.0
Average mark 4.03		

Self-evaluation of their own preparedness to play a backing instrument is also, as shown, very high, very good on average (4.03), 234 students (76.2%) believe that their preparedness level is very good and excellent. Only three percent of the students believe that they are very poorly prepared for playing instruments, and less than two percent of the students believe that they are insufficiently prepared to play a backing instrument.

Table 3. Self-evaluation regarding preparedness for playing percussion instruments

Preparedness for playing percussion instruments		
Mark	f	%
1	3	1.0
2	11	3.6
3	52	16.9
4	109	35.5
5	132	43.0
Total	307	100.0
Average mark 4.16		

Table 4. Self-evaluation regarding preparedness for singing

Preparedness for singing		
Mark	f	%
1	6	2.0
2	16	5.2
3	59	19.2
4	91	29.6
5	135	44.0
Total	307	100.0
Average mark 4.08		

Table 5. Self-evaluation regarding preparedness for musical games

Preparedness for musical games		
Mark	f	%
1	2	0.7
2	7	2.3
3	34	11.1
4	104	33.9
5	160	52.1
Total	307	100.0
Average mark 4.35		

Table 6. Self-evaluation regarding preparedness for listening to music

Preparedness for listening to music		
Mark	f	%
1	1	0.3
2	2	0.7
3	18	5.9
4	102	33.2
5	184	59.9
Total	307	100.0
Average mark 4.55		

The results show that the students feel very well, even excellently prepared for all of the course topics and for playing instruments. The mark excellent (5) was in the top

place for almost all course topics, i.e. it is what most of the students used to evaluate their preparedness. The mark (4) was in the top place only for preparedness for playing a backing instrument.

These results in no way reflect the actual situation, i.e. the students are not nearly as well prepared to teach music – in general and for specific course topics – as they believe they are. Namely, research into music courses in the Republic of Croatia conducted by primary education teachers has shown that music classes during the first three grades of primary school are not of the same quality as the classes taught by specialist music teachers in higher grades of primary school, and that primary education teachers are not competent enough to teach music courses (Šulentić Begić, 2013; Đeldić & Rojko, 2012; Birtić, 2012; Radičević, 2010). That is why it is relevant to ask where the students' "optimism" comes from, i.e. the lack of any (self) criticism. It appears that several factors are involved in creating this result. First, the students are surely under the influence of the general stereotype that music education is more or less an insignificant course that anyone can teach to small children. The practical result of this stereotype is that many teachers would do something else instead of teaching music during music courses. Second, the students receive unrealistically high marks for exams in music courses, including the course *Teaching Methods for Teaching Music*. Why does that occur? The reason is that those marks are not the real reflection of actual musical knowledge and achievements according to musical criteria, i.e. the criteria of the musical profession, those marks are instead tailored for a specific group. Relatively good marks for modest displays of singing, playing instruments, or planning a class by using the appropriate teaching methods will logically lead to the conviction that this type of singing, playing instruments, or teaching classes – is good. Third, teacher education students are not receiving and cannot receive a wider and more in-depth picture of music as a form of art, so they simply are not able to apply the appropriate criteria to decide what is or is not good, what is a good music class and what is not.

If the preparedness self-evaluations are compared for individual course topics and for their ability to play backing instruments, using the criteria of excellent marks, the rankings are as follows:

1. Listening to music (184)
2. Musical games (160)
3. Singing (135)
4. Playing instruments (percussion instruments) (132)
5. Playing a backing instrument (102)

Playing a backing instrument is in the fifth place because most of the students (132) evaluated their preparedness for that activity with the mark very good (4).

If the course topics and playing instruments are ranked according to the average mark, then the rankings are as follows:

1. Listening to music (4.55)
2. Musical games (4.35)
3. Playing instruments (percussion instruments) (4.16)

4. Singing (4.08)

5. Playing a backing instrument (4.03)

Except for the fact that the topics *singing* and *playing instruments* switched places, which is irrelevant, the rankings stayed the same.

In the rankings that include course topics and playing backing instruments according to preparedness, the students have, despite the mentioned lack of self-criticism, displayed a degree of objectivity. It is logical that they believe that they are best prepared for listening to music because that topic does not require any musical skills, it requires knowledge about music and teaching methods, and those are relatively easy to acquire. Also, it is logical that they believe they are not as well prepared for playing instruments because they are acquiring the skill of playing instruments during a very short period of time and in group classes.

The third question was designed to investigate how much time the students will spend as future teachers playing the *piano/synthesiser/guitar/accordion* in class. The study participants were asked to decide on one of the following offered statements:

a) *I will not play instruments in class at all*

b) *I will sometimes play only simple songs and those songs that are more familiar to me*

c) *I will play as much as I can*

Table 7. How much time will students spend playing the piano/synthesiser/guitar/accordion in class

How much time will students spend playing instruments in class		
Statement	f	%
a)	6	2.0
b)	90	29.3
c)	211	68.7
Total	307	100.0

For this question, most of the study participants, 68.7%, chose the most positive statement, the one that does not require any commitments. I will play instruments *as much as I can*, but also, I will not play instruments *if I cannot*. So, the answer to that question does not allow us to conclude that the students will spend a lot of time playing instruments, it only shows that the study participants were not critical in their answers, i.e. they chose the easier option. A critical answer to this question was actually provided only by those six participants who said that *they will not play at all*, because they are hopefully aware that they are not sufficiently prepared for playing instruments (Table 7).

In the fourth and fifth question we wanted to find out how much time will the students, as future teachers, spend teaching *musical games* and *listening to music* in class. The study participants evaluated their intentions on a scale of one (will not be teaching) to five (will teach often). The answers are shown in tables 8 and 9.

Table 8. How much time will fourth year students spend teaching musical games in class

How much time will the students spend teaching musical games		
Mark	f	%
1	0	0
2	1	.3
3	19	6.2
4	87	28.3
5	200	65.1
Total	307	100.0
Average mark 4.57		

Table 9. How many of the fourth year students will teach active listening to music

How much time will the students spend teaching active listening to music		
Mark	f	%
1	0	0
2	0	0
3	13	4.2
4	87	28.3
5	207	67.4
Total	307	100.0
Average mark 4.63		

The students answered both questions in a very positive and almost identical way: 93.4% of them will teach musical games often and very often, and about the same number of them (95.7%) will listen to music with their students often or very often. These answers should not be interpreted as a reflection of some special preference by the students toward those course topics, but as a reflection of the awareness that they are well trained for those topics.

In the sixth question the students were asked to name the course topic that will be the most important for their music courses.

Table 10. Which course topic will be the most important for music courses

The most important course topic		
Answer	f	%
Singing	206	67.1
Listening to music	50	16.3
Musical games	31	10.1
Playing	20	6.5
Total	307	100.0

For the greatest number of students, i.e. for 206 (67.1%) of them, *singing* will be most important. For a considerably lower number of students, i.e. only 50 (16.3%), *listening to music* will be most important. *Musical games* will be most important for 31 students (10.1%), and *playing instruments* will be most important for only 20 students (6.5%) (Table 10).

When considering the answers to the second question (self-evaluation of preparedness for specific course topics), where competence for singing is in the third, or even fourth place – behind *listening to music* and *teaching musical games* – this answer is somewhat surprising. It was expected that the students will put the topic they are best prepared for as the most important. Nevertheless, they chose another criteria, i.e. they decided on the topic that they logically know to be the most important activity in primary education, regardless of the fact that they consider themselves to be less prepared for it then for *listening to music*, *teaching musical games*, or even *playing instruments* (as a course topic). As researchers, we can be satisfied with this answer because it proves that the study participants were engaged and aware of the purpose of the research study and that they thoughtfully considered their answers.

In the next question the students were asked to rank their preferred course topics by assigning numbers to them (1 most important, 5 least important). At first glance this question is very similar to the previous one and may appear redundant because it is logical to assume that the students will prefer those topics that they indicated in the previous question as the most important for their courses. However, that is not necessarily the case, and the criteria used for this question and the previous one do not need to be the same. In the previous question the study participants could use the “objective” criteria of the importance of singing assigned to it in the course syllabus, while here they were expected to use “subjective” criteria, i.e. their opinion about the course topics, instead of the importance imposed by the course syllabus.

Table 11. The position of singing in the students’ rankings

Rankings for singing		
Rank	f	%
1	194	63.2
2	56	18.2
3	29	9.4
4	28	9.1
Total	307	100.0

Singing was placed first by 194 students, or 63.2% of them, second by 56, or 18.2%, and third and fourth by 29 (9.4%) and 28 (9.1%) of the students (Table 11).

Table 12. The position of playing instruments in the students’ rankings

Rankings for playing instruments		
Rank	f	%
1	25	8.1
2	93	30.3
3	84	27.4
4	105	34.2
Total	307	100.0

Playing instruments is in the first place for 25 (8.1%), second place for 93 (30.3%), third place for 84 (27.4%), and fourth place for 105 (34.2%) of the students (Table 12).

Table 13. The position of listening to music in the students' rankings

Rankings for listening to music		
Rank	f	%
1	36	11.7
2	83	27.0
3	98	31.9
4	90	29.3
Total	307	100.0

Listening to music is in the first place for 36 (11.7%), second place for 83 (27%), third place for 98 (31.9%), and fourth place for 90 (29.3%) of the students (Table 13).

Table 14. The position of musical games in the students' rankings

Rankings for musical games		
Rank	f	%
1	52	16.9
2	75	24.4
3	97	31.6
4	83	27.0
Total	307	100.0

Musical games are in the first place for 52 (16.9%), second place for 75 (24.4%), third place for 97 (31.6%), and fourth place for 83 (27%) of the students (Table 14).

Tables 11, 12, 13, and 14 show us that *singing* was ranked first by most of the students (194 = 63.2%). *Musical games* were ranked first by considerably less students – 52 (16.9%), *listening to music* by 36 (11.7%), and *playing instruments* by 25 (8.1%) of the students.

If we compare the answers to the sixth and seventh question, with a note that the “objective” criteria were used for the sixth and the “subjective” criteria for the seventh question, we get the following table:

Table 15. Rankings of specific course topics according to the students' objective and subjective evaluation criteria

ANSWER	The most important course ranked first topic for teaching music courses			
	f	%	f	%
Singing	206	67.1	194	63.2
Listening to music	50	16.3	36	11.7
Musical games	31	10.1	52	16.9
Playing instruments	20	6.5	25	8.1
Total	307	100.0	307	100.0

As shown here, the study participants evaluated the course topics with the same result, whether they were using “objective” or “subjective” criteria. *Singing* is definitely in the first place, and *playing instruments* in in the last place. The fact that according to “objective” evaluations *listening to music* is in the second place, and according to the “subjective” criteria *musical games* are in the second place could also indicate that our thesis about the objective and subjective criteria is very likely. *Listening to music* is

definitely more important than *musical games* in the course syllabus. The students obviously do not believe the same.

In the eighth question the students were asked to state the musical course which they believe especially contributed to their competence for teaching music.

Table 16. Musical courses which the students believe especially contributed to their competence for teaching music

The course that especially contributed to students' competence for teaching music			
Answer		f	%
Teaching Methods for Teaching Music		219	71.4
Music Exercises/Playing Instruments		69	22.3
Musical Education		16	5.2
Music Theory		2	0.6
Attending music school at earlier age		1	0.3
Total		307	100.0

Answers from the participants are completely expected here. *Teaching Methods for Teaching Music* is the most important by far, and 71.4% of the study participants consider it as such, while *Music Exercises/Playing Instruments* is in the second place (22.3% of the participants). *Musical Education* and *Music Theory* are practically insignificant, especially *Music Theory*, which is considered to be important by only two study participants. The fact that attending music school is considered irrelevant is the consequence of the situation in which an insignificant number of students have that kind of experience. Students who never attended music school simply cannot know the fact that is perfectly clear here: Completing (at least) primary music school would be an almost ideal basis for successful musical training of primary education teachers. We believe that study participants did not place *Teaching Methods for Teaching Music* so highly in the rankings because of its "theoretical" part, but that they did it because the course provides them with practical musical skills: They are learning and becoming familiar with songs that they then sing along an instrument; they also listen and become familiar with compositions. Teaching Methods then becomes a course in which they are not only learning *how to do something*, but also the course where they are becoming familiar with the content for which there was not enough time during other courses, or because those other courses were poorly set up, with over-expressed verbal elements and no practical benefits.

In the ninth question the students were asked to name a music course which they believe is not necessary at the class teacher studies because it had no effect on their competence for teaching music. The results are shown in Table 17.

Table 17. Music course that the students believe is not necessary at the class teacher studies

Unnecessary music courses		
Answer	f	%
All of them are necessary	253	82.4
Music Theory	23	7.5
Musical Education	12	3.9
Listening to Music	10	3.2
Teaching Methods for Teaching	4	1.3
Playing Instruments	3	1.0
Music Exercises	2	0.7
Total	307	100.0

The large majority of the students (82.4%) believe that all of the courses are necessary. It is worth pointing out that the study participants were not critical enough. If they declared that courses *Musical Education* and *Music Theory* are practically useless for their competence in their previous answers, it is reasonable to expect that they would repeat that here. The reason why they did not do so probably reflects a certain amount of conformism, even opportunism: It is not easy to directly say *this course is unnecessary*, even when one believes so. But the trend is still visible: If we count the small number of study participants who dared to say that some courses are unnecessary, we can still see that the two mentioned courses are at the top of the list: *Musical Education* and *Music Theory*.

The students' answers to the tenth question – *Do you believe that there are enough music courses at the class teacher studies* – are shown in Table 18.

Table 18. Students' opinions on the number of music courses at the class teacher studies

Students' opinions on the number of music courses at the class teacher studies		
Answer	f	%
Yes	256	83.4
No	51	16.6
Total	307	100.0

Most of the students (83.4%) provided a conformist response to this question as well. However, considering their total knowledge about music, it is difficult to expect that they will be able to provide a more critical perspective on the matter, i.e. that they will have the ability to realistically say what parts of the music courses should change to make the course better.

The few students, who in the tenth question said that there are not enough music courses, or that something should change, expressed their opinions about the necessary changes in the eleventh question. For the sake of clarity, we arranged them in the following categories: *singing and playing instruments*, *singing*, *playing instruments*, *issues regarding teaching methods*, *number and the amount of classes as part of music courses*, and *introducing new courses*. Due to the amount of the information we will not show them here, but their suggestions lead to the conclusion that the students have noticed the problem correctly. All of their suggestions, almost without exception, are related

to musical practice: They need more singing, more listening to music, more practical teaching methods exercises. None of the suggestions are related to *Music Theory* or *Musical Education*, or any similar “verbal” course.

In the last question of the survey questionnaire – *Is it necessary to test musical pitch at the entrance exams for class teacher studies* – the study participants expressed their opinions on a scale of 1 to 5, where 1 means *completely irrelevant*, and 5 means *very relevant*.

Table 19. Opinions of students regarding the testing of musical ability at the entrance exams

Opinions of students regarding the testing of musical ability at the entrance exams		
Mark	f	%
1	24	7.8
2	29	9.4
3	88	28.7
4	77	25.1
5	89	29.0
Total	307	100.0
Average mark 3.58		

A large majority of the study participants, 254 (83%) in total – these are the ones that circled degrees 3, 4, and 5 – believes that testing of musical abilities at the entrance exams is important or even very important, which means that they would introduce it (Table 19). The students have obviously noticed that a certain number of primary education teacher candidates do not have the adequate prerequisites to successfully complete the music courses and later teach music.

In order to check if there are any differences between the students in Osijek, Slavonski Brod, Petrinja, Čakovec, and Zagreb regarding their feelings of preparedness for teaching music courses (and specific topics), how much time they intend to spend teaching *musical games* and *active listening to music* in class, and their attitudes on the importance of testing musical pitch at the entrance exams, we conducted a one-way analysis of variance. The results are shown in Table 20.

Table 20. Results of one-way analyses of variance for the preparedness self-evaluations regarding teaching music courses (and specific topics), the intention to teach musical games and active listening to music, and the attitude on the importance of testing musical pitch at entrance exams

Faculty	Osijek		Slavonski Brod		Petrinja		Čakovec		Zagreb		F
Statements	M	Σ	M	σ	M	σ	M	σ	M	σ	
Preparedness for teaching music education courses	4.2394	0.68587	4.0800	0.57155	4.3913	0.49901	4.4655	0.62732	4.2231	0.70728	2.158
Preparedness for playing the piano/synthesizer/guitar/accordion	3.9718	0.92539	3.6000	1.08012	4.4348	0.58977	4.1724	0.79776	4.0154	0.88032	3.202* p<0.05
Preparedness for playing percussion instruments	4.0000	0.92582	4.0000	1.00000	4.3478	0.83168	4.2586	0.80699	4.2000	0.90989	1.255
Preparedness for singing	3.9718	1.08195	3.9600	1.13578	4.1739	1.02922	4.1552	0.87463	4.1231	0.99624	0.480
Preparedness for musical games/elements of musical creativity	4.5775	0.73020	4.4400	0.71181	4.5652	0.58977	4.2414	0.88477	4.2077	0.85087	3.192* p<0.05
Preparedness for listening to music	4.4366	0.71179	4.2400	0.83066	4.4783	0.59311	4.7586	0.43166	4.5154	0.68466	3.345* p<0.05
Using musical games in teaching music education courses	4.9155	0.28013	4.5200	0.58595	4.7391	0.44898	4.3103	0.75410	4.5077	0.64994	9.742*** p<0.001
Teaching active listening to music in music education courses	4.6338	0.59135	4.3600	0.63770	4.4348	0.50687	4.6724	0.50914	4.7000	0.55195	2.764* p<0.05
Necessity for testing musical pitch	3.7887	1.10732	3.6800	1.18040	3.6522	1.11227	4.3448	0.90905	3.0923	1.22282	13.345*** p<0.001

As shown above, there were statistically significant differences between students from individual faculties regarding the self-evaluation of preparedness for *playing a backing instrument* ($F = 3.202, p < 0.05$), for *musical games/elements of musical creativity* ($F = 3.192, p < 0.05$), and for *listening to music* ($F = 3.345, p < 0.05$). Also, students from individual faculties are different in their evaluations of the time they will spend teaching *musical games* ($F = 9.742, p < 0.001$) and *active listening to music* ($F = 2.764, p < 0.05$), and also regarding their attitudes on the importance of testing musical pitch at entrance exams ($F = 13.345, p < 0.001$).

The *Scheffe test* was used to determine between which groups there were statistically significant differences. Significant differences and their direction are shown in Table 21.

Table 21. Statistically significant differences (from Table 20) and their direction

	Better/more	Worse/less
Preparedness for playing a backing instrument	Petrinja	Sl. Brod
Preparedness for musical games/ elements of musical creativity	Osijek	Zagreb
Preparedness for listening to music	Čakovec	Osijek, Sl. Brod
Intention of teaching musical games	Osijek Petrinja	Sl. Brod, Čakovec, Zagreb, Čakovec
Intention of teaching active listening	Zagreb	Sl. Brod
Necessity for testing musical pitch at entrance exams	Osijek Čakovec	Zagreb

The post hoc analysis (*Scheffe test*) has shown that:

- Students in Petrinja feel more prepared for *playing a backing instrument* than the students in Slavonski Brod. Other comparisons were not significant.

- Students in Osijek feel more prepared for *musical games/elements of musical creativity* than the students in Zagreb. Other comparisons were not significantly different.

- Students in Čakovec feel more prepared for *listening to music* than students in Osijek and Slavonski Brod. Other comparisons were not significantly different.

- Students in Osijek intend to teach *musical games* in class more often than students in Slavonski Brod, Čakovec, and Zagreb, and also, students in Petrinja intend to do it more often than students in Čakovec. Other comparisons were not different.

- Students in Zagreb intend to teach active listening to music more often than students in Slavonski Brod. Other comparisons were not different.

- Students in Osijek and Čakovec believe that testing musical pitch at entrance exams is more important than students in Zagreb. Other comparisons were not different.

Analyses of variance shown in Table 20, and the small number of active differences from Table 21, show that there are actually no relevant differences between students from the examined faculties. The fact that the students in Petrinja, for example, feel more prepared for playing a backing instrument than students in Slavonski Brod cannot be an indicator of a more significant difference if there are no differences between them and the students from other teacher education faculties. The result seems to be that “statistically significant differences” between the students of different teacher education faculties from Table 21 are more the product of some random statistical circumstances than an indicator of relevant differences between teacher education faculties.

In order to determine if there are differences between the students regarding the course topics that will be most important in their music courses, we used the χ^2 test. We found no significant differences in the frequency of individual answers ($\chi^2(12) = 18.41, p > 0.05$).

In order to check if the students’ evaluations are different regarding the time spent in class *playing a backing instrument*, we used the nonparametric *Kruskal-Wallis test*. The results are shown in Table 22.

Table 22. Results of the Kruskal-Wallis test for playing a backing instrument

Faculty	Osijek	Slavonski Brod	Petrinja	Čakovec	Zagreb	χ^2
How much time will you spend playing ^a piano/synthesizer /guitar/accordion in music classes?	140.53	95.82	147.57	155.29	173.11	28.504, p<0.001
N = 307						

As shown above, the *Kruskal-Wallis test* indicated that there is a statistically significant difference ($\chi^2 = 28.50, p < 0.001$) between the students from different faculties.

In order to determine between which faculties the differences are significant, we calculated a series of *Mann-Whitney tests*. Those tests have shown that:

- Students in Slavonski Brod intend to spend significantly less time in class *playing a backing instrument* than students at all the other examined studies (Osijek $z = -2.58, p < 0.05$; Petrinja $z = -2.20, p < 0.05$; Čakovec $z = -3.29, p < 0.01$; Zagreb $z = -5.09, p < 0.001$)
- Students in Osijek intend to spend significantly less time in class *playing a backing instrument* than students in Zagreb ($z = -3.28, p < 0.01$).

Of these two pieces of information, only the first one could be really relevant, not only statistically significant: If the students from one of the studies are significantly

different than students from all the other studies, this could indicate that there is really a difference that is probably the result of the quality of classes at the appropriate course, which would be *Playing Instruments* in this case. The other piece of information – that the students from Osijek will play instruments less than students in Zagreb – cannot be relevant if the students from Osijek are not at the same time different from students from other examined class teacher studies in that regard.

In order to check if the students are different in ranking their preferences for course topics (*singing, playing instruments, listening to music, and musical games/elements of musical creativity*), *Kruskal-Wallis tests* were also conducted. The results are shown in Table 23.

Table 23. The results of Kruskal – Wallis tests for singing, playing instruments, listening to music, and musical games/elements of musical creativity

Faculty	Osijek	Slavonski Brod	Petrinja	Čakovec	Zagreb	χ^2
Singing	145.82	152.14	147.15	151.12	161.32	2.291
Playing instruments	184.06	188.40	132.57	147.72	137.56	19.742, p<0.01
Listening to music	143.42	164.86	182.87	144.48	156.83	5.012
Musical games/elements of musical creativity	140.79	113.98	153.80	170.81	161.45	10.40, p<0.05
N = 307						

As shown above, significant differences in rankings appeared for *playing instruments* ($\chi^2 = 19.74$, $p < 0.01$) and *musical games/elements of musical creativity* ($\chi^2 = 10.40$, $p < 0.05$). In order to check between which groups there are significant differences, a series of *Mann-Whitney tests* were conducted for *playing instruments* and *musical games/elements of musical creativity*.

Mann-Whitney tests have shown that:

- Students in Osijek ranked *playing instruments* lower than students in Petrinja ($z = -2.49$, $p < 0.05$), Čakovec ($z = -2.37$, $p < 0.05$), and Zagreb ($z = -3.80$, $p < 0.001$)
- Students in Slavonski Brod also ranked *playing instruments* lower than students in Petrinja ($z = -2.20$, $p < 0.05$) and Zagreb ($z = -2.75$, $p < 0.01$)
- Students in Slavonski Brod ranked *musical games/elements of musical creativity* higher than students in Čakovec ($z = -2.71$, $p < 0.01$) and Zagreb ($z = -2.54$, $p < 0.05$).

These results also do not indicate any systematic differences, so it can be said that there are no relevant differences between students from different studies in ranking music course topics.

4. Conclusion

The students are mostly unaware of their low musical competence. Moreover, they evaluated their preparedness for teaching music in primary education with high marks, in general and for individual course topics. There are several reasons for these incorrect self-evaluations: On one hand, it is the lack of criteria that is the result of very low general knowledge in the area of music as a form of art (which should have been acquired earlier in education), and on the other hand, the stereotypical attitude that music courses in primary education are not something that requires some special musical competence. The musical level of the student population in general should also be added to it; the students will evaluate themselves in relation to their, equally competent or incompetent, colleagues. The students had no relevant complaints against the current system of musical education for primary education teachers. However, they did emphasize the need for more practical training, primarily playing instruments and singing. Namely, musical competences of primary education teachers cannot be determined otherwise than in relation to the course plan and programme for music courses in the first three grades of primary school. According to the primary school programme created as part of the HNOS (*Croatian National Educational Standard*) project, music courses in primary education should be viewed as the preparation for the part of primary school when the music courses will be taken over by specialist, i.e. course specific teachers (*National Plan and Programme for Primary School*, 2006). This then means that it will be enough for children in primary education to sing as much as possible and as well as possible, to listen to well selected music as much as possible, and to play with a musical background in various ways. The students declared that *Teaching Methods for Teaching Music* is the key course for training future teachers to teach music. The students are also satisfied with the number of classes dedicated to music courses, with a note that they are in favour of reorganising the course content in the direction of increasing the number of practical classes and reducing the number of theoretical classes. Large majority of the students believe that testing musical ability at entrance exams is important or even very important, which means that they would introduce it.

What is the cause of musical incompetence of students at class teacher studies? Learning music has some specific features and those set it apart from all the other courses at the class teacher studies. All of the courses, aside from music, can be studied normally after completing secondary education. Music studies require special skills that cannot be acquired as part of general education, and those include the skill in playing instruments and musical literacy. Considering the specifics of adopting musical knowledge and skills, some level of musical literacy and some level of skill in playing instruments are the conditions for starting musical studies at the class teacher studies, but the majority of students will enrol without any previous musical

education. Unfortunately, the current situation with the time allotted for music as part of class teacher studies does not allow the appropriate preparation for the relevant studies and for the proper music studies akin to those conducted at music academies. Considering the current conditions, it is necessary to change the concept of learning music at class teacher studies. Without drastically increasing the number of classes or setting conditions where students could enrol at the studies only with certain previous musical competence (for example, after completing/at least/ primary music school), this situation cannot be changed. Since the realisation of the mentioned conditions cannot be realistically expected – even just one of the conditions, let alone both of them – learning music should be set up in a way that would allow future primary education teachers to get the most practical use from it. Instead of dividing it into courses, music at class teacher studies should be taught in groups according to the group teaching model. As part of this organisation of music courses at class teacher studies, regardless of how the course will be called – *it would be best to call it Music* – it is important that every music teacher teaches their group of students everything that they will need:

- Singing songs and accompanying it by playing an instrument, and, at the same time, teaching methods and procedures for introducing the song in class,
- Listening to music and getting to know compositions and musical games, and at the same time transferring them to the students by applying teaching methods,
- Learning to play a backing instrument will then be done in a way an amateur learns: There is no playing of scales, technical exercises, etudes, and similar, and the most necessary elements of musical literacy will be adopted at the same time.

The current approach to teaching music being practiced at teacher education faculties is the imitation of professional musical education, which we can say follows the path *from theory to practice*. In class teacher studies, where not enough time is devoted to music courses, this approach cannot be effective. Teaching music here must follow the reverse path, i.e. *from practice to theory*, or in other words, in a situation where time is insufficient, music must be learned from music, while adopting the appropriate teaching methods along the way.

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Music Teacher Education in Croatia – Changing Traditional Paradigms

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Abstract:

The higher education for future music teachers is facing numerous challenges. The traditional educational system is heavily relying on secondary school music education which educates two main profiles of musicians, either future artists, or music theorists. Music theorists acquire music knowledge but are not primarily centred on learning about music itself (in terms of performing and competence). The requirements for enrolment into studies of music pedagogy include an evaluation of acquisition of theoretical music knowledge and only basic performing skills. This approach does no longer suit the realistic needs of the area which requires music teachers with immense musical performance, pedagogical, psychological, and organizational skills, therefore also the selection proceedings should be adjusted to current demands.

The aim of this research was to explore the opinions of experienced teachers, regarding the purposefulness of completed higher education in relation to challenges they face daily in class, in order to offer a modern concept of future music teacher's higher education based on their needs. The opinions of teachers regarding the traditional education concept and the importance of the content, which so far has not been implemented into study programs, have been researched. The results of the research showed that study programs of Music Pedagogy should be clearly profiled towards accomplishing equality between artistic-productive, creative, scientific and professional disciplines with an emphasis on expanding competences of independent artistic and scientific work, while the development of pedagogical competences of teachers should be integrated into all existing study programs.

Keywords: music teachers, higher education of teachers, study programs, music pedagogy

1. Introduction

European principles for teacher education formed through the program "Education and Training 2010" state the basic competences and qualifications that all teachers should have acquired, in order to successfully do their professional tasks (*Common European Principles for Teacher Competences and Qualifications*, 2005). The document

includes all levels of education and training, from preschool, through primary and secondary school, to higher education. Things to be noted from the document: a university diploma is needed for the qualification of the teachers, with the possibility of continuation of the studies via a postgraduate program, and multidisciplinary approach that means: "a) knowledge from certain subjects, b) knowledge in pedagogy, c) skills and competences required to guide and help students, d) understanding of the social and cultural significance of education" (Lončarić and Pejić Papak, 2009, p. 6). Furthermore, the document also states three key teacher competences, put in the context of lifelong learning, and connected with the European qualifications framework. Teachers should be trained to work with information, technology and knowledge, to work with people - students, associates and other partners in education, as well as working in society and with the society on a local, regional, national, European, and a wider global level. For the purpose of this paper it is perhaps the most important to express the notion that the European commission has, on a basis of exactly that document in 2007 published the document improving the *Quality of Teacher Education* where it is strongly highlighted that the quality of teachers' education is a key factor in the improvement of students' achievements. The document accentuated the importance of in-service training, in other words, the increase of the number of hours included in practical work in schools during the studies, as well as during the training, or for the first year of employment.

In the proclamation *Teacher Education in Europe: An ETUCE Policy Paper*, the complexity and the demanding nature of the teaching profession is highlighted, as well as the fact that their education should be executed as a Master's Degree. "Courses and modules should be inclusive with areas of theory of education, pedagogy, class work methodology, developmental psychology, and legal issues in education. School practice should be integrated in the program, under controlled conditions, with mentorship and supervision. It should be summed with knowledge from certain parts of the curriculum. Programs should preferably be enriched with new areas, such as education for the multiculturalism, and the application of the information and communication technology. In order to strengthen the education of teachers on the Master's Degree level, competences from the areas of science research should be amplified. The number of students with PhDs, who could participate in the education of new teachers, should be increased" (Lončarić and Pejić Papak, 2009, p. 8).

2. Literature review

With the publication of the document *Music Teacher Education: Partnership and Process* (Music Education National Society, 1987), the guidelines for the process of education of music teacher have been implemented, and are used even today. The document is conceptualized in a way to better the areas of: a) recruitment, selection, and retention of teachers, b) appearance and structure of formal education of teachers, and c) professional development - permanent learning, and since the formation to today, different additional activities have been undertaken in the direction of elaboration,

supplementation, and the implementation of the document. Despite the time interval of 30 years, we are still witnesses of the deficits and weak spots of the education of music teachers, which are, according to Conway (2010), being overcome by cooperation and communication of teachers in the field and university institutions that educate teachers. The author puts in perspective the problem of the education system for music teachers in the 21st century, with the emphasis on the necessity for change. Special attention is given on the mentorship of music teachers, which makes a great impact on the professional development of young teachers. Abeles, Conway and Custodero (2010) indicate the music teachers' professional life and the importance of permanent development, and learning, as a way of expanding competences, constant reconfiguration of the field of studies, and building their own attitudes. Also, Conway speaks about skills and knowledge of future music teachers, whose development is possible and necessary to encourage by early inclusion of students in the process of acquisition of teacher competences by developing their musical and pedagogical knowledge and skills: "The skills needed for success in music teaching (piano skills, aural skills, conducting and pedagogy) are somewhat removed from the day to day life of the undergraduate student. Most music teacher education programs attempt to address this conflict by sequencing curricula so that students are in at least one music education course each semester. These courses often include observations of teaching as a way to highlight the importance of the music teacher skills" (Conway, 2010, p. 263).

Colwell (2006a, 2006b) also states that the main foothold of education of future music teachers is in acquisition and development of music knowledge and skills. The author sees the main problem in the deficit of consciousness about the importance of the common purpose of contemporary education - which means the focus on students, flexibility in teaching, more teacher responsibility that stems from their personal beliefs and personality. Furthermore, Colwell talks about prerequisites for the enrolment of different study programs that educate future music teachers in most higher learning institutions, and finds them inadequately set up which results in enrolment of students with average music abilities. He finds the current selection components inadequate, and proposes that the selection procedure should include reviews which will yield candidates that possess the potential for the development of desirable competences of future music teachers described in the standards of the NASM association:

"(1) Personal commitment to the art of music, to teaching music as an element of civilization, and to encourage the artistic and intellectual development of students plus the ability to fulfil these commitments as an independent professional; (2) Ability to lead students to an understanding of music as an art form, as a means of communication, and as part of their intellectual and cultural heritage; (3) Ability to inspire others and to excite the imagination of students, engendering a respect for music and a desire for musical knowledge and experiences; (4) Ability to articulate logical rationales for music as a basic component of general education; (5) Ability to work productively within specific education systems, maintain positive relationships

with individuals of various social and ethnic groups, and empathize with students and colleagues of differing backgrounds; and (6) Ability to evaluate ideas, methods, policies in the arts, the humanities, and in arts education for their impact on the musical and cultural development of students” (Colwell, 2006b, p. 17).

By researching the influences of music education, Pitts (2012) points out the global differences in music education. By comparing The United States and The United Kingdom, she accentuates that active music making, especially choral singing, is a more represented activity in America, and as the American curriculum is more oriented on the music execution, so are study programs for music teachers’ education more focused on development of competences required for that form of teaching. The question of globalization and the knowledge economy is unquestionably connected nowadays with the future of music education, as stated by Aróstegui (2011). He strives for an educational approach in a form of combining the traditional methods, including making plans and predictions, pedagogical experiments, with a strong foothold in everyday learning and experiences in the process of education.

Svalina (2017) talks about the representation of the pedagogical group of subjects in music studies in Croatia, Serbia, Macedonia, and Slovenia. The author has examined the opinions of musicians about the necessity of acquiring pedagogical competences on the Academies of Music and Arts, and concludes that “teachers suggest that the students should get more school practice in the framework of pedagogical education, especially for subjects of Methodology and Pedagogical practice. The programs and the contents of pedagogical subjects should be modernized, made more interesting and more in synch with the practice. Besides, it is necessary to secure more professional literature in which the authors are dealing with the individual teaching and its specificity” (Svalina, 2017, p. 468).

3. The education of music teachers in the Republic of Croatia

University level of music teacher education in the Republic of Croatia is executed on Academies of Music and Academies of Arts in Zagreb, Osijek, Pula and Split.

Through a detailed analysis and compilation of study programs (even though they differentiate slightly by means of organization when considering the concept of studies, especially on the level of obligatory courses and by that also conditioned competencies of graduated teachers) we have established the fact that the crucial differences between study programs of Musical pedagogy in Republic of Croatia are not notable.

Table 1. The structure of studies on the Academies of Music and Art in Croatia (Zagreb, Osijek, Pula, Split)

ACADEMY	ZAGREB	OSIJEK	PULA	SPLIT
Name of the study program	Musical pedagogy	Musical pedagogy	Musical pedagogy	Undergraduate study Musical pedagogy Graduated study Musical culture
Educational cycle duration	5+0 300 ECTS	4+1 240 + 60 ECTS	4+1 240 + 60 ECTS	4+1 240 + 60 ECTS
Concept of the study	Single major Double major	Single major	Single major	Single major
Academic title after graduation	(mag. mus.)	(bacc. mus.) (mag. mus.)	(univ. bacc. paed.) (mag. mus.)	(bacc. mus.) (mag. mus.)
Entry terms and conditions	State's exam + Entry exam	State's exam + Entry exam	State's exam + Entry exam	State's exam + Entry exam

Study programs at the Academy of Arts in Osijek, Academy of Arts in Split and Academy of Music in Pula are established according to the principle of four-year undergraduate studies and one year graduate study, while the Music Academy in Zagreb has implemented a concept of integrated undergraduate and graduate five-year study (Table 1). All the studies are adopted as single major, apart from the musical pedagogy on the Academy of Music in Zagreb where the studies have a double major.

The names of the study programs are also the same at all Academies, except in the case of the graduate study of Music pedagogy that is carried out at the Academy of Arts in Split, that has retained its old pre-bologna name of the same study program. As visible from Table 1, after having finished the studies the academic title is also the same or at least almost the same (the difference is the undergraduate study program in Pula), similarly to the conditions of entering the study program which on all Academies includes having passed the state's exam and the entry exam with the purpose of examining theoretical and practical knowledge and skills (theory of music, solfeggio, harmony, piano playing, knowledge exam in music and art terms and other).

By analysing study programs and discussing obligatory courses it was established that study programs do not differ significantly. A certain number of subjects that make the core of all study programs is observed, and which, even though on different academies sometimes have various names, the analysis of the contents established the fact that the programs are kindred and compatible and on the level of national mobility of students, so they are valued as equivalent. The role of those 25 subjects is researched in the empirical part of this paper. Certain differences appear in the offer of elective courses which vary in aspects of specificity of regional surroundings of the Academy or the area of artistic and scientific interests of teachers that teach.

It can be concluded that the concept of study programs that teach future music teachers in Croatia is based on the traditional concept, which is dominated by musical theory

and other professional subjects that, in formal means, satisfy the needs of mass professional musical-theoretical education, and less performing arts education of future music teachers, but in the executive and content sense lack the connection between knowledge that is being acquired and developed during the studies with real needs of contemporary music teaching. Moreover, it is very important to accentuate that the study programs are conceptualized in a way that more time is dedicated to learning about music, than performing, knowing, and adopting music itself. Rojko states that “in many its aspects, music education has been alienated from its subject: instead of music, it is being learned about music” (Rojko, 2012, p. 49). The author suggests that the mentioned practice happens in the so called theoretical subjects which are hampered by over-verbalization and formalization that they became their own purpose. That traditional approach is, sadly, still present in some musical-theory subjects which effects and disables the necessary transfer of knowledge from one discipline to another (Rojko, 2012).

4. Methodology

4.1. Research

The aim of this research was to affirm the opinions of teachers with years of experience regarding the purpose of finished higher education in relation to the needs that they encounter every day in class, and comparing it to the opinions of students, which currently attend University undergraduate and graduate study programs of musical pedagogy. The opinions of teachers and students regarding the importance of certain University courses for their everyday work was questioned, just as the opinions of possible advancements of study programs which educate future music teachers by introducing new contents from which some lead in the direction of additional theorization of class, and others lead in the direction of functionality and optimization of practical pedagogical and professional musical knowledge.

In accordance with the established goal, the following problems of the research have been emphasized:

1. To question the opinions of teachers of music education and art regarding the purpose of courses which they have attended during their University period, in other words, to explore their opinion regarding the importance of content and acquired skills and knowledge from the mentioned courses for their current job placement.
2. To ascertain whether there are differences in opinions regarding the purpose of courses between music teachers and students.
3. To question the opinions of music teachers regarding the introduction of new suggested contents into higher musical-pedagogical education.
4. To question the opinions of students regarding the introduction of new suggested contents into higher musical-pedagogical education.

5. To ascertain whether there are differences in opinions regarding the introduction of new suggested contents into higher musical-pedagogical education between music teachers and students.

4.2. Method and participants

The research was conducted on a sample of 113 teachers from which 88 were teachers of Music Culture and 25 teachers of Music Art (Table 2) from 19 Croatian counties and on 56 students of University undergraduate and graduate studies of Musical pedagogy on the Academy of Arts in Osijek.

Table 2. The structure of the sample of teacher participants in relation to the type of school in which they work (N=113)

Schools in which they currently work	N	Percentage (%)
Primary School	88	77.9
Secondary School	25	22.1
Total	113	100

The sample of teacher participants was between one and forty years of service increment, in average about 13 work years.

The method used for choosing the teacher participants was the snowball method. The questionnaires were sent to the leaders of the Professional Country Council who were asked to distribute it to the teacher colleagues for whom they considered would contribute to the topic of the research.

The sample of students represents the population sample of all students currently enrolled into undergraduate and graduate musical pedagogy in Osijek (Table 3).

Table 3. The structure of the sample of students in relation with their year of study (N=56)

Study year	N	Percentage (%)
1 st year of undergraduate studies	15	26.8
2 nd year of undergraduate studies	10	17.9
3 rd year of undergraduate studies	10	17.9
4 th year of undergraduate studies	15	26.8
1 st year of graduate studies	6	10.6
Total	56	100

4.3. Instruments and the procedure of the research

For the purpose of the research two questionnaires were made. The questionnaires consisted of three parts. First part of the interview consisted of the main socio-demographic characteristics of participants: type of school they work in, county they come from, years of experience, or in case of students solely the year of study. The rest of the questionnaire was the same for both groups of participants and it consisted of two main following units:

1. Questioning the opinion regarding usual obligatory university courses for students of musical pedagogy
2. Questioning the opinion regarding the possibility to introduce new courses and subjects into study programs

Participants have estimated the degree of relevance of offered contents on a scale of five degrees, 1 indicated a completely irrelevant content, 2 indicated irrelevant content, 3 indicated neither relevant nor irrelevant content, 4 indicated relevant and 5 extremely relevant content. Data processing was consequent after the collection of information from the questionnaires. Basic statistical parameters were calculated. The results were shown in percentages, frequency of the results, arithmetic means and standard deviations, and corresponding t-tests were calculated. The statistical processing of the gathered data was conducted via the statistical program IBM SPSS (Statistical Package for the Social Sciences) Statistics 20.

5. Results

From the Table 4, it is visible that the participants valued 25 courses for which we have ascertained to be mutual content-wise to study programs in Musical Pedagogy in Croatia. Here is the list of those courses:

Table 4. Difference in opinion regarding the purpose of courses between music teachers and students

Course	Music teachers					Students					t
	N	Min	Max	M _t	SD _t	N	Min	Max	M _s	SD _s	
SOLFEGGIO	113	1	5	3.93	1.033	56	2	5	4.71	0.653	-5.19**
HARMONY	113	1	5	3.96	1.034	56	3	5	4.57	0.599	-4.06**
HARMONY ON THE PIANO	113	1	5	4.16	0.912	56	2	5	4.25	0.769	-0.64
PIANO	113	1	5	4.38	0.783	56	3	5	4.43	0.735	-0.38
CONDUCTING	113	1	5	4.58	0.652	56	3	5	4.41	0.757	1.46
INTRODUCTION TO VOCAL TECHNIQUES	113	1	5	4.58	0.765	56	2	5	4.21	0.889	2.73**
MUSIC HISTORY	113	2	5	4.38	0.816	56	1	5	4.16	0.910	1.58
MUSICAL INSTRUMENTS	113	1	5	4.31	0.803	56	1	5	4.14	0.980	1.18
FOREIGN LANGUAGE	113	1	5	3.92	1.028	56	1	5	3.73	1.120	1.09
CHOIR	113	2	5	4.68	0.616	56	2	5	4.30	0.971	3.08**
PSYCHOLOGY OF EDUCATION	113	1	5	4.21	0.911	56	2	5	3.95	0.980	1.74
MUSIC THEORY	113	2	5	4.08	0.857	56	2	5	4.32	0.741	-1.80

MUSICAL FORMS AND STYLES	113	1	5	4.24	0.805	56	2	5	4.23	0.809	0.05
PEDAGOGY	113	2	5	4.33	0.901	56	2	5	4.46	0.713	-0.99
DIDACTICS	113	1	5	4.18	0.975	56	2	5	4.34	0.815	-1.07
POLYPHONY	113	1	5	3.22	0.904	56	1	5	3.66	1.149	-2.71**
ARRANGING FOR ENSEMBLES	113	1	5	4.20	0.898	56	1	5	4.02	0.904	1.26
CHOIR MUSIC SCORE MUSIC READING	113	1	5	4.25	0.840	56	1	5	4.11	0.966	0.97
PLAYING ORCHESTRA SCORE MUSIC	113	1	5	3.20	1.036	56	1	5	3.62	1.153	-2.40*
METHODS OF TEACHING THEORETICAL MUSIC COURSES	113	1	5	4.37	0.937	56	3	5	4.48	0.687	-0.78
PEDAGOGY PRACTICUM	113	2	5	4.74	0.624	56	3	5	4.75	0.513	-0.06
METHODOLOGY OF SCIENTIFIC RESEARCH	113	1	5	3.24	1.046	56	1	5	3.68	1.114	-2.52*
INTRODUCTION TO ETHNOMUSICOLOGY	113	1	5	3.74	0.914	56	1	5	3.63	1.054	0.75
WORLD MUSIC	113	1	5	3.79	1.022	56	2	5	3.91	0.959	-0.75
MUSIC PEDAGOGY	113	1	5	4.44	0.834	56	3	5	4.75	0.477	-2.56**

** Significance on a scale $p \leq 0.01$

* Significance on a scale $p \leq 0.05$

From the table, it is visible that teachers value these courses as most significant: Pedagogy practicum (M=4.74, SD=0.624), Choir (M=4.68, SD=0.616), Conducting (M=4.58, SD=0.652) and Introduction to vocal techniques (M=4.58, SD=0.765). As least important, the teachers value the following courses: Playing Orchestra Score Music (M=3.20, SD=1.036), Polyphony (M=3.22, SD=0.904) and Methodology of scientific research (M=3.24, SD=1.046).

Also, it is clear that students of Music pedagogy give the most significance to the importance of content and acquisition of knowledge and skills of the course: Music Pedagogy (M=4.75, SD=0.477), Pedagogy practicum (M=4.75, SD=0.513), Solfeggio (M=4.71, SD=0.653), Harmony (M=4.57, SD=0.599) and Methods of teaching theoretical music courses (M=4.48, SD=0.687) and as the least significant value the following courses: Playing Orchestra Score Music (M=3.63, SD=1.153), Introduction to ethnomusicology (M=3.63, SD=1.054), Polyphony (M=3.66, SD=1.149) and Methodology of scientific research (M=3.68, SD=1.114).

On a descriptive level, it can be concluded that both teachers and students value similarly those courses, which they consider to be less important for their present or future calling.

Certain statistically significant differences are defined when assessing the importance of mentioned courses between music teachers and students. Music teachers assessed the courses Choir ($M_t=4.68, SD_t=0.616 > M_s=4.30, SD_s=0.971$) and Introduction to Vocal Techniques ($M_t=4.58, SD_t=0.765 > M_s=4.21, SD_s=0.889$) as statistically more significant than did the students, which means that they are more focused on the artistic-productive aspect of their action. On the other hand, students have assessed the courses Solfeggio ($M_s=4.71, SD_s=0.653 > M_t=3.93, SD_t=1.033$), Harmony ($M_s=4.57, SD_s=0.599 > M_t=3.96, SD_t=1.034$), Polyphony ($M_s=3.66, SD_s=1.149 > M_t=3.22, SD_t=0.904$), Playing of Orchestra Scores ($M_s=3.62, SD_s=1.153 > M_t=3.20, SD_t=1.036$), Methodology of Scientific Research ($M_s=3.68, SD_s=1.114 > M_t=3.24, SD_t=1.046$) and Music Pedagogy ($M_s=4.75, SD_s=0.477 > M_t=4.44, SD_t=0.834$) as more statistically significant than did the teachers, which can be understood by the fact that students are more focused on acquiring traditionally accepted theoretical knowledge during their studying.

Table 5. Differences in opinions about the importance of educational courses with accordance to where music teachers work

Course	Primary school					Secondary school					t
	N	Min	Max	M	SD	N	Min	Max	M	SD	
SOLFEGGIO	88	2	5	3.92	0.997	25	1	5	3.96	1.172	-0.15
HARMONY	88	1	5	4.00	0.959	25	1	5	3.84	1.281	0.58
HARMONY ON THE PIANO	88	1	5	4.22	0.877	25	1	5	3.96	1.020	1.16
PIANO	88	2	5	4.40	0.751	25	1	5	4.32	0.900	0.41
CONDUCTING	88	1	5	4.58	0.673	25	3	5	4.56	0.583	0.15
INTRODUCTION TO VOCAL TECHNIQUES	88	1	5	4.65	0.679	25	1	5	4.32	0.988	1.57
MUSIC HISTORY	88	2	5	4.25	0.861	25	4	5	4.84	0.374	-4.98**
MUSICAL INSTRUMENTS	88	1	5	4.28	0.816	25	3	5	4.40	0.764	-0.68
FOREIGN LANGUAGE	88	1	5	3.91	1.068	25	2	5	3.96	0.889	-0.24
CHOIR	88	2	5	4.68	0.635	25	3	5	4.68	0.557	0
PSYCHOLOGY OF EDUCATION	88	1	5	4.22	0.915	25	3	5	4.20	0.913	0.09
MUSIC THEORY	88	2	5	4.05	0.829	25	2	5	4.20	0.957	-0.71
MUSICAL FORMS AND STYLES	88	1	5	4.16	0.829	25	3	5	4.52	0.653	-2.28*
PEDAGOGY	88	2	5	4.34	0.933	25	3	5	4.28	0.792	0.32
DIDACTICS	88	1	5	4.17	0.997	25	2	5	4.20	0.913	-0.14

POLYPHONY	88	1	5	3.18	0.878	25	2	5	3.36	0.995	-0.82
ARRANGING FOR ENSEMBLES	88	2	5	4.27	0.798	25	1	5	3.96	1.172	1.24
CHOIR MUSIC SCORE MUSIC READING	88	1	5	4.20	0.886	25	3	5	4.40	0.645	-1.25
PLAYING ORCHESTRA SCORE MUSIC	88	1	5	3.28	0.994	25	1	5	2.92	1.152	1.42
METHODS OF TEACHING THEORETICAL MUSIC COURSES	88	1	5	4.47	0.857	25	1	5	4.04	1.136	1.75
PEDAGOGY PRACTICUM	88	2	5	4.75	0.665	25	4	5	4.72	0.458	0.26
METHODOLOGY OF SCIENTIFIC RESEARCH	88	1	5	3.27	1.047	25	1	5	3.12	1.054	0.63
INTRODUCTION TO ETHNOMUSICOLOGY	88	1	5	3.73	0.956	25	2	5	3.80	0.764	-0.38
WORLD MUSIC	88	1	5	3.77	0.991	25	1	5	3.84	1.143	-0.28
MUSIC PEDAGOGY	88	2	5	4.49	0.758	25	1	5	4.28	1.061	0.93

** Significance on a scale $p \leq 0.01$

* Significance on a scale $p \leq 0.05$

T-tests have been calculated for the uneven sample values for every course in reference with the type of school where teachers work - between primary and secondary schools. There is a statistically significant difference in assessments of the importance of the course History of music ($t=4.98$, $p<0.01$), where teachers who work in secondary schools value its importance significantly more ($M=4.84$, $SD=0.374$) from teachers who work in primary schools ($M=4.25$, $SD=0.861$). Also, there is a significant difference in assessment of the importance of the course Musical Forms and Styles ($t=2.28$, $p<0.05$), where secondary school teachers value the course as very important ($M=4.52$, $SD=0.653$), and primary school teachers deem it important ($M=4.16$, $SD=0.829$). That result is expected because the concept of secondary school music education and primary school music education varies greatly specifically in that segment. More so, secondary school music education is formed to follow the diachronic sequence of topics from music history, looking back on musical epochs, styles, characteristic musical types, forms, persons, and phenomena. Secondary school music education almost entirely neglects active music making for students (either singing or playing) and is focused primarily on acquisition of music knowledge, so it is not surprising that secondary school teachers have highlighted the importance of those subjects that are in direct correlation with the content and topics of their everyday teaching.

In order to ascertain whether there are differences in opinions between certain groups of University courses which assess the orientation of studies towards artistic-performing and artistic-theoretical, a subscale of courses was created and defined as 1. Artistic performing and practical music courses (Piano, Conducting, Introduction to vocal techniques, Choir, Arranging for ensembles, Choir music score music reading, Playing orchestra score music, Solfeggio, Harmony on the piano, Methods of teaching theoretical music courses, Pedagogy practicum), 2. Musical-theoretical courses (Introduction to ethnomusicology, Harmony, Music history, Music theory, Musical forms and styles, Polyphony, Musical instruments, Music pedagogy, World music), 3. General and pedagogical courses (Methodology of scientific research, Psychology of education, Pedagogy, Didactics, Foreign language).

From the following results, it is clear that music teachers value the courses of artistic, performing and practical music content as statistically significant ($M=4.28$, $SD=0.490$), in contrast to courses which are musical-theoretical ($M=4.02$, $SD=0.554$) and those which belong to the general and pedagogical content ($M=3.97$, $SD=0.708$).

Table 6. Teacher's differences in estimation of importance of theoretical, artistic and general pedagogical courses

	M	SD	N	F
ARTISTIC PERFORMING AND PRACTICAL MUSIC COURSES	4.28	0.490	113	22.24**
MUSICAL-THEORETICAL COURSES	4.02	0.554	113	
GENERAL AND PEDAGOGICAL COURSES	3.97	0.708	113	

** Significance on a scale $p \leq 0.01$

The results of student's perspective show clearly that students also assess the importance of courses which belong to the artistic, performing and music courses as more significant ($M=4.30$, $SD=0.485$) than they assess the importance of courses which belong to the musical-theoretical courses ($M=4.15$, $SD=0.562$) and general and pedagogical courses ($M=4.03$, $SD=0.685$).

Table 7. Student's differences in estimation of importance of theoretical, artistic and general pedagogical courses

	M	SD	N	F
ARTISTIC PERFORMING AND PRACTICAL MUSIC COURSES	4.30	0.485	56	10.39**
MUSICAL-THEORETICAL COURSES	4.15	0.562	56	
GENERAL AND PEDAGOGICAL COURSES	4.03	0.685	56	

** Significance on a scale $p \leq 0.01$

By comparing results of both groups of participants, it is established that there is no statistically significant difference in attitudes on theoretical, artistic and general pedagogical courses between teachers and students. On a descriptive level, it can be concluded that both teachers and students consider the mentioned courses as important, but there is no difference in attitude between these two groups.

Table 8. Difference in attitudes on theoretical, artistic and general pedagogical courses between teachers and students

	Music teachers					Students					t
	N	Min	Max	M	SD	N	Min	Max	M	SD	
ARTISTIC PERFORMING AND PRACTICAL MUSIC COURSES	113	1.73	5.00	4.28	0.491	56	3.18	5.00	4.30	0.485	-0.25
MUSICAL-THEORETICAL COURSES	113	1.56	5.00	4.02	0.554	56	3.00	5.00	4.15	0.562	-1.42
GENERAL AND PEDAGOGICAL COURSES	113	1.40	5.00	3.97	0.708	56	2.20	5.00	4.03	0.685	-0.53

** Significance on scale $p \leq 0.01$

When discussing attitudes of teachers and students regarding the introduction of new suggested contents into higher musical-pedagogical education, results show that there are statistically significant differences in the following areas: music teachers assess the importance of introduction of the whole variety of courses much higher than students. They mentioned fifteen courses (Table 9), which can mean that they are aware of the need for modernization of existing study programs. Among the most important subjects that teachers find are necessary to be included in the study programs, next subjects have been prominent: Methodology of working with a choir ($M=4.88$), School practice ($M=4.69$), Extracurricular activities ($M=4.67$).

Students are optimistic in their answers yet more careful having assessed the importance of introduction of the content of solely one course Kontrapunkt ($M_s=3.29$, $SD_s=1.171 > M_t=2.86$, $SD_t=0.962$), as statistically more significant than music teachers. The course generally had lower scores from both groups of participants.

Table 9. Opinions of music teachers and students regarding the introduction of suggested content in higher musical-pedagogical education and the differences between music teachers and students

Content Suggestion	Music teachers					Students					t
	N	Min	Max	M_t	SD_t	N	Min	Max	M_s	SD_s	
PEDAGOGICAL DOCUMENTATION	113	1	5	4.35	0.896	56	1	5	3.61	1.039	4.84**
OTHER INSTRUMENTS	113	1	5	3.66	0.830	56	1	5	3.73	0.981	-0.47

MUSIC'S AESTHETICS	113	1	5	3.58	0.970	56	1	5	3.48	1.062	0.62
KONTRAPUNKT	113	1	5	2.86	0.962	56	1	5	3.29	1.171	-2.52**
MUSIC ACOUSTIC	113	1	5	3.51	0.946	56	1	5	3.64	0.980	-0.82
METHODOLOGY OF WORKING WITH A CHOIR	113	4	5	4.88	0.331	56	1	5	4.23	0.953	6.45**
SINGING	113	2	5	4.62	0.631	56	1	5	4.21	0.929	3.34**
SOCIAL ASPECTS OF MUSIC	113	2	5	4.11	0.838	56	1	5	3.61	1.056	3.33**
DANCE	113	1	5	3.88	1.075	56	1	5	2.84	1.172	5.77**
TRADITIONAL MUSIC AND FOLKLORE	113	3	5	4.33	0.725	56	1	5	3.82	0.956	3.83**
INFORMATION AND COMMUNICATION TECHNOLOGY AND MUSIC	113	1	5	4.49	0.745	56	1	5	3.89	0.908	4.53**
EXTRACURRICULAR MUSIC ACTIVITIES	113	3	5	4.67	0.558	56	1	5	4.00	0.934	5.84**
ELECTRONIC MUSIC	113	1	5	3.82	1.002	56	1	5	3.34	1.032	2.93**
SCHOOL PRACTICE	113	3	5	4.69	0.599	56	2	5	4.46	0.785	2.08*
WORKING WITH GIFTED STUDENTS	113	1	5	4.41	0.841	56	3	5	4.30	0.829	0.76
WORKING WITH STUDENTS WITH DIFFICULTIES	113	2	5	4.50	0.721	56	3	5	4.41	0.757	0.78
HISTORY OF ART AND DRAMA	113	1	5	3.36	0.955	56	1	5	2.68	1.162	4.08**
CLASS COMMUNICATION AND LANGUAGE CULTURE	113	3	5	4.29	0.740	56	2	5	3.71	1.039	4.16**
DEVELOPMENTAL PSYCHOLOGY	113	2	5	3.87	0.891	56	1	5	3.36	1.151	3.17**
IN-CLASS MUSIC TEACHING STRATEGIES	113	2	5	4.50	0.696	56	2	5	4.09	0.859	3.37**
WORKING WITH AN ENSEMBLE	113	2	5	4.51	0.696	56	2	5	4.30	0.807	1.74
PROJECT MUSIC CLASS	113	1	5	4.28	0.818	56	2	5	4.12	0.854	1.16
POPULAR MUSIC	113	1	5	4.19	0.865	56	1	5	3.70	0.971	3.38**

PLAYING A VISTA	113	1	5	3.69	1.135	56	1	5	4.04	1.044	-1.91
MUSIC IMPROVISATION	113	1	5	3.97	0.995	56	2	5	4.07	0.892	-0.62
MUSIC THERAPY	113	1	5	4.03	0.995	56	1	5	3.89	1.155	0.77

** Significance on a scale $p \leq 0.01$

* Significance on a scale $p \leq 0.05$

Three subscales have been formed for the need of clearer understanding of interests of participants for specific areas of study curriculum: 1. Artistic performing and practical music courses (Second instrument, Methodology of working with a choir, Singing, Dance, In-class music teaching strategies, Information and communication technology and music, extracurricular music activities, Electronic music, School practice, Working with an Ensemble, Project music class, Popular music, playing a vista, Music improvisation), 2. Musical-theoretical courses (Music's Aesthetics, Kontrapunkt, Music acoustics, Social aspects of music, Traditional music and folklore, Music therapy), 3. General and pedagogical courses (Pedagogical documentation, Working with gifted students, Working with students with difficulties, History of art and drama, Class communication and language culture, Developmental psychology).

When considering the estimation of importance of introduction of the new content, teachers value the introduction of content that belongs to the artistic, performing and practical music courses as statistically the most significant and important ($M=4.28$, $SD=0.498$), then the introduction of content that belongs to general and pedagogical courses ($M=4.13$, $SD=0.522$) and statistically the least significant the introduction of content that belongs to musical-theoretical courses ($M=3.73$, $SD=0.608$).

Table 10. Teacher's differences in estimation of importance of introduction of new contents which belong to the theoretical, artistic and general pedagogical courses

	M	SD	N	F
ARTISTIC PERFORMING AND PRACTICAL MUSIC COURSES	4.28	0.498	113	83.08**
MUSICAL-THEORETICAL COURSES	3.73	0.608	113	
GENERAL AND PEDAGOGICAL COURSES	4.13	0.522	113	

** Significance on a scale $p \leq 0.01$

Again, when considering the estimation of importance of introduction of new contents, students also assess the introduction of contents which belong to the artistic, performing and musical courses as statistically more significant ($M=3.93$, $SD=0.554$) than they assess the introduction of contents which belong to the general and pedagogical courses ($M=3.67$, $SD=0.721$) and musical-theoretical courses ($M=3.62$, $SD=0.771$).

Table 11. Student's differences in estimation of importance of introduction of new contents which belong to the theoretical, artistic and general pedagogical courses

	M	SD	N	F
ARTISTIC PERFORMING AND PRACTICAL MUSIC COURSES	3.93	0.554	56	12.88**
MUSICAL-THEORETICAL COURSES	3.62	0.771	56	
GENERAL AND PEDAGOGICAL COURSES	3.67	0.721	56	

** Significance on scale $p \leq 0.01$

Nevertheless, a statistically significant difference between attitudes on introduction of new contents between teachers and students does exist. Music teachers assess the introduction of contents which belong to artistic, performing and practical music significantly more important. Also, music teachers consider the introduction of contents which belong to the general and pedagogical courses as highly important. But, there is no difference between the estimation of importance of introduction of musical-theoretical courses between teachers and students since both teachers and students assess these courses in the range of neither important nor unimportant.

Table 12. Differences in attitude between teachers and students regarding the introduction of the new content

	Music teachers					Students					t
	N	Min	Max	M	SD	N	Min	Max	M	SD	
ARTISTIC PERFORMING AND PRACTICAL MUSIC COURSES	113	2.07	5.00	4.27	0.498	56	2.64	4.86	3.93	0.554	3.88**
MUSICAL-THEORETICAL COURSES	113	2.00	5.00	3.73	0.608	56	1.83	5.00	3.62	0.771	0.93
GENERAL AND PEDAGOGICAL COURSES	113	2.50	5.00	4.13	0.522	56	2.00	5.00	3.67	0.721	4.25**

** Significance on a scale $p \leq 0.01$

6. Conclusion

When talking about formal education of music teachers, and in the sense of improvement and innovation of current study programs which are being set on a traditional concept of acquisition and development of primarily professional, musical-theoretical skills and knowledge, it is important to consider the possibility of change in the education paradigm.

Results of this research have proven that the study programs of Musical pedagogy should be improved and innovated in a clear and concise manner in order to contribute to the equality and improvements of artistic-productive and creative as well as pedagogical disciplines of future music teachers with the emphasis on expanding the competencies in individual artistic-pedagogical work. Study programmed which are currently preoccupied with musical-theoretical courses need to be innovated according to the needs of modern music art class, an art that demands a creative, professional and flexible teacher – a musical practitioner who knows and teaches music, and not just delivers the knowledge of music.

On a basis of opinions from students and teachers, in order to be more functional, study programs should be further improved with those subjects that belong to the group of direct musical and pedagogical subjects that will introduce students in a concrete way to their future vocation. A change was noted for the additional content that belong to the sphere of a stronger connection between the academic education and school practice, by implementing courses from the areas: methodology of working with school ensembles, working on extracurricular activities, working in the field of information-communication technology, etc. Moreover, it is necessary to reduce the study programs in the sense of reducing lesson times or dropping those contents that are not directly correlated with the general outcomes of study programs, as well as introduce to lessons content like working in a multicultural environment, working with gifted students, working with students with learning difficulties, working with new media, contemporary teaching methods, strategies, and forms of communication that contribute to education of a wide-educated teacher with teaching experience that knows how to answer to new pedagogical challenges, nourishes its primarily artistic work, and if needed, can competently continue to develop, whether by artistic research or scientifically, on a postgraduate level.

Contemporary music education is at its turning point, and given results are a good indicator, and a possible way towards organization of Music pedagogy studies in accordance with the times we live in, which will reflect on the future of music education on all levels of the educational system.

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Intervention in international practicum in the Global South

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Abstract:

Teacher education programmes need to be more internationally oriented, according to national education policy in Norway. Moreover, all teacher education institutions must develop a strategy to meet this aim. International practicum, which sends student teachers for practicum abroad, has become popular. The aim is to enhance students' intercultural competence. Until recently, it was commonly believed that immersing student teachers in an unfamiliar culture would develop students' intercultural competence. Our research findings are in accordance with those of many other studies: immersing students in another culture does not automatically mean that they become interculturally competent: Some of the students in our study have learned to appreciate the difference between cultures and have opened up their minds and increased their acceptance of differences. However, others have come back home more certain than ever of the superiority of their own culture. In this paper we discuss to what extent intercultural competence and global awareness were promoted during an international practicum programme.

Keywords: International practicum, intercultural competence, student teachers.

1. Introduction

Teacher education programmes need to become more international according to national education policy in Norway. Moreover, all teacher education institutions must develop a strategy to meet this aim. International practicum, which sends student teachers for practicum abroad, has become popular. The aim is to enhance students' intercultural competence. In the literature, empirical studies have reported that participation in international work increases learners' intercultural competence, language skills, appreciation of cultural differences, tolerance for ambiguity, and experiential understanding of complex global problems (Cushner & Mahon, 2009). Until recently, it was commonly believed that immersing student teachers in an unfamiliar culture would develop the students' intercultural competence (Cushner, 2007; Stachowski & Sparks, 2007; Walters, Garii & Walters, 2009; Wiggins, Follo & Eberly, 2007). More recently, however, this belief has been challenged. Some researchers claim that being in another country does not automatically make a person

interculturally competent (Hammer, 2012; Engle & Engle, 2012; Zull, 2012). They argue that being exposed to other cultures is a necessary but not sufficient condition for students to become interculturally competent.

In this paper, we questioned to what extent student teachers become more interculturally competent when they attend international practicum programmes. We will furthermore, discuss how to improve the quality of international practicum programmes in the Global South in order to better ensure that students become intercultural competent. The discussion is based on the analyses of two international practicum programmes from two different teacher education institutions in Norway.

2. Literature review

2.1. Theoretical discussion of intercultural competence

In order to design and mentor development of intercultural competence it is necessary to understand what intercultural competence is and how we as educators might intervene to help the students to develop this competence. In this section, we will first discuss the concept before we continue with a discussion of crucial factors in the development of intercultural competence.

What is the nature of intercultural competence? We base our understanding on the definition from two of the most influential academics in the field – Bennet (2012) and Deardorff (2004). Bennet's definition refers to "the acquisition of generalizable intercultural competence: that is, competence that can be applied to dealing with cross-cultural contact in general, not just skills useful for dealing with a particular other culture" (Bennet, 2012). Deardorff (2004) highlights that most of the definitions of intercultural competence include more than knowledge of other cultures, since knowledge alone is not enough to constitute intercultural competence. Intercultural competence also involves the development of one's skills and attitudes in successfully interacting with persons of diverse backgrounds. Based on these two definitions and inspired by Hylland Eriksen (2015), we in the present paper will understand intercultural competence as the ability to communicate and collaborate with people whose attitudes, values, skills and knowledge are significantly different from their own.

International practicum programmes are potentially transformative in nature. By spending time in another culture, the students will gain first-hand knowledge and this is critical in developing intercultural competence (Cushner, 2007). Living and working in a different culture challenges the perception of oneself, of others and of the home culture and country (Walters et al., 2009). According to Stachowski & Sparks (2007), they develop "perspective consciousness" that might help them to understand other cultures and might push the students towards an ethnorelative perspective (Hammer et al., 2003). When student teachers are part of an international practicum, their perspectives might transform through confrontation with other people's perspectives or realities.

Theoretically, this is based on Mezirow's transformative learning theory (1981, 1997). According to his theory, adult learning is about changes in meaning perspectives, which include broad sets of psychocultural assumptions that form an individual's worldview. Meaning perspectives develop from earlier experiences and are socio-culturally specific. Mezirow defines transformative learning as a process of using an *a priori* interpretation to construct a revised interpretation of meaning of one's experience to guide future actions (Mezirow, 1998, 1997).

What do the student teachers experience during the international practicum that might change their meaning perspective in a more ethnocultural direction? It is first and foremost the cultural shock that many students will experience that may catalyse a change in their frames of reference, which again might lead to increased cultural sensitivity. However, this will depend on the ability of the student to reflect and elaborate on an existing point of view and habit of mind, and transform them into a new frame of reference. Another outcome of cultural shock might be that one sticks to one's initial biases regarding groups and cultures and the conceived superiority of one's own cultural values and habits. Transforming one's perspective is less common than making the "new" fit in to existing frames of references (Mezirow, 1998). Thus, international experience alone does not necessarily make the students intercultural competent or give the participants new perspectives on their professional role and on pedagogical practices. Zull (2012) reminds us that transformation is a slow process; the full impact of an international practicum might not appear for years and, at best, such experiences might be the beginning of a transformation.

Vande Berg (2012) and others (Hudson, 2017; Hindrix, 2017) argue that it is possible to intervene and help the students to develop intercultural competence. It is possible to help the students to get new skills, knowledge and develop their attitudes and critical reflection capacity. Based on extensive studies of a number of international practicum programmes Hindrix (2017) finds the following aspects most important to focus on when designing an international practicum programme: 1. Cultural self-knowledge: The student knows and understands his own frame of reference and worldview and he is able to link these to other viewpoints. 2. Cultural flexibility: If necessary, the student adapts his behaviour and communication style in an intercultural context, and explores alternative behaviour patterns. 3. Cultural resilience: The student will deal with the difficulties and negative feelings that may arise in intercultural encounters in a constructive way. 4. Cultural knowledge: The student acquires knowledge about other cultures and employs this knowledge in an appropriate manner with respect for the uniqueness of each individual human being. 5. Cultural connectivity competence: In an intercultural context, the student develops a working relationship with colleagues, clients and other stakeholders and contributes to an atmosphere of trust. 6. Cultural communicative competence: The student examines the specific features of his own communication style, allows for a remedial approach if necessary and explores the communication style of the other. 7. Investigating other perspectives: The student is open to alternative ideas and opinions and will examine them and consider

the value of the alternatives. In addition, the students must show international orientation and social involvement.

2.2. International practicum programmes

At our universities, the international practicum programme consists of 3 phases of which the stay abroad is one phase. The three interlinked phases are pre-departure, in country and re-entry. The programme is meant to help the students enhance their learning outcome by providing relevant knowledge as well as stimulating their reflection of their experiences. Vande Berg & Paige (2009) recommend this design from their analyses of several intercultural training programmes. During these programmes the students are tutored, mentored, challenged and supported to change their previous perspectives. The duration of our programme is 10 months during the third year of a 4-year general teacher education programme.

Inland Norway University of Applied Sciences (INN) offers international practicum in Namibia. The students participate in international practicum in combination with writing their international BA-thesis in Namibia. This includes a 12-week stay in Namibia where the students work as teachers in Namibian primary and lower secondary schools. Their work as teachers is recognized as equivalent to teaching practice in Norwegian schools/kindergartens.

The pre-departure constitutes of lectures, seminars and workshops. The course starts with general knowledge about the country. We find it important that they know as much as possible about the geography, history, economy, ethnicity, culture, school system etc. as possible. The other important part of the course is intercultural competence. We involve the students in discussions of their own culture, the other culture, cultural flexibility, the importance of being open-minded, and the importance of getting involved in the target society. Culture-general knowledge, is not only knowledge, it is more of a discussion of culture-specific versus universalisms of values, habits and beliefs. They are taught about global issues, development theory and issues of poverty and inequality. They will have the opportunity to meet students who have finished their international practicum and thereby gain much practical information.

The *in-country phase*, which is three months, starts with a week in the Namibian capital where they attend orientations and lectures by local professors and NGOs. Moreover, in this phase they are exposed to the local culture, schools and university. The lectures focus on the challenges in the education system, and of being a teacher in Namibia. After this week, they travel to their final destination, Tsumeb, and start their practicum in local schools. Students are placed in pairs so that they can more easily share experiences. The students share hostel lodgings, they do not live with local families. Halfway through the stay we arrange group discussions and individual tutoring. Topics such as culture shock, the students' feelings and behaviour, their frustrations, and the role of being a teacher in a very different context are raised. We furthermore raise questions about Norwegian values, habits and points of view. We specifically ask them to reflect upon how they can apply what they learned at the pre-departure course in the new setting. As part of their GTE education, they must write a BA-thesis. The

students attending the international practicum programme write the thesis with data they collect during their practicum in Tsumeb and focus on challenges in the local schools. We find that this strengthened their reflections on how local factors affect the learning process both on the individual and structural level. The *re-entry phase* starts when they are back in Norway at the university college. We have group discussions and individual discussions where we discuss their experiences on a professional and personal level.

The students from Oslo and Akershus University of Applied Sciences (HiOA) follow the same phases of preparation, in –and post-service follow-up focusing on the same topics as that of INN for their placement and studies in and around Cape Town, South Africa. The only differing elements are: 1. The students are in particular exposed to theories of whole school development approach (Davidoff & Lazarus, 2002; Fullan, 2004) with a focus on the well-being and resilience of teachers in challenging contexts (Olsen & Collett, 2012; Olsen, 2017) both pre-phase and during the in-country phase. 2. Twice through their stay the students get together from the three placement schools for joint reflection on their experiences, frustrations etc. as described for the INN students above. The first reflection session is organised after two to three weeks in the placement schools to deal with feelings related to culture shock - and for some students it involves how to manage traumatic experiences of teachers using different forms of harsh disciplinary methods. The second joint session takes place after 2/3 of their stay is completed. The purpose of the sessions is firstly to enable the students to take agency to address the impact that the contextual challenges have on their own and peer students well-being. Secondly the aim is to enhance the students' level of reflection and therefore understanding of how contextual issues such as poverty impact on the school and what takes place in the classroom, the teacher (stress levels and teaching style) and the learner. Furthermore, twice through their stay the students are supervised in their class practice performance. Local lecturers from HiOA's partner, the University of the Western Cape (UWC), Cape Town, conduct the supervision. In addition, the students placed in South Africa are accommodated differently from the INN students in Namibia. The HiOA students all live with a teacher family while the INN students live as a group together in one house. The accommodation with teacher families provides the students with an additional arena for daily reflection on their experiences in the placement schools. The students' interpretations of their experiences are in this way exposed to corrections or nuances from their host teacher, which in return may encourage students to deal with and understand the issues involved at a deeper level.

3. Methodology

In order to gain insight into how the students' intercultural competence develops during their three-month practicum in Namibia and South Africa, we conducted a qualitative study. The nature of the qualitative data was of pivotal importance during the process of interpreting the meanings, that the respondents themselves presents,

and how they linked these to the social reality of the local communities. Within a qualitative methodology, the focus is on the meanings, values, intentions and emotions of the informants, and the main goal is to obtain an understanding of their perspectives (Kitchin & Tate, 2000). Drawing on the methodology of Willard-Holt (2001), developed for pre-service teachers in international programmes, we developed two open-response questionnaires to be answered pre- and post-practicum. The semi-structured questionnaires were designed to provide insight into the characteristics and outcomes of a perspective transformation. The pre-practicum questionnaire (Q1) and the post-practicum questionnaire (Q2) are very similar in order to allow a direct comparison to show how the three-month practicum has affected the students in terms of issues related to intercultural competence. The questionnaires are numbered in such a way as to ensure that the pre-practicum and post-practicum answers from the same student can be compared, as well as securing the anonymity of the students. The questionnaires consist of a mix of fixed questions where the respondents mark their perceived level of, for instance, tolerance or knowledge on a given scale, and open-ended questions where the respondents explain and elaborate in their own words. In addition, we conducted one focus group interview halfway through the students' practicum and one after their return. The same themes were raised in these group interviews as in the questionnaires. Individual tutoring, a written student reflection note and informal conversations with the students during and after their stay abroad also contributed valuable knowledge to the study.

We had students in schools in Namibia and in South Africa. The data was collected from 6 groups of students: In Namibia we collected data from 16 students in 2014, 20 students in 2015 and 7 students 2016. In South Africa, we gathered data from 8 students in 2014, 10 students in 2015 and 18 students in 2016. With a few exceptions, most of the students were white, Norwegian born young adults in their twenties.

The group interviews and reflection texts were analysed using inductive open coding. We did not use a coding mechanism for the data, but through continuous reading of the interview transcripts, discussing interpretations with the research team, and developing a consciousness with regard to our own assumptions in a reflective process, we gradually developed a deeper understanding of the material. In this way, interpretations of meanings were made. We organised the interview transcripts and the open questionnaire data into meaningful categories, within the framework of the research aims and questions of this research. This is in line with the arguments of researchers supporting a phenomenological approach in order to understand the meaning of others (Bogdan & Biklen, 2003). Miller & Crabtree point to making meaning out of experience and write: "Phenomenology answers the question, 'What is it like to have a certain experience?'" (1992:24).

In the analytical process we were assisted by the theories and studies reviewed for this research. According to Holmarsdottir (2005), theories can help researchers understand and organise the data of experience. "They permit the researcher to summarise relatively large amounts of information via a relatively short list of propositions, and therefore bringing meaning to what is otherwise chaotic and inscrutable"

(Holmarsdottir, 2005:256). An important challenge for analysing the data of this thesis was therefore to look underneath what the respondents were saying and not only *why*, but also *how* people say what they say.

The investigation does not provide a basis for statistical generalisation based on empirical data from a sample of a population considered representative of the whole population. We find, however, inspiration in the concept of analytical generalisation introduced by Yin (1993). Yin argues that context-related units of study can be used to compare with previously developed theory and thus provide a basis for analytical generalisation.

4. Results

Our findings are in accordance with those of many other studies in the sense that immersing students in another culture does not automatically mean that they become interculturally competent. Some of the students in our study have learned to appreciate differences between cultures and have opened up their minds and increased their acceptance of differences. However, others have returned to the home country more certain than ever of the superiority of their own culture. Whiteness theory helps us to understand why it is so easy for our students stick to their initial perspectives, as it is natural for them to interpret the other culture through their own cultural lenses. The main findings from the present study from INN seem to support the contention that it is easier to stick to one's initial perspectives on one's own and other cultures. Moreover, our preparation and follow-up of the students have not been able to counteract this.

However, some of the students had become more open and tolerant towards other cultures and developed their communication skills with people with a different cultural background. After their stay, most the students said that they felt at ease when engaging with people from other cultures. Only one student had become more negative after the practicum than before. In general, they had become more relaxed and curious about cultures different from the Norwegian. The warmth of the people, the openheartedness and the friendly atmosphere they experienced contributed to a positive view of other cultures.

The students also reported that some aspects of Namibian culture were problematic, especially those related to gender issues and child rearing. Students find corporal punishment of children stressful. For some students, the difference in culture gave them a negative impression of Namibian society and culture. For these students, their stay seems to have reinforced a neo-colonial attitude. They experienced their own culture as the only viable one and as superior to Namibian culture.

Minimization, i.e. seeing one's own culture as universal, was also typical, especially in student discussions about the professional aspects of their stay. The students assumed that the teaching style, teacher-student relationship and other aspects of being a teacher that they had learned in Norway were applicable in Namibia. They did not reflect upon the fact that teaching is embedded in ideologies and context (Kabilan,

2013). Most students criticised the teacher's classroom praxis without looking for reasons. Few students questioned the reasons behind Namibian and South African classroom praxis and the teachers' behaviour. More typically, many students developed a negative understanding of the local school culture that strengthened their belief in the superiority of Norwegian school culture. We saw little reflection upon how the local culture, values and customs influence classroom practices and teacher-student relationships

The findings specific to the students' experiences in South Africa reveal that the students found that even if some issues were difficult to raise with their cooperating teachers, the teachers were very helpful in the process of interpreting and contextualising their experiences. As mentioned above the students live in pairs with host families, usually a teacher (not the cooperating class teacher) or parent linked to the placement school with the intention to provide an additional arena for reflection and learning. Where there were difficult issues to raise with their cooperating class teacher, such as harsh disciplinary methods and dominant teacher-led style of teaching, the students felt more at ease discussing these with their host teacher at the supper table at night.

The students do, however, report frequent misunderstandings in their general communication with teachers in the school due to language and cultural codes and how these could be clarified and corrected in these discussions at their home stay. Knowledge of how culture affects communication is important and highlighted by, amongst others, Hindrix (2017). The South African schools in our study have learners from impoverished and crime-infested urban and semi-urban townships in and outside the city of Cape Town and Paarl. The learners are exclusively from the "Black" isi-Xhosa and "Coloured" Afrikaans speaking population groups.

In general, the student teacher in South Africa seems to be more able to reflect critically on the teaching and living conditions in South Africa than the students in Namibia did. This observation has led us to look at the differences between the two programmes. The major difference is that the students in South Africa live in private homes, which will give them a closer understanding of how the life is for families in South Africa and an opportunity to get feedback on a daily basis on their observations and challenge their cultural flexibility and cultural resilience in addition to giving them cultural knowledge. The students in Namibia live in hostels and they do not mix with locals who could challenge their views and interpretations on a daily basis. Contrary, being left alone might lead to strengthening of stereotype interpretations of Namibian customs. Likewise, being given a local supervisor might also be helpful. A local supervisor will help them to develop a working relationship with colleagues and open up to alternative ideas and perspectives. Thus, the students in South Africa are exposed to local colleagues and families during their practicum and this might be the reason that they seem to develop a stronger intercultural competence than the students in Namibia. The focus on teacher well-being and the introduction to self- and peer supportive well-being techniques in the pre-phase and in-country phase seem to have helped reduce students' anxiety and frustrations linked to teaching and

communicating in multicultural and language complex contexts. The pre-phase training in school development and teacher well-being seem to have assisted the students in acquiring a deeper understanding of how an impoverished home environment can impact on learners' school attendance and active participation. The findings indicate that the systemic reflection built into the practicum enables the students to move towards greater self-knowledge, cultural sensitivity and flexibility. The students in South Africa demonstrate empathy with their learners through a stronger acknowledgement of how the socio-economic environment of the school must be conducive to what happens in school in order to make learning meaningful and relevant (Meerkotter, 2001). The students learned ways of providing social and emotional support to learners struggling, which in turn seem to have helped reduce the students' own frustrations when dealing with emotionally disturbing situations.

5. Conclusion

Our research findings are in accordance with those of many other studies: immersing students in another culture does not automatically mean that they become interculturally competent. Some of the students in our study have learned to appreciate the difference between cultures and have opened up their minds and increased their acceptance of differences. However, others have come back home more certain than ever of the superiority of their own culture. The results vary between our two HEIs with the one having a somewhat better outcome when it comes to achieving the main aim of the international practicum programme. As described above, students from both institutions went through an extensive international practicum programme. The aim of the programme is to help the students develop intercultural competence. The two programmes had many similarities, the main differences are that the HIOA programme put more emphasis on local supervisions, had more regular supervised reflection sessions, and the students lived with local families. These factors seem to have a positive effect on the student teachers' ability to become more intercultural competent during their international practicum period. The students' home-stay with a teacher family have a particularly strong bearing on how the students interpret and make immediate meaning out of their daily experiences. They develop a deeper understanding of the interrelationships between the school's context, what happens in the classroom and how this impacts on the well-being of both teachers and learners. In situations of challenging communication with their cooperative class teachers and with learners, we find that the students have the ability to show cultural responsiveness and flexibility and shift the perspective towards the local context – key factors in building intercultural /competence instead of fitting the "new" into existing frames of references as pointed out by Mezirow (1997).

In order to help the student teachers taking part in an international practicum programme to become intercultural competent we must improve the preparation and follow up of students. We see that there are improvements in all phases, especially during the in-country phase and after the students come back home. During the in-

country phase, we need to work harder to challenge the students' reflection on a daily basis. The HIOA model should be implemented for all students. We think that it is important to help the students to adapt their behaviour and communication style in an intercultural context, and explore alternative behaviour patterns. It is also important to help the student to deal with the difficulties and negative feelings that may arise in intercultural encounters in a constructive way. Living with local families and having a local supervisor will be a good intervention in these respects. During the pre-departure phase, it is important to continue to work on cultural self-knowledge. It is important that the student knows and understands his or her own frame of reference and worldview and is able to link these to other viewpoints. The weakest point in our programme is the post-phase. In the present programme we meet the student one day for a reflection on their stay in Africa. This is too short a time. We need to extend this and work on their experiences through a longer period of time. Our argument is supported by Leeman & Ledoux (2003, 2005), who maintain that conscious intercultural competence can only be developed when experience is coupled with knowledge and reflection. They show that one of the biggest problems in intercultural communication is the tendency to believe the "others" are like "us" in spite of knowing that people are bearers of different world views and values and traditions. Therefore, in line with Vande Berg (2012), we conclude that the key to making the students international practicum more effective is to support students to intentional mentoring and guiding that is designed to help them reflect upon themselves as cultural beings and to become aware of the ways they respond to and make meaning within different cultural context. Immersion is a necessary but not a sufficient condition to develop intercultural competence.

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The benefits of using improvisational strategies in real life situations

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Abstract: This research encompasses the history of improvisational theatre, the fundamental characteristics of theatrical improvisation, and the benefits of engaging in improvisation that improve a life of an individual in a variety of contexts. The main aim of this research was to discover if the participants of the course Drama Workshop in English Language offered at the Faculty of Education, Josip Juraj Strossmayer University of Osijek, Croatia, have been for over a decade benefiting from using improvisational strategies in real life situations. The data was acquired by means of a questionnaire, interviews, and online sources revealing the beneficial influences of improvisational techniques on the development of specific skills and competencies. The results confirmed that the representatives of several generations of students who attended Drama Workshop in English Language at the Faculty of Education after the course perceived beneficial improvements regarding their personality development, social skills, as well as language and communication skills in their daily life. The most striking results were obtained in the area of second and foreign language acquisition regarding the expanding of one's vocabulary, the development of presentation skills as well as conversational fluency, which highlights the value of improvisational strategies in teacher training and general instruction.

Keywords: improvisational theatre, foreign language skills, communication skills, personal and social development, conversational fluency.

1. Introduction

It is commonly known that improvisation is an act of saying, playing, or acting in a given moment rather than planning in advance. Patricia Ryan Madson, the author of *Improv Wisdom: Don't Prepare Just Show Up* (2005) and professor emerita at Stanford University asserts that the whole human existence is brimming with improvised situations (p. 15). In her book, she lists thirteen maxims of improv "[that] can help [people] meet real life challenges more skilfully, and with a sense of humour" (p. 19). According to Viola Spolin, the founder of improvisational theatre in the USA and the author of the ground-breaking book *Improvisation for the Theater* (1963/1999), each and every human being is capable of improvising (p. 3). Most people understand the act of courageously entering the area of the unknown and becoming unaware of what the future holds as an act of improvisation. Improvising in theatre, however, demands a high degree of skill; theatrical improvisation is a method in which no dramatic text is

used, but which covers various forms of theatre that are used in many ways when practising, preparing, or performing various dramatic material as well as in numerous other contexts (Nemet Flegar, 2016, p. 13). The course Drama Workshop in English Language at the Faculty of Education, Josip Juraj Strossmayer University of Osijek (Croatia), has been utilising improvisational techniques derived from improvisational theatre also known as Impro/Improv⁵ since the academic year 2005/2006. Accordingly, this research was conducted in order to gain insight into the effect of improvisational exercises and games on the participants of the course Drama Workshop in English Language, offered in the second year of Teacher Studies. Additionally, because improvisational theatre is a popular theatrical form, the results have been supported by improvisational experiences shared online by participants of improvisational workshops and classes internationally. Therefore, the research led to insights regarding the beneficial changes in self-perception that both participants of Drama Workshop in English Language and the participants of other improvisational workshops elsewhere have in common. The effects that may be perceived by the participants of improvisational workshops include better listening skills, generally improved communication skills, and fruitful group collaboration. In the context of Drama Workshop in English Language they may also include higher self-assurance with regard to their English language skills and generally higher self-confidence.

2. Literature review

2.1. History of improvisation

Theatrical improvisation is almost as old as human kind, for it originated with the oral tradition of storytelling, ritual, and myth. However, the most direct ancestor of modern improvisation is the *commedia dell'arte* which was a theatre form that developed in the sixteenth century in Italy in which dialogues were improvised within a provisional scenario. Višnja Machiedo reveals that the older name for *commedia dell'arte* was *commedia all'improvviso*, which suggests that improvisation was one of its fundamental characteristics (pp. 13-15). Improvising within a dramatic frame, the usage of masks and stock characters as well as the comedy in *commedia dell'arte* are some of the elements that were preserved in improvisational theatre. Nemet Flegar (2016) explains that *commedia dell'arte* disappeared after approximately two centuries, however its cult of laughter and numerous structural elements and characteristics were carried over into modern improvisational theatre (p. 16). Following the improvisational practices of Konstantin Stanislavski and many others, Viola Spolin is considered to be one of the first 20th century theatre practitioners to study and teach improvisational theatre techniques that can be applied in improvisational practice. In her book *Improvisation for the Theater* (1999), which is recognized as "the bible for improvisational training" (Gellman, 2004, p. 43), Spolin thanked Neva L. Boyd, a sociologist at the faculty of Northwestern University for

⁵ Impro (BE), Improv (AE).

providing her with “an extraordinary training in use of games, story-telling, folk dance, and dramatics as tools for stimulating creative expression in both children and adults, through self-discovery and personal experiencing” (p. xlvi). In 1955 in Chicago she ran workshops for the country’s first improvisational acting company, which, as Bruce Bebb (1988) reports, was started by a small group of young people including David Shepherd and her own son Paul Sills. The combination of Shepherd’s and Sills’ ideas resulted in the revue *The Compass Players* and later on the establishment of *The Second City*, theatre, club and the school of improvisation, which became home to numerous famous American comedians, writers, and celebrities (Nemet Flegar, 2016, p. 17). *The Second City* also influenced the development of *ImprovOlympic (iO)* by Del Close, the legend of American improvisational comedy and the inventor of the long-form improvisational format “the Harold” (Halpern, Close, & Johnson, 1994, p. 8), who also made Chicago one of the leading improv capitals to the present day.

At approximately the same time another pioneer of theatrical improvisation, Keith Johnstone, started to build his reputation in 1956 at the Royal Court Theatre in London where he:

[...] started to teach his own particular style of improvisation, much of it based on fairy stories, word associations, free associations, intuitive responses, and later he taught mask work as well. All his work has been to encourage the rediscovery of the imaginative response in the adult; the refinding of the power of the child’s creativity. (Gaskill, as cited in Johnstone, 1979/1989, Introduction)

Due to his disappointment with formal education, Johnstone used “reversed methods” by advising his students to be more obvious, to be more boring and not to concentrate, which was an approach that gradually made improvisation a theatrical form legally performed on stage. After his emigration to Canada, Keith Johnstone developed *Theatresports* (Salinsky & Frances-White, 2013, p. 4), founded the *Loose Moose Theatre*, and other patented inventions such as *Micetro Impro™* and *Gorilla Theatre™* (p. 7) in which even “exists a mechanism by which ‘failures’ – scenes which didn’t go the way the players hoped they would – can be incorporated in the show and made entertaining” (pp. 8-9). In his book *Impro: Improvisation and The Theatre* (1979/1989) Johnstone thoroughly described his approach and philosophy of *Impro* by writing about *Status*, *Spontaneity*, *Narrative Skills*, and *Masks*, which are still considered revolutionary for the theatre and are the foundation of what is nowadays known as Johnstone’s “*Impro System*” (Robbins Dudeck, 2013). Spolin’s and Johnstone’s approaches remain the foundation of contemporary improvisational theatre. Spolin’s method was based on focus, “physicalization”, and intuition, accentuating that anyone is “stage-worthy,” and valuing the importance of play, while Johnstone’s was based on welcoming mistakes and failure, developing the skills of storytelling, and constantly encouraging spontaneity. Theatre games, the *Impro System*, as well as a variety of formats in contemporary improvisation are the basis for this flexible, fluid, and adaptable dramatic form, which is nowadays performed both on stage and screen and used in the most diverse walks of life to train actors, professionals, students, teachers, and enthusiasts.

2.2. Principles of improvisational theatre

Improvisation in theatre opens up many ways of creating a spontaneous environment where improvisers may feel free to explore and react in the moment. In essence, “the theory of theatrical improvisation assumes that all inspiration and creation comes from initial spontaneous impulses and not deliberate reflection and contemplation” (Flegar, 2013, p. 88). There are lots of different types of theatrical improvisation, which all consist of a combination of unique improvisational structures and various forms of activities that enable improvisers to express themselves freely on stage. In other words, not everything that one spontaneously improvises on stage is considered theatrical improvisation, but there are specific rules and principles which are placed in the context of an improvisational activity, such as an exercise or a game. Specific structures of improvisational theatre also include warm-up exercises and ask-fors, which encourage audience involvement. In other words, improvisational theatre nurtures specific activities and formats that enable spontaneous expression. Therefore, Bernard Downs (2004) defines four characteristics of an improvisational game: the automatic individual adjustment between the degree of ability and difficulty, the existence of the controlled environment, the demand for concentration which focuses the participant on the present moment, and immediate relaxation as the result of focus. Similarly, Spolin’s mentor Neva Boyd described playing an improvisational game as:

[...] the ability to create a situation imaginatively and to play a role in its tremendous experience, a sort of vacation from one’s everyday self and the routine of everyday living. We observe that this psychological freedom creates a condition in which *strain* and *conflict* are dissolved and potentialities are released in the spontaneous effort to meet the demands of the situation. (as cited in Spolin, 1999, p. 5)

Tom Salinsky and Deborah Frances-White (2103) explain that the process of learning to improvise involves learning to turn off a lot of instinctive behaviour, which has proven to be “very useful in achieving most people’s top priority: maintaining a feeling of comfort and safety” (p. 125). Consequently, according to Carol Hazenfield, “no written play can match the edge and spontaneity of an improv show – the audience members know they’re watching the actors’ imaginations at work” (p. 9). In her book *Acting on Impulse* (2002) she argues that improvisers can “create the [same] levels of comedy, tension, sorrow, and joy because [they] are improvising, the stakes are higher – there’s no script to act as a safety net” (p. 10). Not knowing what comes next develops scenes that are either utterly comic or filled with tension since improvisers are acting without predicting or over thinking. However, improvisational theatre is based on varying sets of rules and principles of communication, which act as players’ general guidelines. For Ronald Alan Berk and Rosalind H. Trieber (2009) those are trust, acceptance, attentive listening, spontaneity, storytelling and non-verbal communication (pp. 31-33). Overall, players in the improvisational context are given the chance to explore where spontaneous interactions could lead them and what “acting on impulse” really means.

3. Benefits of improvisational techniques in a non-theatrical context

Nowadays improvisational theatre techniques are not intended for only actors. Because they possess the adaptable game structure, they are applicable in a variety of contexts with subjects of different ages and backgrounds. Improvisational theatre techniques have been used for decades for a variety of useful purposes, both in the theatrical and in non-theatrical contexts; as part of therapy and evaluation methods of “psychodrama” and “sociodrama”, in educating actors, preschoolers, children with special educational needs, counsellors, social workers, business teams, or teachers (Zaunbrecher, 2011, p. 50). Improvisational theatre easily interlocks with lots of different fields, and as such, provides high development of communication skills, focus, spontaneous reactions, and creative thinking (Nemet Flegar, 2016, p. 62). Moreover, the process of improvising can lead to personal transformations (Hazenfield, 2002, p. 206). Not only is engaging in theatrical improvisation liberating but it also has a potential and very concrete influence on the development of one’s personality, social skills, language, and communication. Accordingly, as Hazenfield claims, “improvising opens channels [improvisers] didn’t even know [they] had: channels of perception, communication, and emotion” (p. 12). In teacher training, improvisational techniques might bring about significant benefits regarding one’s personality, social skills, communication, and foreign/second language acquisition as well as the concrete knowledge of improv-based teaching strategies in the classroom. In the following sections, each of the categories outlined in this research is supported by sound theoretical bases.

3.1. Influence on personality

Engaging in improvisational training may result in positive effects with respect to one’s own personality development. In her book *Improv Wisdom* (2005) Patricia Ryan Madson discusses the principles of improvisation applied to one’s life-style and attitudes. Likewise, Hazenfield (2002) states that “improvising holds up a clear unerring mirror and challenges us to look at ourselves” (p. 12), adding that “the fact that we get to learn about ourselves is a beneficial by-product of the process” of improvising (p. 49). Similarly, Arthur Morey reports that Viola Spolin’s exercises in her book *Theater Games for the Classroom* “help students in developing performance skills [as well as] make students more knowledgeable of themselves [and] go beyond the theatrical to nurture skills and attitudes that are useful in every aspect of learning and life” (Preface). According to Keith Johnstone (1979/1989), in the moment when improvisers decide to do or say things spontaneously they are being who they truly are (p. 119). Consequently, improvisational techniques and strategies help improvisers lower their anxiety levels and the fear of public speaking. While acknowledging the general anxiety and fear of “being looked at on stage” (Johnstone, 1979/1989, p. 30), Johnstone often applied Joseph Wolpe’s methods for curing phobias when working with overly anxious students in order to make them feel more relaxed. Nevertheless, one of the most prominent personality traits to emerge from improv is risk-taking, which Salinsky and Frances-White (2013) describe as the essence of improvisation (p. 163). Therefore, some of the aspects of personality that can be affected by

improvisational training are becoming more adventurous by opening to new life situations, getting out of one's comfort zone, starting to trust one's instincts, and feeling more confident and less anxious about communicating, giving a speech, or presenting in public. Those are some of the valuable assets when it comes to getting by in life and handling demanding situations, particularly in the classroom.

3.2. Developing social skills due to group collaboration

Johnstone in his book *Impro for Storytellers* (1994/1999) recalls advising his students to "keep checking up on [their] partners to make sure they're having a good time" (p. 59). Similarly, Ryan Madson (2005) stresses that "each [improviser] works for the welfare of the others" and that "consummate improvisers are marked by their generosity, courtesy, and ability to watch out for the needs of their teammates" (p. 123). In other words, the essence of improvisation is learning how to work together from one moment to the next without a known formula (Ryan Madson, 2005, p. 126). Likewise, Spolin (1963/1999) claimed that "improvisational theater requires very close group relationships because it is from group agreement and group playing that material evolves for scenes and plays" (p. 10). The essence of improvisational communication is accepting "offers", which can be verbal or non-verbal. Accepting does not only imply agreeing with an offer, but also building on it, while "blocking" means rejecting an offer. Assuming that the group is participating and agreeing on various offers and choices, it is able to "remove all the imposed tensions and exhaustions of the competitiveness and open the way for harmony" (p. 11). In view of all of the above, it is easy to understand why successful companies hire improv coaches in order to improve team work collaboration. According to John Harthorne (2014) improv training can teach start up founders and future entrepreneurs about interacting with employees, investors and mentors because good communication between work colleagues is the key to the success of a company (para. 1). Each individual that decides to get involved in improvisation by way of a workshop or otherwise might experience beneficial changes in their social skills. This might include a form of natural communication with other group members that may result in overall improvement when communicating with other people.

3.3. Communication

There is no doubt that improvisers continuously engage in various forms of spontaneous communication. Much like real life interactions, improvisational theatre is not scripted. Spolin was convinced that styles in theatre are subject to continuous change because "the techniques of theatre are the techniques of communicating" (1963/1999, p. 3). Communication encompasses a wide array of expression, for "when we communicate, we use words, body language, vocal tone, facial expression, and emotion to convey our meaning" (Hazenfield, 2002, p. 74). Since words themselves are just as important as non-verbal communication, improvisers are advised to open all their channels of perception in order to get a better idea of what the other person is trying to communicate (p. 74). In other words, players are encouraged to follow cues from their environment and their fellow players, and focus on the present moment.

Within their theory of improvisation as “bodily poeticizing”, which includes the “epistemic stances” of communication, playfulness, sedimentation, sensuality, and vulnerability, Lesa Lockford and Ronald J. Pelias (2004) point out that “the performer’s work requires a communicative connection”, which leads improvisers to become “aware communicators” who are able to use their “cognitive, affective and intuitive abilities [...] in order to absorb interaction details, create characters, and establish relationships” (p. 434). Therefore, an improvised scene is an environment of constant and diverse interaction in which the players are focused on the same issue which leads to broad communication (Matthias, 2007, para. 2). However, the most important medium through which improvisers communicate are with their bodies, a process referred to by Spolin (1963/1999) as “physicalization” (pp. 16-17), which “opens up communicative possibilities, and eventually enables students to overcome cognitive and psychological barriers to successfully move towards greater linguistic proficiency and communicative freedom” (Matthias, 2007, Abstract). Therefore, the aspects of human communication that can be affected by improvisational training are the improvements in listening and speaking skills. The attention and focus on fellow players as well as the reading of cues may result in the development of social intelligence and improvement in their overall public performance skills.

3.4. Foreign language acquisition

As the research was conducted predominantly within Teacher Studies Modul C (English language) at the Faculty of Education, it was assumed that the implementation of improvisational techniques impacted the development of foreign/second language skills. It is commonly known that people thrive at learning in an environment where they are not being criticized, discouraged by disapproval, or punished for making mistakes. The same applies to the acquisition of a foreign/second language, especially in the context of theatrical improvisation. Spolin (1963/1999) often spoke of approval/disapproval from authority as highly debilitating and asserted that “when response to experience takes place at the intuitive level, when a person functions beyond constricted intellectual plane, intelligence is freed” (pp. 3-4). Therefore, when acquiring a foreign/second language in the improvisational context people start to use the target language more freely and spontaneously by default. In improvisational theatre, which functions within the structure of an improvisational game, the emphasis is on the actual communication and spontaneous language production (Nemet Flegar, 2016, p. 55). Johnstone (1979/1989) encouraged his students to speak before they over think their decisions because “once [they] say whatever comes to [their] mind[s], then it’s as if the story is being told by some outside force” (p. 131). Moreover, improvisational techniques used as communication and psychological strategies in foreign language teaching foster foreign language acquisition in terms of acquiring vocabulary, grammar, and developing four of the language skills of speaking, listening, writing, and reading (Nemet Flegar, 2016, p. 56). Therefore, the strongest impact of improvisational techniques can be perceived in language spontaneity and conversational fluency (Nemet Flegar & Kovačević, 2015, p. 57) as well as in overcoming public speaking anxiety and language anxiety.

Improvisational theatre can create an adaptive environment for students who fear the language by introducing strategies that may influence student's behaviour and the process of learning itself (Nemet Flegar, 2016, p. 60). Most importantly, most improvisational techniques are applicable with pupils and students of different ages and backgrounds. According to Matthias (2007), improvisational strategies which are introduced within the structure of an improvisational activity may elicit a "personal and creative response to whatever the linguistic input may be" (p. 59). Therefore, participants of foreign/second language improvisational workshops may start to perceive foreign language differently, begin to speak more freely without the fear of making language mistakes, and disregard the issues of approval/disapproval. They may also start to speak the language more fluently and may significantly expand their vocabulary. It is reasonable to believe that such natural communication may extend into their professional endeavours as well.

4. Methodology

4.1. Research goal

The main purpose of this research was to discover if the participants of the course Drama Workshop in English Language offered at the Faculty of Education, University of Osijek, for over a decade have benefited from using improvisational strategies in their real life situations. More specifically, the aim was to determine the potential influence of improvisational techniques on the self-perceived development of personality, social skills, (foreign/second) language skills, and communication in real life.

4.2. Hypothesis

The research was conducted under the hypothesis that the students who attended Drama Workshop in English language at the Faculty of Education in Osijek noticed beneficial changes regarding their personality development, their social skills, (foreign/second) language skills, and communication in their daily life after the completion of the course.

4.3. Method

The core instrument of collecting data was an anonymous questionnaire designed for the former and present students of the Faculty of Education.⁶ Fifty-three students who attended the course Drama Workshop in English Language were identified and contacted for the purpose of filling in the questionnaire, which later on provided the researchers with information regarding the participants' impressions during the course and their self-perception after the course. The questionnaire consisted of four different sections. The first section included the personal data and demographic information about the respondents, such as age, gender, work status, and period of time studying English language or improvisational workshop attendance. The second

⁶ The self-report form can be appended upon request.

section referred to the respondents' impressions during their attendance of Drama Workshop in English Language while the third section referred to their self-perception in real life situations after, and as the result of, Drama Workshop in English Language. The second and third sections included the five-point Likert scale that determined the levels of the participants' agreement or disagreement with the provided statements. The last section summarized the respondents' final thoughts, including the questions that revealed in which way specifically the respondents were affected by the Drama Workshop in English Language course, whether they still used some of the improvisational techniques in their everyday life, work, and other relevant contexts. The additional comments and impressions were obtained by interviewing two of the participants, Dinko Antun Kandjera and Sara Vasiljević, who attended the course Drama Workshop in English Language in the 2012-2013 academic year and who remembered the course in great detail, with one of the interviews conducted via email, and the other in person. The interviewees answered similar questions which covered four of the most important aspects that might have been affected by the offered course: development of personality, social skills, (foreign/second) language skills, and communication. The research was complemented by online reports on positive experiences during improvisational workshops such as health benefits, benefits of improving one's business career, bolstering one's confidence, and improving one's communication skills.

5. Results

The questionnaire was filled in by fifty-three respondents, the majority of them female (N=50), with only three male respondents (N=3). The youngest respondents were 19 (N=2), while the oldest was 34 (N=1). Furthermore, at the time 30 out of 53 respondents were students (56.6%), 8 worked as teachers (15.1%), 6 worked as trainee teachers (11.3%), 6 worked, but not as teachers (11.3%), 4 had graduated but were not yet employed (7.5%) and 2 out of the 53 were either unemployed or had dropped out of school (3.8%). Regarding the course Drama Workshop in English Language, the majority of respondents (N=35) reported that while choosing an elective course in that specific year of study, Drama Workshop in English Language sounded by far more interesting than the other elective courses. What follows is the analysis of the most outstanding aspects of the survey in categories where the benefits were perceived most clearly.

5.1. Analysis of the possible influence on personality

The analysis of the third section of the questionnaire that refers to the respondents' self-perception in real life situations after Drama Workshop in English Language showed that the majority of the respondents (77.4%) reported that after the course they could deliver a speech or a presentation less anxiously (see Figure 1). Yet, when asked to recall whether they felt fear but did the activities anyway at the beginning of the course, a substantial number of respondents (N=36, i.e. 67.9 per cent) agreed or

completely agreed with the statement of feeling anxious but engaging in the activities anyway.

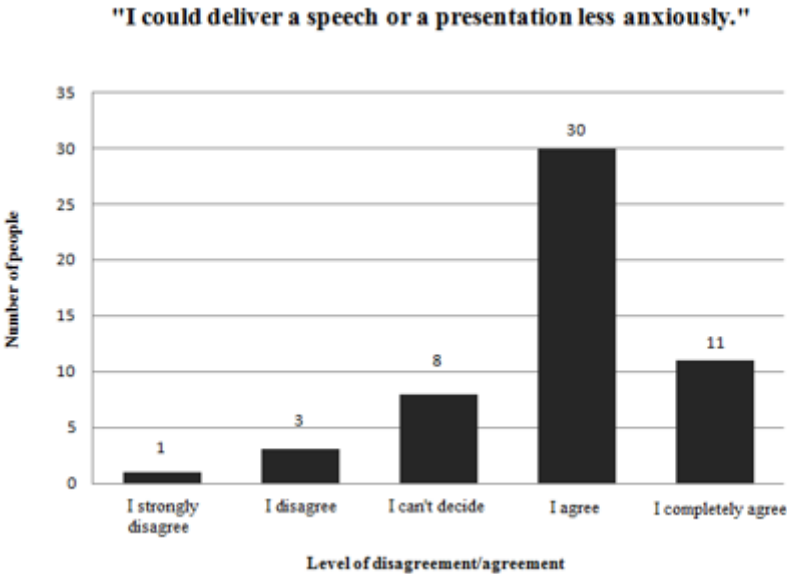


Figure 1: Histogram depicting respondents' levels of disagreement or agreement with the statement "I could deliver a speech or a presentation less anxiously."

Accordingly, many academic and professional improvisational sources confirm that taking up an improvisational class leads to the development of self-awareness and the mastering of skills that help one handle any mishap that occurs when a person is giving a presentation (see Pena, 2013, para. 2). For example, research at Klagenfurt University (Austria) in 2004 revealed that improvisational strategies significantly modified public speaking anxiety by transforming it from "debilitating" into "facilitating" anxiety (Nemet, 2014). Additionally, the majority of the respondents (88.7%) reported that they liked the activities and the games they were playing, which afterwards made them feel more adventurous in real life (73.6%). Similarly, when asked to decide if they agreed with the statement that the course made them feel more confident, 73.6% of the respondents agreed or completely agreed. This is in accord with numerous reports of participants of improvisational workshops developing a sense of self-confidence and agility as well as tackling their fears, which are great assets in professional life or when preparing for a job interview (Caldwell, 2015; Livengood, 2015). Furthermore, 66% of the respondents agreed or completely agreed that they saw themselves getting out of their comfort zone, which helped them bolster their self-confidence. Smith (2011) claims that being "pushed outside of [one's] comfort zone" encourages participants of improvisational classes to "live up to their true potential" (para. 1). Overall, the results show that the benefits regarding the developments of one's personality are visibly related to one's self-perception of increased self-confidence, alleviation of anxiety as well as the willingness to experiment and take risks.

5.2. Analysis of the possible influence on the development of social skills

When analysing the respondents' impressions during their attendance of Drama Workshop in English Language, 66% of the respondents agreed or completely agreed that there was initial embarrassment connected to improvising in front of other group members, which is expected in the face of newly introduced tasks and exercises. However, when asked to decide whether later on they felt comfortable being around one other, 73% of the respondents agreed or completely agreed with the provided statement. This might be because improvisational theatre often results in group cohesion as a result of sharing the stage in pursuit of a common story (Nemet Flegar & Kovačević, 2015). Likewise, the majority of the respondents (61%) reported that they developed a sense of trust with the other group members and 72% stated that they could feel that the group they were in was bonding. In the same spirit, the interviewee Dinko Antun Kandjera, recalled how it felt to improvise in front of other group members. Kandjera stated, "At the beginning it was a bit weird, because we didn't know each other as well as we did after the course and so we were a bit [so] to say stiff, but we became relaxed throughout the class and the teacher used great methods for relaxation..." (D. A. Kandjera, personal communication, December 1, 2016). Similarly, Linda Flanagan (2015) in her article on the topic of learning through improvisation quotes Deana Criess, director of Improv Boston's National Touring Company, saying that "improv depends on the group providing categorical support for every answer, participants also grow in confidence and feel more connected to others"(para. 4). Flanagan adds that in order "to persuade students to abandon their fear of mistakes, [Criess] insists on unconditional support to all answers, then works to build trust among the group and invite risk-taking". On a lighter note, since improvisation utilises a high level of fun, it does not come as a surprise that 98% of the respondents agreed or completely agreed with the statement that during the course there were times when they laughed a lot. In a positive atmosphere people tend to build relationships with one another, which was confirmed by the fact that slightly more than half of the respondents (56%) agreed or completely agreed with the statement that after the course they became close friends with the people from their groups. In his web log "Health Benefits of Practicing Improv" Jason Caldwell (2015) affirms that "practicing improv with friends builds a camaraderie because you are each other's therapy. You bring great joy to the people around you and they bring you joy as well. There are few activities that bring happiness like practising improv" (para. 3). Therefore, the challenges and positive atmosphere of an improvisational workshop based on "accepting" and "building" can result in group cohesion as well as the building of trust and collaboration. Most of these benefits, however, are perceived during the course because they are directly tied to the communicational aspects of improvisational theatre techniques.

5.3. Analysis of the possible influence on communication

Spontaneous communication between improvisers is an inevitable aspect of every improvisational course or workshop. Additionally, improvisational communication is marked by specific parameters as described earlier. Thus, the analysis of the second

section of the questionnaire that refers to the respondents' impressions during their attendance of Drama Workshop in English Language showed that 91% of the respondents agreed or completely agreed with the statement that they constantly interacted with each other throughout each session of the course. As a result, 54% of the respondents reported that they became better listeners after the course, which is in accord with the popular observation that "improv teaches us to listen more patiently and to respond more slowly than we may be accustomed [which] allows us to be present to colleagues and friends in ways that we may never before have been" (Asghar, 2015, para. 9). Furthermore, as 81% of the respondents agreed or completely agreed that during the course most of the activities were based on a variety of improvisational conversation topics, the data showed that after the course the majority (66%) of the respondents noticed that they could more easily get into and develop a conversation with others. Since communication occurs on both verbal and non-verbal level, 85% of the respondents detected body language being used as a tool of communication during the course. Therefore, after the course 59% of the respondents agreed or completely agreed with the statement that they could read someone's body language much better than before. Additionally, 81% of the respondents agreed or completely agreed with the statement that the activities taught them more about verbal as well as non-verbal communication, which led to the recognition that the majority of respondents (N=37, i.e. 70%) noticed improvement in their overall communication skills (see Figure 2).

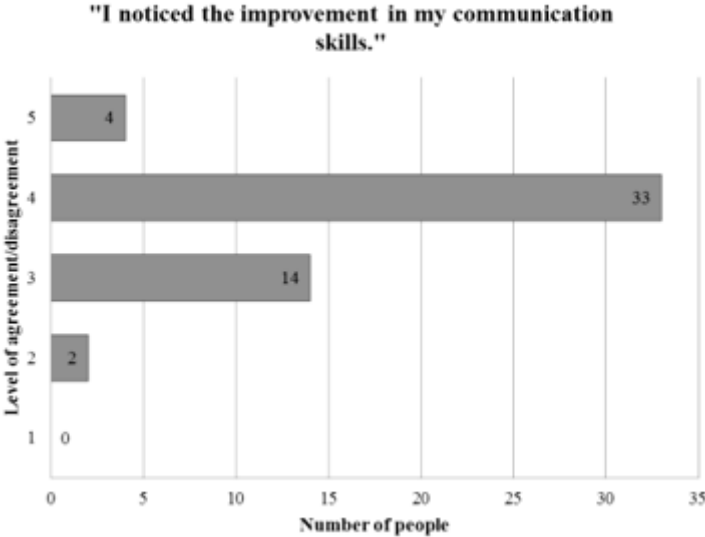


Figure 2: Bar chart showing respondents' levels of disagreement or agreement with the statement "I noticed the improvement in my communication skills".

Due to the specific structure and formats of improvisational theatre, improvisational training often presents a challenge for the participants. However, the exposure to improvisational structures often impacts participants' communication skills, not only with regard to their performance, but also in terms of listening and detecting cues from their fellow speakers. As such, this type of training may impact one's relationships in personal and professional life as well as result in empathy and the recognition of other people's needs.

5.4. Analysis of the possible influence on foreign/second language skills

Within this study, most of the respondents reported to have been studying English since primary school (N=43), which makes up 81% of all the respondents. Other responses included learning English since kindergarten (11%), secondary school (6%), and nursery school (2%). The course Drama Workshop in English Language is a course throughout which the participants are required to speak English at all times, as it is primarily offered to future teachers of English at the lower primary school level. Accordingly, 90% of the respondents confirmed that they spoke English throughout the whole course. As a result, a high percentage of respondents (75%) agreed or completely agreed that they noticed that the course expanded their vocabulary. Also, during the course more than half of the respondents (61%) agreed or completely agreed to have perceived most of the participants making language mistakes but that it did not matter. Further results revealed that after the course 68% of the participants did not worry about making language mistakes while speaking English, while only 9% disagreed with the statement. The interviewee Sara Vasiljević commented on the experience as follows:

In the beginning, I was a little unsure of myself because I was afraid I'd make a mistake. But with time we all relaxed and it was normal to interact in English. Over time, our language was getting better and we all felt more confident while speaking. I believe that my colleagues and I became more proficient and secure in speaking English. (S. Vasiljević, personal communication, December 5, 2016)

Likewise, approximately half of the respondents (53%) agreed or completely agreed that during the course they were self-conscious about their English but that after the course they felt more confident about their English-speaking skills (68%). During the course, the participants were encouraged to react spontaneously without overthinking. Therefore, when asked to decide whether they agreed or disagreed with the statement that during the course they would say the first thing that crossed their minds rather than preparing what to say, a bit more than a half of the respondents (54%) agreed. Apparently, after the course 68% the respondents felt more self-assured when they were required to communicate in English while only 2% disagreed (see Figure 3).



Figure 3: A pie chart showing the level of agreement or disagreement with the statement "I felt more self-assured when I was required to communicate in English".

Finally, 58% of the respondents reported that during the course there were times when speaking English felt like using their mother tongue, which was complemented by the fact that 66% of the respondents agreed or completely agreed that they started speaking English more fluently after having completed the course. The fact that the course was taught and conducted in English posed an additional challenge in terms of expected higher language anxiety than in the context of using one's mother tongue. Paradoxically, the greatest benefits were perceived in this category.

6. Discussion

After comparing the results within the selected categories, although improvisational techniques had influence on the majority of the participants from different generations (2005-2015) with respect to their personality, social skills, communication skills, and foreign/second language skills, it became apparent that the greatest impact was perceived with respect to the respondents' language and communication skills. The participants spoke English throughout the whole course (90%) even though they were self-conscious about their English-speaking skills and were aware of making language mistakes. However, it was reported that their vocabulary expanded (75%), that they were more self-assured when required to communicate in the English language (68%), and that they subsequently perceived themselves speaking English more fluently (66%), which at times felt like using their mother tongue. The participants reported to have constantly interacted with each other throughout each session of the course (91%) by engaging in various improvisational exercises and games and were exposed to both verbal and non-verbal communication. Thus as the result of the course the participants perceived themselves being able to easily get into and develop a conversation with other people (66%), while the majority noticed improvement in their overall

communication and presentation skills (70%). In view of all of the above, it is no surprise that the former students of Drama Workshop in English Language often admit to using improvisational techniques in their own classroom.

However, there are considerable limitations to this study that caution to over-generalize the results: the relatively small sample of respondents of the participants of Drama Workshop, some of which were virtually unreachable and the fact that there was only one instructor assigned to the course. However, the goal of the research was to ascertain whether improvisational strategies had any kind of impact on the participants of this particular improvisational course in view of their own self-reports. The results generally show a positive impact of the course on the students of Drama Workshop, much in the same way that the theory and practice of improvisation would suggest.

7. Conclusion

The research was conducted under the hypothesis that the students who attended Drama Workshop in English language at the Faculty of Education in Osijek would have noticed beneficial changes regarding their personality development, their social skills, language skills, and communication in their everyday life. After analysing the respondents' answers based on the self-report questionnaires, the interview reports and the information gathered from various online sources, the benefits of improvisational training are readily apparent. In accord with the theory and popular reports provided by theatre practitioners, the majority of the Drama Workshop participants reported that the course made them feel more adventurous and saw themselves getting out of their comfort zone, which resulted in higher levels of confidence and the ability to more effectively communicate and perform in public. Furthermore, the course resulted in group cohesion and development of collaborative relationships based on trust, often resulting in friendships that extended beyond the course. Due to the particular structure of improvisational exercises and games, the participants observed an improvement in their communication skills, both in terms of reading verbal and non-verbal cues. Although language anxiety thrives in the environment in which foreign/second language is taught, the perceived benefits in this category included expanded vocabulary, natural communication, development of conversational fluency, and the alleviation of anxiety, resulting in overall self-perceived increase in self-confidence. For all these reasons, improvisational theatre techniques are a welcome addition to teacher training to foster the development of complex, versatile, inquisitive, communicative, and self-confident individuals aware of other people's needs and requirements, all of which are the traits of high-quality educators of the present and the future.

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Teachers' perceptions of implementation of democratic values in secondary schools

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Abstract:

Democratic values constitute one of the main components of education programs in many countries around the world. This case study aimed to examine teachers' views related to implementation of democratic values in 6th grade secondary school education program in North Cyprus. The participants of the study – 21 sixth grade teachers – were drawn from three schools in one of the regions in this context. The data were collected through semi-structured interviews which were analysed thematically, using content analysis technique. The objectivity and credibility of the findings were ensured through expert audit review and multi-site data sources. The data revealed invaluable findings related to whether democratic values are a part of the program or not, the methods and techniques teachers employ to teach democratic values, the factors inhibiting the provision of these values and their suggestions to overcome these problems. In light of the findings, implications for practice and suggestions for further research were addressed at the end of the study.

Keywords: Democratic values, Secondary school education program, Teacher professional development, Initial teacher education

1. Introduction

The Paris Declaration calls the Europe's combined efforts to nurture citizenship and values of freedom, tolerance and non-discrimination through education, starting from an early age (Informal Meeting of European Union Education Ministers, 2015). In the context of globalization, equipping students with such values and helping them to live together is critical. In the report by International Commission on Education for the Twenty-first Century (1996), 'Learning to live together' is reported as one of the 'four pillars of education', embracing themes like developing resilience and understanding of diversity, resolving conflict, humanitarian behaviour, and overview of the norms and values of human rights and humanitarian law along with civic duties. Educational systems are responsible to equip individuals with such values to build active citizenship (Bayeh, 2016).

Dewey views democracy as 'a way of life', which is acquired through shared communication within a democratic school context and considers curriculum as a means for preparing individuals for life and improving the life we share (Dewey, 2004). Learning democracy is the fundamental affair of learning for life, thus it *must* be a focal target of education in schools, which are resorted "to provide for a *democratic form of life.*" (Edelstein, 2011, p. 130) and expected "to teach children how democracy exists and works and how they can become active citizens" (Matusová, 1997, p. 66). Concepts like democracy, democratic life and human rights are critical as far as instruction and curricular and extra-curricular processes are concerned (Papanastasiou & Koutselini, 2003). Over two decades, democratic participation has been placed firmly on educational agendas to inculcate democratic values (Deuchar, 2009), such as human rights; republican values; respecting individual and others; living together; becoming responsible members of family, society and nation and so forth, which can be listed under social and moral responsibility, community involvement and political literacy (Kerr, 2000).

1.1. Contextualization of democratic values

Democratic values, one of the main components of citizenship education programs, constitute one of the major dimensions integrated in curricula all round the world. They are integrated in citizenship education programs in the Far East - Singapore, Japan, Korea (Kerr, 1999) and - either through interdisciplinary or as separate school subject - within the courses like ethics, moral education, citizenship education, character education, democratic education and human rights in Europe (EACEA, 2012). They are also incorporated in the nine values of Australian National Program - Care and Compassion, Doing Your Best, Fair Go, Freedom, Honesty and Trustworthiness, Integrity, Respect, Responsibility, and Understanding, Tolerance, Inclusion (DEST, 2005).

To develop students' democratic values is highlighted in the aims of educational system in North Cyprus (NC): "Students admit and respect that humanity is peaceful, democratic, justice and that every human being has equal value"; "Students, displaying empathy, approach consciously and tolerate cultural differences"; "Students acquire the value of respecting human and human rights" (Talim Terbiye Dairesi, 2005). Currently, the core curriculum has been revised grounding on competency-based and interdisciplinary approaches. It aims to ensure that all students: possess higher order thinking skills; are self-aware and caring; are secular, democratic, and patriotic; and are conscious producers and consumers. One of the dimensions of this curriculum is to develop students who respect human, children and animal rights; are sensitive to environmental issues; are against all forms of discrimination; and adopt democracy as a way of life (Temel Eğitim Program Geliştirme Projesi [TEPGP], 2016). One of the interdisciplinary themes of this curriculum is developing 'Responsible and active citizens' (Democratic consciousness, values of our country, environmental sensitivity, and respect for every kind of difference) (TEPGP, 2016). Unlike the formal curriculum in most of the countries, in which students' democratic consciousness is promoted through citizenship education based on integrated and/or separate

approach(es) (Kerr, 2000), citizenship education is not recognized as a part of secondary school education program (SSEP) in this context.

The inclusion of democratic values in SSEP necessitates to examine how teachers inculcate these values since these values are included in the aims of educational system. A review of literature displayed that teachers not only lack necessary knowledge and skills to teach these values but also fail to integrate these values in instructional processes (Thornberg, 2008). Halstead and Taylor (2000) also underline that “Schools do not seem to have been successful in inducting young people into civic virtues and democratic practices” (p. 170). That values can be transmitted through hidden curriculum is reported as one of the reasons (Carr & Landon, 1999).

Literature also revealed that initial teacher education programs (ITEP) fail in preparing prospective teachers to teach values (Willemse, Lunenberg & Korthagen, 2005). Further, teachers lack necessary skills and dispositions to teach values (Thornberg, 2008) and do not feel empowered to teach citizenship values (Willemse, Ten Dam, Geijsel, van Wessum & Wolman, 2015). The review also exhibited a number of studies on inculcation of democratic values around the world, but few studies in Turkey and no studies in NC. Thus, this study aimed to examine what teachers report related to the inclusion of democratic values in the 6th grade SSEP and how they implement them along with the problems they face. Thus, it is believed that the findings would shed light upon the revision processes of the new curriculum and teacher development programs and practices.

2. Methods

2.1. Research design

A qualitative case study was adopted as a research strategy for investigating democratic values implemented in the secondary schools in the academic year 2015-2016. Case studies are considered invaluable in grabbing the richness of individual variations and diverse experiences and unfolding the interactions of events and individuals and the incidents within the uniqueness of each context (Patton, 1987). The study is qualitative in nature since it aimed in-depth examination of the issue within a genuine context, placing importance on the socially-constructed meaning via descriptive data and inductive analysis (Bogdan and Biklen, 1998).

2.2. Context and participants

The ‘unit’ of analysis in this case study (Patton, 1987) constituted twenty-one teachers who were purposively drawn from the teachers teaching 6th graders in three state schools, which have the largest amount of students and are located in the central area in one of the regions. These school sites were a lycee (School A), a college (School B) and a secondary school (School C). Of all these sites, only School B is an English medium state school and accepts students with a matriculation exam. Mainly students from high socioeconomic status are sent to this schools to have a better quality of education. The rest are Turkish medium state schools and accept students depending

on their places of residence. Thus, students from various socioeconomic backgrounds study at these two schools. The participants of the study - 16 females and 5 males – were selected on voluntary basis from three sites, 7 from each, respectively. Table 1 illustrates the teachers’ areas of specialization and the codes assigned to each teacher during data analysis.

Table 1. Distribution of Teachers’ Areas of Specializations and Codes According to School Sites.

SCHOOL A	SCHOOL B	SCHOOL C
T1. Counselling	T8. Science and technology	T15. Social sciences
T2. Mathematics	T9. Information technology	T16. Science and technology
T3. Social sciences	T10. Science and technology	T17. Technology and design
T4. Turkish	T11. English language	T18. Counselling
T5. Science	T12. Physical training	T19. Turkish
T6. Science	T13. Physical training	T20. Turkish
T7. French	T14. Turkish	T21. Turkish

2.3. Data collection and analysis

An interview protocol was used to gather in-depth qualitative data in the participants’ own lives and experiences so as to gain insights on how they perceive, view and practice the incidents, occurrences and issues that cannot be directly observed in a particular setting. Having conducted a comprehensive review of literature, an interview protocol was prepared following four phases: writing questions in alignment with the research questions, creating an inquiry-based dialogue, getting expert opinion on interview protocol and piloting it (Castillo-Montoya, 2016). The protocol included both closed questions to get information related to teachers’ personal and professional characteristics and semi-structured questions to elicit their views as to how democratic values are placed in programs and implemented in instructional processes, the problems faced and suggestions proposed. After getting the consent from the Ministry of Education, the three sites were visited and the volunteer teachers were interviewed through getting their consent for audio recording.

The steps of the data analysis process were coding the participants’ names (T1, T2 ... T21) for ethical purposes, listening and transcribing all interviews, coding and extracting themes and sub-themes, preparing matrices in light of research questions, getting expert opinion on the themes and sub-themes in matrices, and reorganizing matrices upon the feedback received. While creating codes and sub-codes on matrices helps assemble segments and themes under meaningful categories and sets the preliminary phase for drawing inferences (Miles & Huberman, 1994), confirming the coded data on the matrix by an inquiry audit helps verification of the data (Lincoln & Guba, 1985).

2.4. Trustworthiness

Warranting rigor is essential throughout data collection and analysis processes of the inquiry because without it the research will lose its trustworthiness and value (Morse et al., 2002). The credibility of the findings was ensured through several ways: firstly, the whole inquiry process was audited by an expert to ensure the objectivity of findings (Lincoln & Guba, 1985). The matrices prepared for themes and sub-themes were reviewed by an expert in the field of curriculum and instruction which helped promote the quality of analysis (Patton, 2002). To augment the transferability of the findings, multi sites can be included to provide rich and thick descriptions (Lincoln & Guba, 1985), which was also ensured in the study. Generalization of findings to the population is not the target in a case study (Yin, 1994). Thus, the findings of the study can only be generalized to the participants in the sites of the study.

3. Findings and discussion

The analysis revealed remarkable findings focusing on the current situation of the implementation of democratic values within 6th grade classes.

3.1. Democratic values in the secondary school education program: Integrated or not?

The findings revealed that almost half of the teachers had no clear ideas if democratic values are integrated in the SSEP or not. One of the science and technology teachers (T8), reporting that these values are not integrated in courses, stated, "There is not a separate course, I think it depends on teacher initiative to integrate them." Reporting that there is not such a course and referring to the decision makers, T11 underlined, "Democratic values are always beautifully articulated, yet they don't appear in practice at all. As far as I know there isn't such a course but I believe that teachers inculcate those values in various lessons." Few reported that these values are a part of the program and integrated in thinking training course. Finally, that these values do not exist in the program at all was reported by almost one third of the teachers. One of the social sciences teachers (T3) remarked, "Although these values are a part of social sciences course, there aren't topics related to these values either in the contents of the program or books." Focusing on non-existence of these values in the program, T10 highlighted,

"Teaching these values is a mission that we personally undertake and it depends on the willingness of a teacher to integrate them in lesson ... that is if we are trying to integrate life in classes, it means we are trying to develop good citizens."

Another teacher (T17), stressing that technology and design curriculum fails to integrate these values, said, "There is not such a course integrating instruction of these values."

Diverse views considering whether democratic values are integrated in the SSEP or not were revealed. That nearly half of the teachers displayed lack of awareness and knowledge if these values are integrated in the program is significant to underline.

Also, it is notable to stress that these values were considered as non-existent in the program as a separate subject. They were even reported as missing elements in social sciences course. These values were neither integrated as a separate course nor through interdisciplinary means in the former program. Though one of the general aims of education is to develop citizens who are devoted to the principles of democracy, social justice and law and protect and promote these rights, and developing students' consciousness of democracy is one of the basic principles of national education (www.mebnet.net), the findings showed that democratic values are mostly implicitly taught.

3.2. Diverse views on teachers' implementation of democratic values

More than half of the teachers reported that they integrate democratic values in their classes. While few underlined that they do not emphasize them at all in classes, some reported that they sometimes do it. The teachers who integrate these values in their classes are from School A and School C.

A number of teachers reported that they use mostly inculcation strategies to develop students' democratic values. Some teachers employed it through giving examples from real life. T2 stated, "If I say I solve problems for 40 minutes, it's a lie. Besides, I try to tell them something about life." That teachers inculcate these values not because they are a part of the program but they are vital for being a good citizen was highlighted.

Some reported that they give advice so that students can seek their rights. T11 reported that he tells students, "Everybody has rights which end at a point. If your friend doesn't want you to behave like that, you need to stop acting like that. You cannot force and coerce others." One of the science and technology teachers (T6) remarked, "We always warn students to be respectful to one another and not to use offensive words and remind them the rules such as good manners, etiquette and respect." Also, one of the Turkish teachers (T21) remarked that in the classroom she inculcates those values through giving explanations about the reasons why we should not behave badly and act disrespectfully to others.

Further, Turkish and physical training teachers (T4 and T13) reported that they always strive to be good role models for the students in their manners. On the contrary, T8 underlined that, while giving assignments, she employs group work technique so that students can be aware of their roles, duties, and code of conduct.

The primary finding is that most teachers prefer employing traditional strategies in teaching democratic values, which are employed implicitly, mainly in School A and C. Traditional approaches, one of the broad teaching approaches (Martens & Gainous, 2013), focus on the processes of habit formation, imitation, modelling and direct instruction (Arthur, 2008). Mainly, direct strategies and then giving advice and warning students were reported to be used to teach democratic values. Further, teacher's being role model to students and engaging them in group work were reported to be employed to raise students' awareness related to the code of conduct. Teaching moral education through modelling was found widespread by Sanger and

Osguthorpe (2013). Research findings revealed that teachers employ a rich variety of in-class and out-of-class tasks to promote civic values (Hahn, 2003), yet the activities employed by the participants in this study are limited and teacher-centred.

Next, though many teachers displayed lack of awareness if those values are a part of the program or not, most of them stated that they teach those values implicitly, as a part of hidden curriculum. "The implicit values education which derives from the teacher...or from other aspects of the hidden curriculum must not be underestimated" (Halstead, 1996, p. 10). Although democratic values are integrated in social studies programs all round the world, it is significant to underline that one of the social sciences teachers reported that she sometimes instructs those values.

Interestingly, it was found that inculcation of democratic values was not given consideration in School B. Although this school is considered as giving high quality of education, it is significant to underline why these values are not integrated in instruction. One of the reasons might be the fact that this school puts emphasis on preparing students for university examinations. On this point, focusing on the importance of the content of the lesson, T10 stated, "Teaching values means wasting time. The kid wants to study medicine. Which one is more important? The topic I am supposed to teach or social life or being democratic?" Students achieving high marks and entering prestigious universities is deemed to be important in this school. Thus, developing affective domain and democratic values may not be prioritized during instruction. Thus, depending on the school culture and climate, teachers' beliefs and attitudes, and the learning environment shaped by the school, hidden curriculum is operated (Çubukçu, 2012).

3.3. Problems faced while inculcating democratic values

The findings revealed various problems teachers encounter while inculcating democratic values.

Students' individual differences

Students' lack of motivation, their entry behaviors and cultural differences were reported as obstacles hindering teachers from instructing those values by almost half of the teachers.

Particularly the teachers at School A and School C reported that students' low academic level and family factor decrease their motivation, which inhibits inculcation of those values. T1 reported, "We cannot talk about these values to the students who are unmotivated and unsuccessful and whose parents are problematic and difficult. The worst is that the students' making up the majority in classes decrease the motivation of others as well."

Some teachers reported that deficiencies in students' entry behaviours inhibit their perceptions which indirectly create problems for teachers in teaching those values. T11 reported that since students come from different cultures, they cannot perceive when he tells them, "You have to be respectful and avoid the behaviour that your friends dislike."

Finally, that the students coming from different cultures want to be in the foreground and obstruct other students from showing themselves was underlined by one of the physical training teachers (T12).

In School A and School C, students' lack of motivation, low academic level, entry behaviours, family background, and cultural differences were considered as limitations in instructing democratic values. That these schools compose of students from diverse socioeconomic level and cultural and academic backgrounds might affect instruction of these values. Since School B admits its students through an entrance examination, there is not such a diversity as regards student profile. Therefore, having classes of students from different academic and cultural background can create problems for teachers in teaching democratic values. Students' moral and civic development is a complex and multi-faceted phenomenon, being influenced by various factors like their personal history and the culture they are raised (Colby, 2008).

Instructional environment and time constraints

Crowded classrooms, lack of materials and time were reported as factors creating challenges for teachers in teaching democratic values.

That overcrowded classrooms limits the teachers in giving emphasis on democratic values was stressed by few teachers. T11 remarked, "The existing context and conditions make it difficult to teach certain things, you cannot give students time to speak up." One of the social sciences teachers (T3), complaining about the existing situation, stated, "We are still at the point trying to explain students that males and females can sit together and this is normal. Making explanations on this problem is a reason wasting an hour in 6th grades." On the other hand, T1 stressed that she feels herself limited in teaching democratic values due to lack of materials and logistical problems. Further, few teachers showed time as a challenge in dealing with democratic values. T10 complained about the impact of time in coping with the program and blamed the system, saying "...the most influential factor is the conditions in our country. We always have this question in our minds. How many questions can I solve? How many topics can I finish? What can I ask? That is we focus on just one dimension."

Crowded classrooms, lack of materials and time were reported as limiting instruction of democratic values. That democratic values are not explicitly stated in the curriculum might be one of the factors for this problem. In a study, Thornberg (2008) found out that teaching values is most often unplanned and teachers tend to give more consideration on classroom management and disciplinary issues in order to reduce misbehaviour and set up an environment conducive to learning.

Lack of teachers' professional skills and their anxieties

Teachers' insufficiency in employing appropriate methods and techniques, their worries in coping up with the curriculum and their anxieties were revealed as the factors debilitating their instruction of democratic values.

Some teachers reported their insufficiency in using proper methods. A novice physical training teacher (T12) focused on her insufficiency in using necessary methods to teach

democratic values. One of the counselling teachers (T1) stressed that since this course is non-credited, she is facing problems in managing the class and teaching students such values. Further, one of the science and technology teachers (T8) stated that since it is not her field of expertise, she can feel herself incompetent in using exact techniques and, therefore, she cannot express herself directly.

Further, teachers' worries in coping with the curriculum was reported as inhibiting the inculcation of these values. That curriculum is tough and rigorous and does not allow teachers' flexibility was shown as a reason limiting teachers' teaching democratic values by some teachers. While T8 stressed that each teacher is busy with handling a particular course program, T9 highlighted that teachers worries in coping with the curriculum prevents them going beyond the program and dealing with democratic values. That the curriculum is too tight and extra activities related to democratic values cannot be integrated was highlighted by one of the Turkish teachers (T14).

Next, T2 and T11 expressed their worries about the possible complaints that might arise from anywhere in the process of inculcating democratic values. While T2 expressed his restlessness in this issue, T11 remarked, "There are families having different values. Children will reflect their parents' values. They can conflict with each other and this can go to parents. Since I am afraid, I do not give them much time to talk".

That teachers lack necessary skills to teach democratic values is the primary finding. Thornberg (2008) stated that teachers' professional knowledge seems to be absent in the domain of teaching values and teacher training fails to prepare teachers for teaching these values. Knowledge and skills in teaching values and citizenship are considered indispensable part of teacher competence (Thornberg, 2008) since the prominent figure in instruction is the teacher. Not all subject matter teachers consider themselves responsible to teach democratic values. According to Power and Scott (2014), though civic development is considered under the responsibility of social studies teachers, teachers and administrators need to be supported by the school psychologists in developing students competencies necessary to lead a responsible life and live democratically in a free society. That teachers' concerns of not being able to cope up with the curriculum and their anxieties related to potential complaints that might come from parents can prevent them from employing democratic values in their classes is critical to underline.

Role of family and society

Inaccurate knowledge acquired within the family, families' negative attitudes towards students and structure of society were considered as inhibiting inculcation of democratic values at School A and School C.

Few teachers stated that the imprecise knowledge students acquired within families negatively affect their teaching democratic values. Stating that children consider using violence as acceptable behaviour, T3 stated, "The kid sees that the family considers hitting a woman is quite normal. The kid comes to class in a mode that man is power ... I am a man and he hits girls." T5, underlining that the value of respect is not taught

in family, remarked, "Families do not teach students showing respect to teachers. Kids think that they can do those actions freely at home, they can damage things, if so, they can do them at schools as well."

In relation to family's negative attitude towards students, T1 reported that families do not value their children and the education given at schools. Stressing on the pressure of families on the students, T5 remarked,

"It seems that some of the things do not fit in because parents are either too strict or easy-going. The success level of students in our school is low and the reason...is the families. That is they are not raised in a democratic way. As far as I observe, they are under pressure in the family. Since they are under control, they consider school as a liberating area."

Further, the structure of society was reported as inhibiting teaching democratic values by few teachers. T15 remarked, "I tell my students to express themselves freely. However, that parents tell them "you are a kid, stop talking" is a limitation to teaching those values." Stressing that the structure of the society is a handicap, T18 stated, "We are not such a society showing sensitivity to all matters all the times and neither do some of their parents. Therefore, such situations can be obstacles for us. In reality whatever we do at schools is incomplete... families and the existing situation of the society are handicaps for us."

Knowledge and attitudes gained within families and society can turn out to be hindering teachers in teaching democratic values. This was displayed particularly in School A and School C, where there is diversity considering students' socio-economic background and student profile. Hahn (2003) reports relationship between socio-economic variables and race/ethnicity and civic knowledge. The findings showed that when certain behaviours like 'violence' or 'disrespect' are acquired as if they are normal at home; it might turn out to be problematic for teachers to rebuild them at school. According to Domović, Godler and Previšić (2001), "The attitudes found among the students resemble those of their parents more than those of their teachers, a sign that political socialization occurs mainly in home" (p. 322).

3.4. Suggestions for inculcating democratic values

To get rid of the problems related to teaching democratic values, various suggestions were made.

Restructuring instructional programs and educational system

Firstly, that educational system needs to be rebuilt was suggested by some teachers. T2 remarked,

"If we want to teach our students how to be live in a democratic way, first we need to prepare the conditions for that. First we need to create the system and train teachers accordingly and teach students accordingly. We need to insert this in our system in real terms."

Stressing on the competitive aspect of educational system, T19 highlighted the need of a reform movement and the necessity to develop students who are respectful to human

beings, their environment, and the world. To add a new course into the curriculum was suggested by some teachers. One of the social sciences teachers (T3) stated, "It is difficult to inculcate the values of respect and equality in courses, there should be a separate course to teach these values." Also, T12 supported this and added that values should be given more consideration than numerical classes. Further, T6 reported that those values should be taught through hands-on activities since "when students take roles in activities, they see that they can communicate despite their gender and ethnic origins and understand that they can adapt together as human beings." That democratic values should be integrated in all courses in an interdisciplinary nature was underlined by T18. Another teacher suggested integrating democratic values in humanities and social sciences classes. He stated, "We can do good in this matter if we can place these values in courses like philosophy and sociology and give extra responsibilities to teachers for teaching those values."

Integrating more extracurricular activities into the program was another suggestion. Almost half of the teachers reported that democratic values should be taught through involving students into cultural and social activities such as plays and films (T8 and T14) and charities (T16). While some suggested organizing seminars to inculcate those values, few reported that academicians, organizations and associations can visit schools and deliver speeches on this issue.

The need to integrate democratic values either as a separate subject or cross-curricular or extra-curricular theme into the SSEP was underlined. Democratic values are placed into curriculum as a stand-alone subject, carrier-subject (Sinclair, 2013) or through cross-curricular theme in all school subjects (Tibbitts, 2015). These values need to be a part of formal curriculum which is regarded to cultivate certain democratic values, advance students' skills so that they can communicate better about values and encourage their active participation (Leenders, Veugelers, & De Kat, 2008).

Promoting teacher development and modelling

Firstly, giving in-service training (INSET) to teachers to teach those values was suggested by some teachers. While T1 remarked, "I think first we should start with ourselves with concrete practice-based INSETs", T3 stated that INSETs should be given to teachers by the experts visiting schools. It was also reported that teachers should be equipped with various techniques to teach democratic values by two teachers. T9 suggested teachers' changing way of teaching, saying, "If we educate students starting from primary school level, in a way that they can express themselves freely, then they we can raise more democratic and creative youngsters." Next, emphasizing that ITEPs fail in putting sufficient consideration on these values, T15 suggested integrating democratic values into those programs, since "in the societies where democracy consciousness is settled, there is no discrimination."

The role of teachers and headmasters as role models was also underlined. T14 remarked, "Administrators and teachers at schools are important role models to students. If they are democratic to students, students gain more awareness."

In a study, Lukacs (2015) reported that teachers as change agents see teaching as a moral profession and believe in service to others. Teachers as change agents need to be supported to develop students' affective factors as well. "The teacher is the mediator of democratic values and norms and is, at the same time, a participant in the interactive and dialogical process in which the students give meaning to values" (Leenders, Veugelers, & De Kat, 2008, p. 158). Democratic citizenship can be promoted "through participatory and learner-centred teaching and learning processes ... through democratic practices in the classroom and democratic governance in the school environment" (Tibbitts, 2015, p.10). This brings to the fore the importance of integration of democratic values in ITEPs. Further, both teachers and headmasters need to take active roles in being role models to students in displaying democratic actions. The findings of a study showed that role modelling is hardly employed as an overt instructional method in character education and teachers are perceived as role models only by very few of adolescence (Sanderse, 2013).

Raising family and societal consciousness

Few teachers suggested educating families so that they can teach kids those values. Focusing on the importance of raising families' awareness of democratic values, T20 stated, "First families' consciousness should be raised because whatever we try to do, kids live at home." T18 stressed, "There should be more activities for parents...there should be more seminars and panels and such activities given to parents at the school." In contrast, T12 highlighted that it is the parents who should teach those values to children, not schools.

Further, that it is critical to raise societal consciousness to inculcate democratic values was reported by two teachers. One of the English language teachers highlighted the dire need to start with raising societal consciousness. Another teacher, stressing the necessity to change as a society, stated, "We need to tolerate each other more, respect each other, and listen to each other more."

Family was given high consideration in teaching democratic values. Whatever values and attitudes children possess, they bring them from their families and all these diversities can lead them to experience different relationships with the other students (NCERT, 2011). Thus, activities, seminars, panels can be given to parents to equip them with the knowledge and skills to help their children in gaining democratic consciousness.

4. Conclusion and implications

Certain conclusions can be drawn in light of the findings. First, although democratic values are stated in the aims of the educational system, many of the participant teachers displayed lack of awareness and knowledge related to whether these values are integrated in the SSEP or not. However, the findings revealed that these teachers inculcate these values implicitly through direct instruction and traditional strategies. Lee remarks (2007) that "socialisation function of education transmits the dominant societal values to the younger generation both explicitly ... and implicitly through the

hidden curriculum" (p. 377) and character is not deemed to be shaped automatically through traditional approaches, but through teaching, exemplification, and practice (Arthur, 2008). Thus, teachers need to possess democratic values so that they can create democratic situations and instruct these values to students (Yazıcı, 2011). Next, lack of teachers' professional knowledge and their worries, instructional environment, and time constraint were found as limiting instruction of these values. Students' individual differences and the role of family and society were found as inhibiting inculcation of these values at particularly schools where there is diversity regarding student profile and cultural background. Kuş (2014) highlights that "some problems exist in relation to the democratic environment offered to children at school, at home, and in society"(p. 126). Thus, restructuring educational programs, supporting teacher development, and raising family and societal consciousness were deemed to be essential to develop students' democratic consciousness. All levels - local, regional, national, European, transcultural, international and global - need to be reflected while integrating democratic values in education (Matusová, 1997). In this regard, considering the current revision processes of SSEP and the central role of teachers in instructional processes, it is critical to equip teachers with the necessary knowledge and skills in developing students' democratic consciousness at both school level and university level through ITEPs.

Since the newly implemented core curriculum (TEPGP) aims to develop democratic values, we can suggest an extended follow-up study to examine teachers' views related to their implementation of democratic values in all courses in all regions. Also, while INSETs and workshops can be organized to equip teachers with the knowledge and skills to develop students' democratic consciousness, related courses can be integrated in ITEPs to equip prospective teachers with the knowledge and skills to inculcate these values.

Limitations of the study

The study is limited to 21 volunteer teachers teaching sixth graders in three state schools in one of the big regions in NC. Therefore, the findings can be generalized to only these participants and sites. That the study only relied on interview protocols as data collection instrument is another limitation. Classroom observations could have been administered to get a more comprehensive understanding of the topic investigated.

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Secondary school English teachers' scaffolding skills

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Abstract:

This study deals with the theoretical and practical aspects of scaffolding student learning. Scaffolding is a socio-constructivist strategy in which a more knowledgeable person guides the learner solving a problem or performing a task that she/he could never accomplish without the help. Some researches show that teachers limit their teaching process with few methods in the classroom. The main objective of this research is to determine the scaffolding strategies used by secondary school English teachers, and variables that might have a significant impact on the use of these strategies. In the first phase of the research, a theoretical frame on scaffolding was formed. Then, on the basis of this theoretical frame an interview form on scaffolding and a rubric was prepared. The participants were 14 secondary school English teachers, teaching at three different high schools in Ankara. The interviews were recorded and transcribed. The rubric was used for scoring teacher responses. Data was analyzed by means of both quantitative and qualitative analysis methods. Findings of the study revealed that few teachers diagnose their students' needs, their intention for scaffolding is mostly for direction maintenance and the means that teachers mostly recommend are prompting and giving hints. Although the findings show that secondary school English teachers use some scaffolding strategies, there is still a need to develop awareness and skills for applying effective scaffolding strategies. Therefore, a professional development program for teachers that focuses on scaffolding is recommended.

Keywords: scaffolding, diagnose, intention, mean

1. Introduction

Many countries trying to improve the quality of education have taken the constructivist approach as a base to their education systems. In a globalizing world, learning and teaching a foreign language as an international tool for communication has become extremely important. In the last decades in Turkey like all other subjects, the primary and secondary school foreign language curricula have been renewed based on the constructivist approach. Constructivism is basically a theory about how children learn and how they construct their own understanding.

In Hobsbaum, Peters and Sylva's (1996) observations, it is revealed that the method most frequently used by teachers is still using narrative method for instruction. Making explanations is often found enough for some teachers (Anghileri, 2006). With the constructivist approach, the role of the teacher has changed to identify and provide

learners with the learning strategies, and to support them to feel independent in learning. It is an important issue to know the new roles that the constructivist approach assigns teachers and students, and how these roles can be reflected in learning environments. This however requires a great transformation and a change in understanding (Bikmaz, 2006). Teachers should be competent in teaching strategies and should apply different methods in their classes. It will not be possible for the students to construct new knowledge or to acquire high-level skills by using only the narrative method. Effective teachers have a rich strategy and method repertoire (Gözütok, 2007).

For the social constructivist approach, a child's learning and development is a result of interaction with its environment, which is similar to the communicative approach where the primary function of foreign language learning is interaction. Foreign language learners should be ready for learning the new language, be motivated to learn, and to associate their new skills with their previous knowledge and skills in order to internalize it quickly. This is closely related with the support that the foreign language teachers provide their learners. Findings of Pawan's (2008) study showed that linguistic, conceptual, social and cultural scaffolding were effective on foreign language learners.

Acquiring the skills like speaking and listening are much more problematic in those countries where foreign language learners experience and practice the newly learned language only in the classroom. In order to achieve the goals of the renewed foreign language curricula and to improve student's speaking skills, teachers at secondary schools have to gain instructional strategies that will enable them to become effective teachers. Thus, as a result, students will not only learn grammar but also use foreign language to interact with others. For this purpose, scaffolding was proposed as a teaching strategy in this research. A study was carried out to identify the strategies that teachers use to support their students with listening and speaking problems, and to determine their professional development needs in the area of scaffolding.

In the context of parent-child interaction, Wood, Bruner and Ross (1976) investigated the role of an adult on problem-solving activities in their research conducted with children aged three-five. Their research reveals the importance of child interaction with adults and suggest the metaphor of 'scaffolding' which is a socio-constructivist strategy where a more knowledgeable person guides the learner while solving a problem or performing a task that the learner would never be accomplish without the help (Wood et. al. 1976).

Social constructivist theorists, such as Vygotsky (1978) and Wertch (1998) regard language as the primary tool for learning. As learning is the result of social interaction, it should be seen as the most important tool for language, communication and guiding learning. Collins, Brown, and Newman (1989) have stated that scaffolding is a kind of problem solving effort that teachers and learners are doing in collaboration. Here it is expected to make the learner become able to do the task on his own as soon as possible.

According to Dewey, the capacity of a child provides the starting point for teaching. Vygotsky (1978) has argued that the task a child can do with guidance today, is what she/he can do alone tomorrow. He revealed the concept of the zone of proximal development (ZPD), that expresses the distance between what a learner can do alone and do with assistance. If the learner is not supported within this zone, she/he cannot take a further step. Scaffolding expresses a teacher as the competent person who provides support by gently pushing the learner within her/his ZPD until the learner can apply something new in an independent way. The more competent other is a person who is more knowledgeable about the task, the problem, or the subject than the learner. The more competent other is either the parent, the teacher, or the peer; a well-structured teaching instrument can also be called as the more knowledgeable other. The knowledgeable other has a bridging role between the existing knowledge, skills of the learner and the requirements of the new task (Rogoff, 1990).

In teaching-learning activities, a development in cognition, metacognition and affect is expected. As a result of an effective teaching, it is intended that the learners will learn how to learn, remember, self-motivate, and effectively control and direct their own learning (Weinstein and Meyer, 1986). Cognition means to be aware of anything. Besides learning and understanding, metacognition comprises an awareness of how something can be learned. Affect includes various feelings and behaviors such as interest, attitude, anxiety and self-confidence that effects learning. A teacher using scaffolding does enable learners to develop not only their knowledge and skills but also their metacognition and affect by influencing their learning, processing, thinking, motivation and confidence (Dennen, 2004).

An instructional skill that intends to support student learning must include some principles in order to call it as scaffolding. Teachers must properly plan the lessons (Hogan and Pressly, 1997), must comply with reciprocity so that they have a common understanding and ownership of the task with the student, must be contingent to meet students' needs (Wood and Wood, 1996; Van de Pol et.al. 2010), must provide support whenever the student needs, so that she/he can construct the knowledge and skill (Rosiek, 2003; Hogan and Pressly, 1997); and the support must be removed as soon as the student is able to perform the task on his own.

Designed by bringing the classifications of Wood et. al. (1976), Tharp and Gallimore (1988), Hogan and Pressly (1997) and Van de Pol et al. (2010) together, a framework consisting of three stages of scaffolding was established (table 1) and diagnose, goals/intentions and means/methods were defined.

At a point where a learner cannot progress while struggling with a task, teacher determines/diagnoses learner's need and puts an intention that focuses on supporting her/him in the direction of the diagnosis. This intention allows teacher to choose the right intervention methods/means. As the learner progresses through the support, teacher reduces the degree so that she/he can remove the scaffolding slowly to transfer the responsibility of the task to the learner (Van de Pol, et al. 2010).

Table 1. Stages of scaffolding

STAGE II											
STAGE I	FOCUS LESSONS AND REMOVING THE SCAFFOLDING									STAGE III	
	SETTING GOAL/INTENTION					MEAN/METHOD SELECTION					
DIAGNOSING STUDENT NEED	Cognitive Structuring	Reducing the Degree of Freedom	Direction	Maintenance	Control of Frustration	Modelling	Prompting	Questioning	Giving Feedback	Giving Hints Explanation	TRANSFER OF RESPONSIBILITY

First stage, *diagnosing student need*; Tharp and Gallimore (1988) define diagnosing strategies in general as -to discover the level of learner's ability to perform without assistance- (Van de Pol et. al. 2010). Diagnose can be expressed as a mean/method mostly performed via questioning and observation for determining learner's needs.

The second stage, *focus lessons and removing of scaffolding* starts with setting a goal/an intention that is compatible with the diagnosis made in the first stage so that the teacher can choose the methods/means for intervention. Setting the goal/intention is a mental process rather than a behavior. There are four intentions: *Cognitive structuring*, is related with cognitive strategies such as putting information pertaining to the subject or task in the memory and retrieving it therefrom, the attainment of behaviors, thinking processes comprising metacognitive processes that guide cognitive strategies, and helping with associating the knowledge in the learner's mind with the new knowledge. *Reducing the degrees of freedom*, simplification of the task determining the level of comprehension of the learner, thus aiming to provide a step-by-step progression of the problem (Wood et. al. 1976). *Direction maintenance*, keeping the learner in pursuit of a particular object (Wood et.al. 1976) to ensure that the learner remains focused on the goal. *Control of frustration*, providing a relative risk-taking opportunity by helping the learner to control his anxiety.

The second stage continues with choosing the means/methods for intervention. Six means/methods are identified; *Modeling*, verbal or visual modeling of how one should feel, think or act to complete a task. *Prompting*, encouraging learners to complete procedures of the task. *Questioning*, getting information, opinion or details from the learner, to clarify something or act on her imagination. *Giving feedback*, helping learner to check his/her own understanding and allowing correction. *Giving hints*, directing the attention of the learner to the source of information. *Explanation*, providing factual information to the learner so that she can complete the task

Third stage, *transfer of responsibility* is related with the uploading of the responsibility to the learner, it is similar with the change between the first and second stages perceived by Tharpe and Gallimore (1988), in which they use the concept "fading". Fading does not occur at once, it occurs gradually between the second and third stage where the teacher obtains evidence via the means/methods of scaffolding.

The research problem considered in this paper is to define the scaffolding strategies used by expert teachers who have been teaching English as a foreign language (EFL) at high schools. It composes the first phase of a larger study, which aims to develop a professional development program (PDP) on scaffolding. Additionally, in this paper the variables that might have a significant impact on the use of scaffolding are aimed to be determined. Answers to these two research questions were addressed;

1. Does scaffolding used by high school English teachers conform with the diagnose, intention and means of scaffolding?
2. Does scaffolding used by high school English teachers differ according to some variables like gender, age, graduation, professional experience, type of school in which they work and number of professional development programs to which they have attended in the last five years?

2. Methodology

This descriptive study was conducted in the year 2014-2015. Participants were 14 secondary school teachers. They were teaching EFL, at three different school types: six teachers at private academic high school, five at public vocational high school and three at public academic high school. The participants were mostly female teachers; eleven female and three male. All male teachers were teaching at public vocational high school. Most of the teachers had classroom teaching experience between 5-10 years.

The data was derived from an interview form (scaffolding scenario form) designed within this study. For a start, the study was limited to only the first two stages of scaffolding in the framework. The interview form consisted of eight scenarios, which focused on real classroom situations. Teachers were expected to propose methods, techniques and strategies for the problematic classroom cases given in each scenario. A planning was made to ensure that the interview form would cover all the points. Eight scenarios were written considering the distributions in the planning phase. It has benefited from the observations and experiences of foreign language teachers and inspectors in the identification of the problems of the cases. For obtaining information about the suitability, expert opinion was taken, pilot interviews were held with eight secondary school EFL teachers not participating in the study. Then pilot practice results were reassessed by three experts.

The personnel information gathered from the first part (table 2) were used for the analyses in the second research question. A sample of eight scenarios is given in table 2.

Table 2. First part of the interview form and a sample scenario

Scaffolding Scenario Form	PART II: Scenarios
<p>This interview form was prepared in order to collect data on English teachers' knowledge and skills about scaffolding strategies. It consists of two parts. In the first part there are questions about your personal information and in the second part there are 8 scenarios related to listening and speaking skills. Assume yourself in the problematic situation given in the scenario and try to propose strategy/ies you would use, and the reason(s) why you would choose that strategy/ies.</p> <p>Please fill in your personal information in the first part before starting the interview.</p>	<p>Scenario 1 Mrs. Meltem reflects the picture above, to the white board and starts this dialogue. Teacher: Look at the picture? Do you have an idea about where this might have been taken? Student 1: A cinema Student 2: Yes, a cinema Teacher: It might have been taken at a cinema. Teacher: Why do you think cinema? Student 3: No, I think Airport Student 1: People buy ticket Teacher: Oh! You say because people are buying ticket in the photo. So, it must have been taken at a cinema you say, is that right? Student 1: Yes right, people are buying ticket at the cinema Teacher: You said cinema, too. What makes you think about cinema? Student 2: Because I love cinema Teacher: That's fine; I like going to the cinema too. And what makes you think that this photo was taken at the cinema? Student 2: Because people are buying ticket at the cinema in the picture. Teacher: (Looks at the 3rd student) You said that people might be at the airport. What makes you think so? Student 3: (the student stays still, there are some laughing in the classroom) <i>If you were in place of Mrs.Meltem which strategies would you use to make the 3rd student speak? Why?</i></p>
<p>PART I: Personal Information</p> <p>1. Gender: Female () Male ()</p> <p>2. Age:</p> <p>3. Experience in teaching: () 1-5 years () 6-10 years () 11-15 years () 16-20 years () over 20 years</p> <p>4. University you graduated from:.....</p> <p>5. Department/program you graduated from:.....</p> <p>6. The school you are currently teaching at:.....</p> <p>7. How long have you been teaching at this school?.....</p> <p>8. In service training programs you participated in the last five years.....</p>	

The data was collected via face to face interviews which were recorded. Equal time was allowed to all teachers, not exceeding 35-45 minutes. After the completion of the interviews, voice recordings were transcribed by the first writer.

A rubric was prepared to score teacher responses and to identify if teachers' suggestions were compatible with the diagnosis, goals/intentions and the means/methods of scaffolding. The rubric prepared was analytic, as it was aimed to evaluate each scenario, and diagnosis, goal/intention setting and method/mean phases separately and then to sum up the whole scores for the interview form. The highest score that could be obtained from the whole interview form was (76). In order to ensure internal validity of the data obtained and to test the reliability of the rubric, second author scored four randomly selected interview forms and the inter-encoder reliability

was calculated using Miles and Huberman's (1994) formula. The confidence interval was found to be .93 between two coders.

After teacher responses were scored, Shapiro-Wilk normality test was used, the sig.value was found to be greater than 0,05 indicating the normal distribution of the data at the 95% confidence interval ($0,770 > 0,05$). Teacher scores were analyzed by descriptive statistics, independent group t-Test, and one-way analysis of variance (ANOVA). Qualitative data was analyzed by content analysis methods, diagnosis, intention and means were determined as the categories, teacher responses were coded for each scenario, their frequencies were calculated and findings were supported with direct teacher quotes.

3. Results

To answer the first research question; *Are the strategies that secondary school English teachers use for providing support to their students compatible with diagnose, intention and means of scaffolding?* Teachers' responses for eight scenarios were scored by using the rubric, descriptive statistics were calculated for the total scores (table 3), then they were analyzed according to diagnosing student need, goal/intention setting and method/mean selection categories (table 4).

Table 3. Descriptive statistics to teachers' total scores

	N	✱	Median	Min	Max	ss
Total Score	14	54.90	55.50	34	71	10.76

Descriptive statistics related to the total scores of the participants was found ($\bar{x}=54.9$), the minimum score obtained from the interview form was found (34), and the maximum score was found (71). The standard deviation is (10.76) which shows us that teacher scores are not very similar and spread over a large area that we think it adds value to this case study. Anyway, the aim of this study was not to reach generalization.

Table 4. Teachers' diagnose, intention and mean scores

Teacher	Diagnosing student need		Setting goal/intention		Mean/method selection		Total	
	Score Received	Max Point	Score Received	Max Point	Score Received	Max Point	Score Received	Max Point
T1	13		25		17		55	
T2	21		30		20		71	
T3	20		26		19		64	
T4	20		29		20		69	
T5	14	24	25	32	20	20	59	76
T6	10		11		13		34	
T7	16		23		19		58	
T8	5		17		16		38	
T9	8		22		18		48	
T10	10		26		20		56	

T11	8	19	18	45
T12	16	29	18	63
T13	14	22	17	53
T14	15	21	19	55
*	13,6	23,2	18,1	54,9

All teachers in the study group gained the lowest average score ($\bar{x}=13,6$) in the diagnosing student need category, the highest score of which is 24. They owned the highest average score ($\bar{x}=18,1$) in the method/mean selection category, the highest score of which is 20 and the average score is ($\bar{x}=23,2$) in the goal/intention setting category, the highest score of which is 32.

Table 5. Problem cases of the scenarios, expected scaffoldings, frequencies of proposed scaffoldings, maximum point that can be obtained from each scenario and teachers' average scores

No	Problem cases given in the scenarios	Expected scaffoldings (<i>diagnose, intention and mean</i>)	Most proposed scaffoldings and their frequencies	Max Point	Teachers' \bar{x} Score
1	A students' speaking problem	Diagnose Intention; Direction maintenance Reduction of frustration Mean; Prompting Questioning Giving hints	Diagnose (9) Intention; Direction maintenance (11) Reduction of frustration (11) Mean; Questioning (11) Prompting (9)	12	8,7
2	Problem with students who do not want to talk in the classroom	Intention; Reduction of frustration Direction maintenance Cognitive structuring	Intention; Reduction of frustration (9) Direction maintenance (7) Cognitive structuring (4)	4	3,5
3	To design a form / template to solve the problems of the students losing interest as audiences	Diagnose Intention; Direction maintenance Reduction of frustration Mean; Giving hints Prompting	Diagnose (9) Intention; Direction maintenance (14) Mean; Giving hints (9) Prompting (8)	12	8,9
4	Students pronunciation / sound problems	Diagnose; Intention; Cognitive structuring Reduce degree of freedom Mean; Modelling, Prompting	Diagnose; (5) Intention; Cognitive structuring (7) Direction maintenance (8) Mean; Modelling (8) Prompting (7) Giving hints (6)	12	7,6
5	Students can't recall some words easily	Intention; Cognitive structuring Direction maintenance Mean;	Intention; Direction maintenance (9) Cognitive structuring (7) Mean;	8	6,3

	Giving hints Prompting Questioning	Giving hints (13) Prompting (8) Modelling (6)		
6	A students' problem <i>who</i> was inclusive in the whole class <i>but</i> does not want to participate in the given speech activity	Diagnose; Intention; Direction maintenance of Reduction of frustration Mean; Questioning Prompting Explanation	Diagnose; (8) Intention; Direction maintenance (10) Reduction of frustration (9) Mean; Questioning (13) Prompting (9)	12 9
7	The problem of two students who progress / left behind in a task	Diagnose; Intention; Cognitive structuring Reducing the degree of Freedom Direction maintenance	Diagnose; (6) Intention; Direction maintenance (9) Reduction of frustration (5) Cognitive structuring (5)	8 5
8	The problem of two students who cannot answer any question in the listening task	Diagnose; Intention; Cognitive structuring Reducing the degree of Freedom Direction maintenance Reduction of frustration	Diagnose; (7) Intention; Direction maintenance (14)	8 5,9
			TOTAL	76 54,9

In table 5, it can be seen that few teachers diagnose their students' needs (44 diagnoses in total), most diagnoses were made in scenario one and three. Teachers' intention for scaffolding is mostly for direction maintenance (82), followed by reduction of frustration (38). The most proposed means/methods are prompting (41), giving hints (36) and questioning (33). It is evident that most teacher responses are in line with scaffolding strategies that were expected.

Below are some quotes taken from participants' responses discussed in the case of the problematic situation given in the scenario. In scenario one; *A students' speaking problem*, teacher diagnoses student need;

T3; The third student probably does not know the meaning of the word 'airport'. She may have given this answer just to let the teacher recognize her, but then might be embarrassed because does not know the meaning...

In scenario two; *problem with students who do not want to talk in the classroom*; Some teachers don't propose a direct intention but their explanations give clues about the fact that they have a goal/intention to support their students need. Here is an example where the teacher explanation complies with reduction of frustration but does not directly tell her intention;

T2; I prefer not to distress my students at first because if I constantly say that they have to speak English, I may cause pressure on them and they will totally rapture from my class. At first, I allow them to

express themselves a bit in Turkish so that they can get used to the classroom environment, but when they say the Turkish sentence I repeat it in English and in this way I prefer to encourage them to speak English.

In scenario three; *where the teachers had to propose a form/template to solve the problems of the students losing interest as audiences*; Some teachers diagnosed students need directly.

T5; In such activities our students are always in a worry for that the next is their turn, and they start to concentrate on their own presentation and do not listen to each other.

A teacher proposes to design a template that will give hints to the learner. Here the teacher does not directly tell her intention;

T2; In this case I would prepare a small peer review form so that they can evaluate their peers. On the form, there would be some questions like "how was his/her eye contact? How was his presentation? Was it fluent? Was he reading mostly from his paper? Was it clear for you? Did he make a presentation that could reflect his goal?

However, from her response, we can understand that the questions she poses carry the intention for direction maintenance so that students who are listeners will not be distracted.

In scenario four: *the problem with students' pronunciation*; most teachers' explanations give clues about the fact that they would diagnose their students' need during a speaking activity. For example;

T2; Pronunciation is an important issue. When students reach the secondary school we no longer expect them to have pronunciation problems, but this is not the case. Students might also have pronunciation problems due to regional effect, or the student might wear a dental brace.

Another teacher makes a direct diagnose;

T4; "Th" is a serious problem especially not as a voice but within vocabularies. They have also problems with the sound /ae/ in "cat, bat".

The same teacher sets her intention for cognitive structuring;

T4; At first I write phonetic transcriptions for a word that they haven't come across before and that is difficult for them. I want them to see the difference and then we repeat it occasionally. I mean, I make them distinguish this sound from the other sounds.

A teacher proposes modelling as a mean to place the sounds that are hard to pronounce for students;

T3; We repeat the sound /th/ in "three" several times because they need to hear it. I would do listening activities. The more they hear from a native speaker the better it is for them.

A teacher proposes to show students that voices have also alphabets and they can find it on the dictionaries when necessary. This support has a general goal for metacognitive support by using the method/mean for giving hints to the students so that she can solve the pronunciation problem;

T12; It is useful to introduce voices from the phonetic alphabets at the dictionaries and to introduce students the voices and show them that the voices also have an alphabet.

In scenario five; *the problem that students can't recall some words easily*; A teacher proposes to give hints as a mean by using a visual, a melody, a story or her body when

teaching a word for the first time. When the student does not remember it when needed, she would apply one of the hints, for example reminding a part of the melody, the visual or doing a gesture.

T4; I prefer to use visuals for a word that they will learn for the first time. I try to use my body or repeat it with a melody like "hit the ball, hit the ball", "score a goal, score a goal" or match it with a story, or something in Turkish, I say you can remember from this, it is up to your creativity...

In scenario 6; *The problem of a student who was inclusive in the whole class but does not want to speak in the given speech activity*; Two teachers made direct diagnosis and their diagnoses may take them to set their goals for emotional scaffolding.

T3; I observe student's performance, if it is not related with her English level, I would talk to her privately and try to figure out the problem. Especially in high schools when they make a wrong pronunciation, students sometimes experience bullying. Really not only laughing, bullying.

T12; There can be many reasons why she does not want to talk. She might be afraid of making mistakes, or she might have never heard of such a place. Some children are luckier than others and can travel abroad...

From T12's suggestion for the mean/method that she would use, we can see that she really has a goal for emotional scaffolding, and sets an intention for frustration control, and uses questioning as a mean to support the student.

T12; Maybe she never heard of "Tower of London" or "Statue of Liberty". Maybe I can mention her a place where she probably knows, for example, the "Statue of Atatürk" in Ulus Square. I would ask her "Forget about the Tower of London, what about the statue in Ulus?" then she would probably speak.

In scenario eight; *the problem of two students who cannot answer any question in the listening task*. Half of the teachers diagnosed students need directly, for example;

T3; Maybe they do not know that an adjective comes before a noun. I would remind them it first. If they do not know the meaning of "verb" in Turkish this task would not be possible for them to finish.

T12 also did a direct diagnosis and put an intention for direction maintenance, where she proposes modelling as a mean for intervention strategy.

T12; First I myself would make sentences using these words for those students. "Last night I had a bad dream. I forgot to cover my back. It was not a dream it was a nightmare." I would say "a nightmare, I use 'a' so it must be a noun."

When assessing quantitative and qualitative findings together for the first research question, it can be said that only few teachers would diagnose their students' need before they start to support them. All teachers in the study group obtained the lowest average score in the diagnosis category and only 44 diagnoses were recorded. Most of the teachers who proposed a diagnosis, used a direct diagnose statements. In her research on scaffolding Van de Pol (2012), put forth that the diagnose of the student need was very rare in the classrooms, and among the basic reasons she counted on that the teachers do not know how to diagnose students' needs and the problem of limited time, crowd of the class and the cognitive burden of diagnosing the student need while dealing with the subject. It is also stated by Hogan and Pressly (1997) that it is very difficult to determine the needs of all students in a classroom environment, especially in the classroom where the number of students is 25-30. To adapt to the principle of

contingency of scaffolding they propose to remember that not every student needs support.

The average score for intention category was ($\bar{x}=23,2$), (82) direction maintenance, (38) control of frustration, (30) cognitive structuring and (17) reducing the degree of freedom were recorded in total. As can be seen from direct teacher quotes given above, most teacher statements do not include their direct goal/intention, but their intentions were understood by their explanations about the method. It is understandable that it is difficult to express and to define the goal/intention of scaffolding, as it is a mental process rather than a behavior performed by teachers. Although they did not distinguish scaffolding intention and mean, Bikmaz and others (2010) in their study on scaffolding strategies that students and teachers use, they found out that inviting student participation (used instead of direction maintenance), was the most scaffolding that was applied to support student in struggling with mathematical tasks.

The average score for the mean/method category was ($\bar{x}=18,1$). From teacher responses (41) prompting, (36) giving hints, (33) questioning and (19) modelling were recorded. Explanation and giving feedback were the least proposed methods/means (with 6 and 4 records). Similarly, explanation was the least referred scaffolding in Bikmaz and others (2010) studies.

When examined in terms of participating teachers (T1-T14); the most diagnoses were made by T2, T3 and T4. The highest scores at intention category belong to T2, T4 and T12. The highest scores in the mean/method category belong to T2, T4, T5 and T10. Thus T2 and T4 own the highest scores in each category, and they got the highest scores from the whole interview form (T2=71, T4=69), followed by T3 (64) and T12 (64).

To answer the second research question: *Does scaffolding used by secondary school English teachers differ according to «gender, age, graduation, professional experience, type of school and number of professional development programs to which they have attended in the last five years» variables?* Teacher scores achieved from the scaffolding scenario form were analyzed by independent group t-Test (gender and graduation variables with two sub-levels) and one-way analysis of variance (age, professional experience, type of school and number of PDP variables with three or more sub-levels).

Examining table 6 for the results of the analyses made in order to determine whether the scaffolding strategies proposed by secondary school English teachers differ according to gender, age, graduation, professional experience, type of school and number of professional development programs to which they have attended in the last five years we found out; for gender variable, male teachers' average scores are about nine points lower than the female teachers scores, however this difference was not significant.

Table 6. Teacher scores by variables

VARIABLES	SCORES	
Gender	Male (3) $\bar{x}=48$	Female (11) $\bar{x}=56.72$

Age	25-29 years (2) M=46.50	30-34 years (3) M=59.33	35-39 years (2) M=64.50	40 years and more (7) M=52.88	
Graduation	English teaching, literature, linguistics field (10) M=58.70		Other fields (4) M=45.25		
Professional experience	1-5 years (4) M=56.50	6-10 years (1) Score=71	11-15 years (4) M=49.25	16 years and more (5) M=54.83	
Type of school	Public academic highschool (3) M=57	Public vocational highschool (5) M=49	Private academic highschool (6) M=58.67		
Number of PDP attended in the last five years	No PDP (4) M=49.25	2-3 PDP (5) M=58.88	4 PDP(3) M=51.00	5 PDP (1) Score=69.00	7 PDP (1) Score=55.00

For age variable, the highest score average belongs to two teachers in the 35-39 age range, and the lowest score average belongs to two teachers in the 25-29 age range, but the difference was not significant.

For the average scores of the graduation variable, teachers who graduated from English language teaching/literature or linguistics field have higher average scores than the teachers who graduated from other fields. There is also a statistically difference between the average scores in the favor of the English language teaching/literature/linguistics field variable ($p=0.028<0.05$). Schulman (1987) defined pedagogical content knowledge as a bridge between specific subject matter (in this case EFL) and how this specific subject matter is demonstrated to others (in Rosiek, 2003). Rosiek (2003, p.406) stated that; “emotional scaffolding requires teachers to have a clear knowledge of their own subject matter and knowledge about the various influences on students’ emotional experiences of the subject matter”. These statements support the finding of the study. EFL teachers who are not expert in their own specific subject matter will not be able to consider the variables that affect their students negatively and thence will not be able to diagnose their needs and support them effectively.

Considering the average scores for the professional experience variable, the highest score belongs to a teacher who has been teaching for 6-10 years (71). The lowest average score belongs to four teachers who have been teaching in the 11-15 years range (M=49,25).

The average scores for the school type variable show that participants from the private academic high school have the highest average score (M=59). Scores of the participants from the public academic high school are close to each other and the school average is (M=57), and the lowest average score belongs to public vocational high school teachers (M=49). There is an increase in the scores for the teachers in academic high schools both private and public towards the vocational high school, however this difference was also not significant.

The highest score for the number of professional development courses teachers have participated in the last five years belongs to a teacher who stated having participated five PDP (69), the lowest average score was found for four teachers who haven't participated any PDP in the last five years ($\bar{x}=49.25$). This was found also below the average score of all participants ($\bar{x}=54.90$) which shows the importance of PDP's in effective teaching. Wei and others (2009), in their study on professional development programs and student achievement, they have revealed that continuous and intensive PDP for teachers can lead to an increase in student achievement.

4. Conclusion

In this research a framework was established after a literature review on 'scaffolding' which is a key strategy that can be used in EFL teaching where the students can interact by taking increasing responsibility and ownership for their role in speaking and listening activities in guidance with a more knowledgeable other. Pawan (2008), states that scaffolding has an effect for enhancing the quality of education of foreign language learners.

A framework consisting of three stages: diagnosing student need, focus lessons and removing of scaffolding and transfer of responsibility was formed. The goals/intentions, means/methods and principles of scaffolding was defined. A case study was conducted via face to face interview with 14 secondary school English teachers from three different secondary school types.

Within the findings of the case study, it can be said that some strategies proposed by secondary school English teachers were in accordance with diagnosis, goals/intentions and means/methods of scaffolding. Only few teachers proposed to diagnose their students need before starting to solve their learning problem, some teachers proposed a direct goal/intention whereas most teachers did not. Nevertheless, most teachers' goal/intentions could be distinguished from their explanations about the means/methods they proposed to use. Almost all teachers were good at the means/methods category. However, most of them did not choose the mean/method in accordance with the diagnosis they made and the goal/intention they set out beforehand.

Although this result obtained from a small sample cannot be used for generalization, findings show that there are differences between the scores. These scores do not differ statistically according to gender, age, professional experience, type of school they teach at, and the number of PDP teachers have attended in the last five years. However, their score averages differ statistically according to their graduation variable.

As a conclusion, there is a main point that can be concluded from this case study: Making diagnose and setting the goal/intention need to be developed by teachers and an effort should be made for developing awareness for the importance of the link between diagnose, intention and means of scaffolding. Opportunities should be given to teachers to improve their knowledge and skills through PDP's that focus on

scaffolding. Especially diagnosing student need which is directly related to the contingency principle of scaffolding, setting the goal/intention and using means and methods to intervene in accordance with the diagnose. It must be kept in mind that the starting point for learning and development, should be what the learners know and what they can do.

For the future researches, these aspects need to be taken into account: This study focused only to the first two stages of the framework, transfer of responsibility that composes the essence of the metaphor should also be tested. Theoretical framework for scaffolding should be tested in various specific subject areas. The scaffolding scenario form that focused on speaking and listening activities can be improved and/or new scenarios focusing on writing and reading activities can be designed.

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Mind the gap! The impact of professional learning communities focussed on the primary-secondary school transition

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Abstract:

Students' primary-secondary school transition has been a research topic for decades. Yet, so far, little attention has been paid to differences in didactical approach between primary and secondary school teachers influencing students' transition process. Results of a recent survey study conducted in Flanders stress the relevance of such a didactical perspective (Goos & Decelle, 2017). Based on the results of this survey study and on the primary-secondary school transition literature in general, 2 pilot professional learning communities (PLCs) consisting of primary and secondary school teachers were established, with a focus on didactics (school year 2016-2017). PLC activities entailed, i.a., discussion of good didactical practices, across-educational-level classroom observations, co-design of lesson materials, coaching, intervision, and co-teaching. An online platform (<http://pwomindthegap.com>) offered PLC participants further insights on relevant aspects of didactics (with theoretical background, articles, videos, didactical checklists, exercises) as well as a blog space. This paper presents the impact of these 2 pilot PLCs. Following recommendations of Merchie, Tuytens, Devos, and Vanderlinde (2016), a mixed-method approach within a 1-year longitudinal design was used for this purpose. Findings reveal that PLC participants evaluate the 'Mind the gap!' PLC rather positively, experience a positive (perceived) impact on their knowledge, attitudes/beliefs, instructional practices, and students' outcomes, and are well aware of some important conditions affecting 'Mind the gap!' PLC effectiveness. Suggestions for educational practice, policy and research are discussed.

Keywords: didactics, primary-secondary school transition, professional development, impact

1. Introduction

1.1. The primary-secondary school transition

In order to ease students' transition from primary to secondary education, Flemish primary and secondary schools undertake a vast amount of activities: for example, the organisation of open days, information sharing about secondary school structure and organisation via brochures or talks, school visits, reception days, and learning skills

trainings. These activities seem effective, as most Flemish students, after some time, indeed seem to adapt well in secondary school (Goos & Decelle, 2017). However, some Flemish students, unfortunately, transition less smoothly, showing study choice doubts, inclined achievement growth, a reduced school well-being, or grade retention (Goos & Borlauw-Vanderlocht, 2017; Dockx, Stevens, Custers, Fidlers, De Fraine, & Van Damme, 2015; Vlaams Ministerie van Onderwijs en Vorming, 2017). Such negative transition effects have also been found in other countries (for reviews, see Hanewald, 2013; Hopwood, Hay, & Dymont, 2016; Korpershoek et al., 2016).

According to Cauley and Jovanovich (2006), an effective primary-secondary school transition policy entails activities framed within a 3x3x3 model: schools should undertake transition activities related to three content domains, i.e., (1) organisation, (2) management of the social environment, and (3) curriculum / pedagogy / didactics, at three time points surrounding the transition, i.e., (1) before, (2) during, and (3) after the transition, for all parties involved, i.e. (1) students, (2) teachers, and (3) parents. In Flanders, most attention so far has been paid to organisation-related and social activities, both in research (Boone & Van Houtte, 2011; Goosen, Boone, Dehertogh, Kavadias, Mahieu, Van Avermaet, Vanhoof, Van Houtte, & Van Kerckhove, 2017) and daily school practice (Departement Onderwijs en Vorming, 2007; Goos & Decelle, 2017). This main focus on organisation-related and social activities is also apparent in other countries (Ashton, 2008; Cauley, & Jovanovich, 2006; Evangelou, Taggart, Sylva, Melhuish, Sammons, & Siraj-Blatchford, 2008; Hanewald, 2013; Hopwood, Hay, & Dymont, 2016). With this context in mind, it comes as no surprise that Flemish teachers primarily name differences in didactical approach between primary and secondary school teachers as plausible reasons for transitional difficulties, either in general, for all students, or for some students or some courses in particular (Goos & Decelle, 2017).

1.2. Professional learning communities

Based on the primary-secondary school transition literature in general, and the aforementioned survey study in Flanders in particular, a pilot intervention study was set up, with the aim of bringing Flemish primary and secondary school teachers together in two professional learning communities, in order to smoothen their students' transition process.

Following DuFour and DuFour (2013), we define a professional learning community (PLC) as *'an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve'*. When set up well, PLCs have been shown to have the potential of increasing teacher knowledge and skills, improving teaching practice, and improving student learning (for reviews, see Dogan, Pringle, & Mesa, 2016; DuFour, & DuFour, 2013; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006; Lomos, Hofman, & Bosker, 2011; Vangrieken, Meredith, Packer, & Kyndt, 2017; Vescio, Ross, & Adams, 2008). Well set-up PLCs share the following nine key features (Merchie, Tuytens, Devos, & Vanderlinde, 2016): (1) content focus (i.e., focus on student learning); (2) pedagogical knowledge (i.e., focus on enhancing the knowledge and skills to teach in these content areas); (3) coherence and evidence-base (i.e., alignment of PLC experiences with PLC participants' goals,

standards, and current reforms, informed by theory and meaningful research evidence); (4) ownership (i.e., alignment of PLC content and process with PLC participants' self-identified needs and interests); (5) duration (i.e., extended and intensive programme); (6) collaborative participation (i.e., collaboration with internal or external peers, e.g., collegial observation); (7) school- or site-base (i.e., incorporation of PLC activities into PLC participants' daily work); (8) active learning (i.e., inquiry-based approach); and (9) trainer quality. Well set-up PLCs take important micro-context conditions and macro-societal conditions into account. Micro-context conditions affecting PLC effectiveness are school administration, school management practices, school leadership and support, resources, school SES, teacher appraisal and feedback, school autonomy and the presence of a professional community (Merchie et al., 2016). Macro-societal conditions entail the policy environment and curriculum/standards (Merchie et al., 2016).

1.3. 'Mind the gap!' professional learning community in Flanders

Within the 'Mind the gap!' PLCs, eight goals were set:

- (1) increased teacher knowledge of (already undertaken) transition activities within own class and school;
- (2) increased teacher knowledge of transition activities (already) undertaken by other teachers and schools, in particular of the other educational level;
- (3) increased teacher knowledge of reasons for transitional difficulties;
- (4) increased teacher knowledge of didactical approaches used by teachers from the other educational level (based on literature, observation, intervision, etc.);
- (5) increased teacher knowledge of learning goals of the other educational level;
- (6) increased mutual understanding;
- (7) application of (4) in teaching practice (in either own class or class of colleague from other educational level, with or without co-teaching);
- (8) smoothed primary-secondary school transition among students.

To reach these eight goals, two PLCs were set up, with a sharp focus on the primary-secondary school transition and didactics. PLC activities entailed, among others, discussion of good didactical practices, across-educational-level classroom observations, co-design of lesson materials, coaching, intervision, and co-teaching. Table 1 shows the design of the intervention study in more detail. An online platform (<http://pwomindthegap.com>) offered PLC participants further insights on relevant aspects of didactics (with theoretical background, articles, videos, didactical checklists, exercises) as well as blog space. Didactical aspects potentially negatively affecting students' transition process were identified based on the literature (Decelle, 2016) and the aforementioned Flemish survey study (Goos & Decelle, 2017). Didactical aspects covered in the PLCs were (1) thinking routines, (2) authentic and contextual teaching, (3) interdisciplinary and project-based teaching, (4) communicative approach in language teaching, (5) students' literacy and academic skills, (6) evaluation, (7) teaching approaches, (8) differentiated instruction, and (9) focus on review and repetition at the start of secondary education.

Table 1: Overview of 'Mind the gap!' PLC activities

Oct '16	PLC session 1 = acquaintance, goal setting, SWOT analysis of current transition policy, theoretical framework, preview PLC course
Nov '16 – Jan '17	Assignments = observation of lesson(s) given by a colleague from the other educational level, blog posting, (voluntary) exploration of didactical aspects (on online platform)
Feb '17	PLC session 2 = intervision, in-depth exploration of several didactical aspects (workshops), preparation of didactical innovation, coaching
Mar '17 – Apr '17	Assignments = preparation of didactical innovation, coaching (upon request), application of didactical innovation in daily practice, blog posting
May '17	PLC session 3 = intervision, evaluation, reception

Note. The UCLL PLC had a more dense course, starting from January 2017 onwards.

1.4. Study aims

The aim of this study is to examine the effectiveness of the 'Mind the gap!' PLCs. In doing so, we aim to add to the current PLC effectiveness literature in two important ways. First, most PLC effectiveness studies have been conducted in countries such as the United States, New Zealand, Australia, and the United Kingdom. In these countries, teachers have obtained formal education at the ISCED 5A level (OECD, 2014), have a strong habit of participating in PLCs in general (OECD, 2014), and participate in PLCs consisting of teachers of the same teaching unit, school, or school campus. Our two pilot PLCs took place in a different context. In Flanders, teachers are qualified at the ISCED 5B level (OECD, 2014) and seldom participate in PLCs (OECD, 2014). What is more, our PLCs bring together teachers from two educational levels and a variety of primary and secondary schools, thus not being familiar with each other at the onset of the PLCs and not having the opportunities to physically meet on a daily basis. Keeping the essential conditions for PLC effectiveness in mind, this obviously influences the effects of 'Mind the gap' we can maximum expect. Second, previous PLC effectiveness studies have mainly investigated effects via observations of PLC sessions, (semi-structured) interviews, or questionnaires, very often within a cross-sectional design (Vangrieken, Meredith, Packer, & Kyndt, 2017). Our study uses a mixed-method approach within a 1-year longitudinal design (see Methodology section), as advised by Merchie et al. (2016).

Research questions:

- (1) How is the 'Mind the gap!' PLC perceived by the PLC participants, in terms of its features?
- (2) What is the (perceived) impact of participation in the 'Mind the gap!' PLC on participants' teacher quality (i.e., knowledge, skills, and attitudes/beliefs)?
- (3) What is the (perceived) impact of participation in the 'Mind the gap!' PLC on participants' teaching behaviour?
- (4) What is the (perceived) impact of participation in the 'Mind the gap!' PLC on participants' students' results?

(5) Which contextual factors affecting PLC effectiveness can be detected by the PLC participants?

2. Methodology

2.1. Participants

In school year 2016-2017, two PLCs consisting of primary and secondary school teachers were established. One PLC was established in close collaboration with a network of local Catholic primary and secondary education schools, in Leuven, thus recruiting teachers from a specific school region. The other PLC was established at the Teacher Training Department of University College Leuven–Limburg, as professional development initiative offered to UCLL's partner schools, thus recruiting teachers from multiple school regions. Participation in 'Mind the gap!' was free of charge and voluntary.

Participants ($N_{\text{total}} = 25$, $N_{\text{primary}} = 15$, $N_{\text{secondary}} = 10$) were mainly female (% female = 84), were 40 years on average, and had an average teaching experience of 15 years. Before the start of the PLCs, most participants (84.20%) perceived the primary-secondary school transition of their students as a rather smooth process. When probed for reasons for non-smoothness among some of their students or for some specific courses, a lack of transition activities related to curriculum, pedagogy, and didactics was often named (67.31%), for example, *"The expectations and [teaching] approach in secondary education differ a lot from those in primary education: more learning content, more difficult learning content, more individual processing of learning content, higher expectations, ..."*

PLC trainers ($N = 3$) were all female, were 36 years on average, and had an average teaching experience of 11 years. Two trainers were mostly familiar with secondary education (teaching courses related to Dutch and language didactics in the UCLL teacher training program of secondary education respectively teaching French in a secondary school). One trainer was mostly familiar with primary education (teaching courses related to pedagogy and general didactics in the UCLL teacher training program of primary education). All PLC sessions were co-taught by two trainers and individual coaching was provided upon request, by the trainer fitting the needs of the specific participant the most.

2.2. Measurement instruments

In order to measure the effectiveness of the 'Mind the gap!' PLCs, a mixed-method approach within a 1-year longitudinal design was used, following recommendations of Merchie et al. (2016). An overview is presented in Table 2.

2.2.1. Features of the 'Mind the gap!' intervention

Core and structural PLC features were evaluated by means of two instruments. First, PLC features were assessed by the PLC participants through the use of a shortened version of the Dutch translation (Vanblaere & Devos, 2016) of the Professional Community Index of Wahlstrom and Louis (2008). The shortened Dutch PCI version (see Appendix, available upon request) was administered at the end of PLC sessions 2

and 3. It contains 6 items covering deprivatisation of practices (3 items; e.g., “How often during the last months (since September 2016) have you visited other teachers’ classrooms to observe instruction?”), reflective dialogue (2 items; e.g. “How often during the last months (since September 2016) have you exchanged suggestions for curriculum materials with colleagues of our professional learning community?”), and collective responsibility (1 item; e.g. “How often during the last months (since September 2016) have you felt that your colleagues feel responsible to help each other improve their instruction?”). Items had to be rated on a 5-point Likert scale with values ranging from 0 (*never*) to 4 (*very frequently*). Based on the scree plot, a one-factor solution was retained. Scale scores were computed by averaging the item scores, for both session 2 and 3. Internal consistencies of the scale scores, assessed by Cronbach’s alpha coefficient, were considered acceptable to good (.69 for session 2 and .78 for session 2). Second, PLC features were evaluated by the teachers via a focus group interview, in session 3. A semi-structured interview schedule, with 12 open-ended questions, was especially constructed for this purpose (see Appendix, available upon request). Two questions were raised pertaining to PLC features: “Which ‘Mind the gap!’ PLC features (sessions, content, organisation, assignments, website, other) should be maintained in the future?” and “Which suggestions do you have to improve the ‘Mind the gap!’ PLC in the future (sessions, content, organisation, assignments, website, other)?”.

2.2.2. Teacher quality (knowledge, skills, and attitudes/beliefs)

PLC participants’ knowledge, skills, and attitudes/beliefs were evaluated by means of three instruments. First, PLC participants’ attitudes/beliefs were assessed through the use of two self-constructed short teacher questionnaires, administered at the end of PLC sessions 1 and 2. These questionnaires (see Appendix, available upon request) contain open-ended questions regarding teachers’ beliefs about the primary-secondary school transition (e.g., “In your opinion, what are plausible reasons for transitional difficulties for some students or some courses?”) and teachers’ beliefs about didactics (e.g., “Have your thoughts about (potential) didactical differences between primary and secondary education changed? If so, in what way, and regarding which didactical aspect in particular?”). Second, PLC participants’ knowledge and attitudes/beliefs were evaluated via blog posts. After PLC sessions 1 and 2, PLC participants were requested to reflect on their learning experiences on the project’s online platform (blog post assignment, see Appendix, available upon request). Open-ended questions raised related to teachers’ curricular knowledge (e.g., “What knowledge have you gained regarding differences between primary and secondary education?”) and beliefs about the primary-secondary school transition (e.g., “Which ideas have you gained regarding what secondary school teachers might do in order to ease students’ primary-secondary school transition process?”). Third, PLC participants’ knowledge, skills, and attitudes/beliefs were assessed by the teachers via the aforementioned focus group interview, in session 3. One question was raised pertaining to teachers’ pedagogical content knowledge (“Where do you locate what you have learnt throughout the ‘Mind the gap! PLC in the didactical model? What did

you learn regarding the other didactical aspects?"), two questions were raised pertaining to teachers' curricular knowledge ("How did participation in the 'Mind the gap!' PLC affect your perception towards the primary-secondary school transition and the other educational level? I used to think ... Now I think ..."; "Where do you locate what you have learnt throughout the 'Mind the gap!' PLC in the 3x3x3 transition model? What did you learn regarding the other transitional aspects?") and two questions were raised pertaining to a mixture of teachers' subject matter content knowledge, teachers' pedagogical content knowledge, and teachers' curricular knowledge ("Which predetermined goals have you achieved? Which not?" (see section 1.3, goals 1-5) and "What knowledge do you still lack?").

2.2.3. Teaching behaviour

Teachers' instructional strategies/practices and interaction patterns were also evaluated by means of the aforementioned focus group interview, in session 3. Three questions related to PLC participants' instructional strategies and practices: "Which predetermined goals have you achieved? Which not?" (see section 1.3, goal 7), "Which didactical practice will you keep applying?" and "Which (so far unexplored) didactical aspect would you be willing to experiment with in the near future?". One question related to PLC participants' interaction patterns: "Which predetermined goals have you achieved? Which not?" (see section 1.3, goals 6-7).

2.2.4. Student results

Student results were indirectly evaluated, again by means of the aforementioned focus group interview, in session 3. One question related to the results among PLC participants' students: "Which predetermined goals have you achieved? Which not?" (see section 1.3, goal 8).

2.2.5. Contextual factors

Micro-context conditions and macro-societal conditions were also evaluated by the teachers via the aforementioned focus group interview, in session 3. Three questions were raised regarding PLC contextual factors: "Which circumstance(s) currently retain(s) you from applying knowledge and skills gained throughout the 'Mind the gap! PLC in your daily practice?", "What could assist you in better applying knowledge and skills gained throughout the 'Mind the gap! PLC in your daily practice?", and "How can educational policy (e.g., your school principal, your school community, ...) assist you in better applying knowledge and skills gained throughout the 'Mind the gap! PLC in your daily practice?"

2.3. Data analysis

A mixture of ANOVA and thematic analyses was performed to analyse the data.

As for the closed questions on the shortened Dutch PCI, averages were computed and compared across time (during versus post intervention), by means of an analysis of variance. The analysis was conducted in R.3.3.2.

As for the open-ended questions on the teacher questionnaires, focus group interview, and blog assignments, a thematic analysis approach was used. In a first step, a categorisation framework was built up by the authors, based on Merchie et al. (2016).

The following coding categories were constructed: (1a) content focus, (1b) pedagogical knowledge, (1c) coherence and evidence-base, (1d) ownership, (1e) duration, (1f) collaborative participation, (1g) school- or site-base, (1h) active learning, (1i) trainer quality, (2a) teachers' subject matter content knowledge, (2b) teachers' pedagogical content knowledge, (2c) teachers' curricular knowledge, (2d) teachers' skills, (2e) teachers' attitudes and beliefs about teaching and learning, (2f) teachers' beliefs about themselves, (3a) instructional strategies and practices, (3b) interaction patterns, (4a) domain-specific student outcomes, (4b) domain-general student outcomes, (5a) micro-context conditions, and (5b) macro-societal conditions. In a second step, all participants' answers were anonymised, coded, and categorised. Coding and categorisation was done by the first two authors separately. In a third and final step, coding and categorisation was compared across coders. Agreement was reached in most cases and can thus be considered as satisfactory.

3. Results

3.1. Features of the 'Mind the gap!' intervention

Overall, participants rated the 'Mind the gap!' PLC features as 1.71 during session 2 and 1.65 during session 3 (on a 0-4 scale), with no significant differences in perceptions across time, $F(22,1) = .05$, $p = .82$. Items receiving the lowest average scores all referred to deprivatisation of practices (i.e., collegial observation and co-teaching), with average scores ranging between 0,13 and 1,22.

The 'Mind the gap!' PLC was positively evaluated by the PLC participants regarding the features pedagogical knowledge, ownership, collaborative participation, and active learning, as is illustrated by the following quotes.

Pedagogical knowledge: *"[Input on the 'Mind the gap!' website] can be useful"*.

Ownership: *"I need to be able to do it myself", "When people start imposing things on me, I lose interest"*.

Collaborative participation: *"Collegial observation is an ideal starting point for further co-operation", "Co-teaching is so much stronger than doing it all by yourself", "It confirmed me that it is very pleasant to collaborate with other teachers, to share expertise and to set common goals", "But what I found to be great, was the collaboration [...] sharing expertise, I find it super important", "[Interested in] exchange of good practices and material", "[...] 1+1=3"*.

Active learning: *"Pure theory, that would not work", "This is a more active way [of professional development]"*.

The PLC features coherence and evidence-base, ownership, and duration were negatively evaluated by the 'Mind the gap!' PLC participants, as is illustrated by the following quotes.

Coherence and evidence-base: *"Often a too 'academical' approach of certain aspects"*.

Ownership: *"The intermediate assignments took a lot of time", "Blogging is time-consuming and over-complicated. It is not my kind of thing", "We do not see the point of filling in the questionnaires. We want to spend our time on things we can actually use in our schools"*.

Duration: *"We need more than three meetings a year. The meetings should provide us with time to focus on this innovation. We need time to work on our lesson plans during the sessions", "I regret that the project only started in January, too late", "The timing is not good", "An additional year to put theory into practice would be nice"*.

No remarks were given regarding the PLC features content focus, school- or site-base, and trainer quality.

3.2. Teacher quality

'Mind the gap!' PLC participants mentioned positive (perceived) effects of PLC participation on their pedagogical content knowledge, curricular knowledge, attitudes/beliefs about teaching and learning, and beliefs about themselves, as is illustrated by the following quotes.

Teachers' pedagogical content knowledge: *"I feel like I can better distinguish the type of lessons that provide opportunities for differentiated instruction", "Grammatical items are very suitable for autonomous activities", "What I found really magnificent, was [to observe how] to integrate separate subjects in one lesson", "The classroom set-up with a mini-class is very inspiring", "Corner approach from primary education: would be interesting to apply in secondary education"*.

Teachers' curricular knowledge: *"The contrast in teaching approach used is so big: from mainly individual processing (primary) to mainly class conversations and presentations (secondary)", "[During my observations in Grade 6], I saw more variation in didactical approaches used, it is a lot more common in primary school", "Of course, this [learning content] is deepened to a larger extent [than in my class in primary school] but the learning content itself ... my students receive this as well", "Teaching tempo is higher in secondary education", "In my opinion, this test was similar to tests I give to my [Grade 6] students", "[During a French course] the [primary school] teacher often speaks French, but at the same time she translates it to Dutch [...] It is not easy for students on September, 1st, to receive French instructions in secondary school, when they are not used to that"*.

Teachers' attitudes/beliefs about teaching and learning: *"[In secondary education, in contrast to primary education, we offer] too little differentiated instruction, [we have] a less personal approach, and [we have] fewer options to adapt our prepared program in order to do something completely different", "[The largest differences between primary and secondary education are] secondary education being bound by a fixed time schedule and having teachers with different teaching styles versus primary education with one teacher knowing his/her students very well", "[For students, secondary education, in contrast to primary education, means] more independent student behaviour and adaptation to a new environment, new people, and new friends", "[observing courses in Grade 6] made me wonder: do all our [Grade 7] lessons have to be so 'stiff'? The fact that students are talking to each other does not necessarily mean they are not learning", "I thought [grouped school desks] would create more chaos, but that was not the case", "Students in primary school are more autonomous than I thought"*

[concerning execution and self-correction of exercises]", "Group work is often more productive if they can explain [things] to each other", "I liked the fact that students may assess themselves and may choose to follow classical instruction or not [depending on this self-assessment]", "I now realise the gap between primary and secondary education is even bigger than I thought", "My perceptions have not changed, but my view is more open and clear", "[My ideas] have not really changed, they have been confirmed".

Teachers' beliefs about themselves: "[the vocabulary used by the secondary school French teacher during an observed French lesson] has given me the courage to actually speak French in my classroom", "I got the impression that maybe I want to be too much on top of things, in control of the situation. I think I must give my students more chances to be independent, to take responsibility", "I [primary school teacher] now realise that secondary school teachers do not all 'look down' on us. I feel that my input in conversations is appreciated".

When specifically probed regarding activities primary school teachers can undertake (more) to ease students' transition to secondary school, PLC participants most frequently respond with activities related to curriculum, pedagogy, and didactics (69,57%, see Figure 1), such as "better arrangements in terms of didactics, assessment periods, and what students specifically need at the start of secondary education", "arrangement of shared gatherings of primary and secondary school teachers, adjustment with secondary education, better knowledge of secondary education learning goals", "appointment of subject-specialist teachers in primary education (talents), learning trainings, planning, inquiry of secondary education learning goals". Likewise, activities related to curriculum, pedagogy, and didactics are most frequently named by PLC participants when probed regarding activities secondary school teachers can undertake (more) to ease students' transition process (70,00%, see Figure 1), as is illustrated by the following quotes: "[...] working in a similar way or ensuring a gradual approach in terms of homework, teaching approaches, required independence", "better arrangements regarding didactics (terminology)", "more attention for learning trainings [...] more group work".

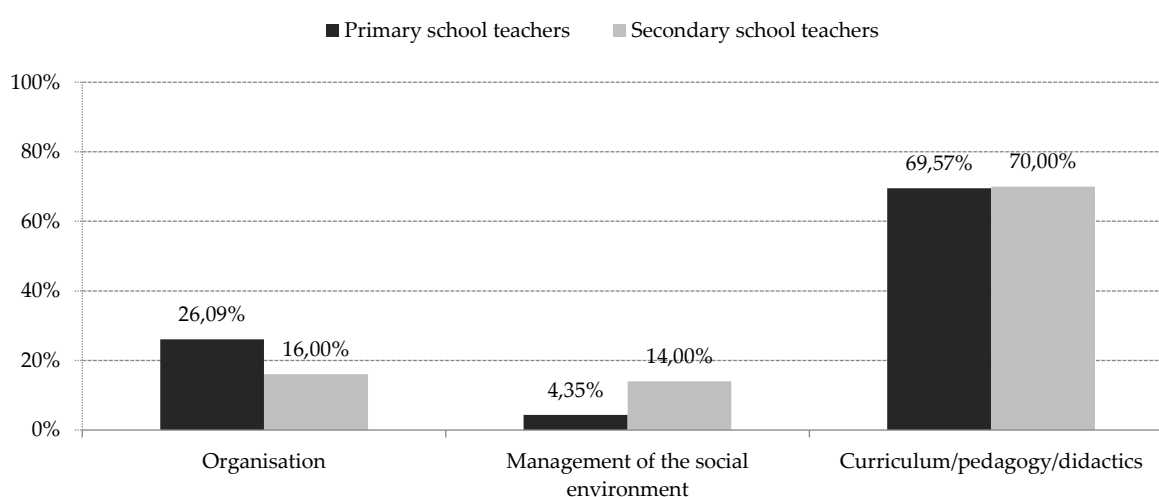


Figure 1: Activities that primary and secondary school teachers can undertake (more) to ease students' transition process, according to PLC participants.

Zero-effects on pedagogical content knowledge, curricular knowledge, attitudes/beliefs about teaching and learning, and beliefs about themselves were also mentioned by some PLC participants, as is illustrated by the following quotes.

Teachers' pedagogical content knowledge: *"Personally, I do not like contract work as I find it unnecessary and too much work"*.

Teachers' curricular knowledge: *"At the beginning [PLC session 1], [...] I [secondary school teacher] rated myself low regarding knowledge of primary school curricula. And actually I still know very little about it. But I did not make any efforts to look for that information, I must admit", "The curricula for French are different, but where exactly is the difference? I still do not know what causes the gap for French"*.

Teachers' attitudes/beliefs about teaching and learning: *"Speaking French is something you know how to do or you do not. There is no in-between"*.

Teachers' beliefs about themselves: *"My contributions [in terms of organising interesting and motivating learning activities] will probably be less interesting [than those of primary school teachers]"*.

No (perceived) effects on subject matter content knowledge were reported.

3.3. Teaching behaviour

Didactical aspects chosen by the 'Mind the gap!' PLC participants for instructional innovation were teaching approaches (co-teaching in French courses and cooperative learning), differentiated instruction, thinking routines, and interdisciplinary and project-based teaching.

'Mind the gap!' PLC participants mentioned positive (perceived) effects of PLC participation on instructional strategies and practices used in their classrooms, as is illustrated by the following quotes.

Instructional strategies and practices: *"[...] courage to actually speak French in my classroom", "I used the activities set up for enhancing thinking routines so my students could analyse a movie of their choice: Spijt or The client", "I tried out prolonged instruction by means of mini-classes", "I spoke to some of my colleagues to promote across-curricular activities and it resulted in a project of one week", "During French lessons, we worked by means of peer tutoring. The bright students helped the other ones", "I prepared a lesson using the computer room. The students received correction keys and they had to assess their own work by means of smileys", "I changed the setting of the school desks for my regular lessons", "The ['Mind the gap!'] workshop on 3-tracks-approach [from PLC session 2] [...] encouraged me to experiment with the 3-tracks-approach"*.

A zero-effect on instructional strategies and patterns was mentioned by two PLC participants, as is illustrated by the following quotes.

Instructional strategies and practices: *"I [primary school teacher] had the intention of preparing a lesson with S. and L. [...] to realise activities with two classes by means of co-teaching (natural sciences, technique, and arts). We did not get to realise it. We really want to*

try it next school year and it would be awesome if we could convert it into a shared study lesson”, “I did not do anything, I neglected my assignments”.

No (perceived) effects on interaction patterns were mentioned.

3.4. Student results

‘Mind the gap!’ PLC participants reported positive (perceived) effects of PLC participation on their students’ domain-specific and domain-general knowledge and skills, as is illustrated by the following quotes.

Domain-specific student knowledge and skills: *“They spontaneously said “I would not do it that way in a grammar lesson on cases” [...] I liked the fact that they reflected on it and were thinking about which kind of subjects are suitable”.*

Domain-general student knowledge and skills: *“Students were proud of what they had achieved”, “Students’ motivation and involvement was higher than usual”, “They were really enthusiastic and they searched in books”, “[...] they all said it was fun to do”, “I had the impression that students were more helpful to each other”, “[...] there was one student – a very spontaneous one, a student with concentration problems [...] he says to me “Oh, miss, I have never realised that much in a single lesson before!” “, “I would not have gotten so far in a traditional lesson”, “The students enjoyed it”.*

No (perceived) effects on students’ domain-specific knowledge and skills were reported.

3.5. Contextual factors

Some micro-contextual and macro-societal factors affecting PLC effectiveness were reported by the PLC participants, as is illustrated by the following quotes.

Micro-context conditions: *“We should be structurally unscheduled to maximise the effects of PLC participation”, “Only the days of the [PLC] group sessions are fixed. The other things, for example, observation, you kind of have to figure it out yourself. So reserve, let us say, 10 days for ‘Mind the gap!’ and communicate these days to the head masters so they can find a substitute teacher”, “I tried to realise something, but the last months of the school year are so busy”.*

Macro-societal conditions: *“The structure and organisation [of primary education] is completely different. It forces us [in secondary school] to work in another way”, “Interdisciplinary teaching is difficult in secondary education: a project needs to be taught by all teachers”, “[Differentiated instruction] is a weak spot in the teacher training program, especially in the teacher training program of secondary education”.*

4. Conclusion and discussion

4.1. Main findings

In sum, three major findings emerged from this study. First, we found that many features of the ‘Mind the gap!’ PLC seem to be evaluated rather positively by our PLC participants. PLC features that were particularly appraised were pedagogical

knowledge, ownership, collaborative participation, and active learning. We offered our PLC participants a rich variety of PLC activities throughout the PLC course (among which discussion of good didactical practices, across-educational-level classroom observations, co-design of lesson materials, coaching, intervision, and co-teaching) and gave our PLC participants a lot of freedom in terms of cooperation (e.g., choice of colleague(s) to collaborate with, type of collaboration) and innovation content (e.g., choice of didactical aspect, application of didactical innovation in own class or class of colleague from other education level, with or without co-teaching), possibly explaining these positive evaluations (cf., Merchie et al., 2016). What is more, we found that our 'Mind the gap!' PLC participants seem to frequently feel collectively responsible and seem to engage in reflective dialogue every now and then. Unfortunately, and somewhat surprisingly with the goals of the 'Mind the gap' PLC in mind, we also found deprivatisation of practices (i.e., collegial observation and co-teaching) to seemingly never to seldom have taken place during the PLC course. In fact, average scores of our PLC participants on deprivatisation of practices are not higher than those of 490 Flemish, experienced primary school teachers not participating in any formal PLC course, as recently documented by Vanblaere and Devos (2016). This is worrisome and might indicate that a more extended and intensive PLC program is required to break down the still existing (mental) walls between classrooms (cf., OECD, 2014). This suggestion is also shared by our PLC participants, being especially critical about the PLC feature duration.

Second, despite our 'Mind the gap!' PLC participants to seldom deprivatise their classroom practice, we found that they did seem to experience a positive (perceived) impact of the other offered PLC activities on their knowledge (goals 1-5), their attitudes/beliefs, their instructional practices (goals 6-7), and their students' outcomes (goal 8), which is in line with previous PLC effectiveness studies (Dogan, Pringle, & Mesa, 2016; DuFour, & DuFour, 2013; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006; Lomos, Hofman, & Bosker, 2011; Vescio, Ross, & Adams, 2008). Positive (perceived) effects on PLC participants' knowledge and attitudes/beliefs about the primary-secondary school transition (transition activities, reasons for transition difficulties, didactical aspects were most apparent, which is not surprising given the specific content focus of our 'Mind the gap!' PLC.

Third, we found that our 'Mind the gap!' PLC participants seem well aware of important conditions affecting 'Mind the gap!' PLC effectiveness. In particular, school management practices, the policy environment, and curriculum/standards were mentioned by our PLC participants as important contextual factors. The role of contextual factors has so far seldom been investigated in PLC effectiveness studies (Merchie et al., 2016), making it impossible for us to compare our findings with those of previous studies.

4.2. Suggestions for educational practice, policy, and research

With the three aforementioned main study findings in mind, we want to conclude by providing some suggestions for educational practice, policy and research. First, in line

with Hopwood, Hay, and Dymont (2016) and Goosen et al. (2017), we strongly believe that it would improve Flemish educational practice if primary and secondary school teachers and principals would meet on a more regular basis, in order to jointly smoothen students' transition process. Next to focussing on transition activities related to organisation and management of the social environment, a focus on bridging curriculum/pedagogy/didactics seems valuable in these meeting (see also Cauley & Jovanovich, 2006). Our 'Mind the gap!' intervention could be upscaled for this purpose. However, if upscaled, based on our experiences, we suggest adapting several PLC features so as to improve 'Mind the gap!' PLC effectiveness: (1) content focus (i.e., PLC participants could be encouraged to collect data related to student outcomes), (2) ownership (i.e., PLC participants could be invited to blog on Facebook instead of on Weebly; after PLC participation, PLC participants could be asked to evaluate their self-formulated, predetermined goals), (3) duration (i.e., PLC participants would benefit from a higher amount of PLC sessions, offered throughout an entire school year or even longer, with intensive coaching during the PLC sessions instead of voluntarily in between PLC sessions), (4) collaborative participation (i.e., PLC participants could be encouraged to collaborate to a higher extent, especially when several primary and secondary schools from several regions are involved), and (5) school- or site-base (i.e., PLC participants' principals could best be informed on a regular basis, and more specifically regarding the PLC time schedule and required PLC assignments, in order to better guarantee application of what has been learnt during the PLC sessions. In fact, this is exactly the aim of the next phase in the 'Mind the gap!' research project at University College Leuven–Limburg (of which this pilot intervention study was a part of). In school year 2017-2018, four PLCs will be set up, in approach similar to those documented in this study but slightly adapted based on the results of this pilot study.

Second, to make the first suggestion of a more frequent and intense dialogue and collaboration between primary and secondary education feasible, we recommend educational policymakers to remove structural and practical boundaries as much as possible (see also contextual factors; cf. Vanblaere & Devos, 2016). An idea would be to integrate PLC participation in the job description of teachers. In Flanders, such debate is currently ongoing (<http://hildecrevits.be/nl/leraren-en-personeel>).

Third, in line with the Council of Flemish Universities and University Colleges (Vlaamse Universiteiten en Hogescholen Raad, 2014), we believe a close cooperation between primary and secondary school teachers and principals should best start during the teacher training program. In Flanders, the teacher training programs of primary education and secondary education are two separate worlds with (mostly) separate teacher trainers and very few joint courses for students in either program. A joint course on the primary-secondary school transition for students from both teacher training programs, given by teacher trainers with expertise in both educational levels, including several PLC activities (e.g., observation, teaching, and co-teaching in Grade 6 and 7, intervision, etc.), might be a way to bridge the gap already apparent before students enter the 'real' educational practice.

Fourth and finally, further research is needed as our study is subject to a number of limitations. In line with recommendations of Merchie et al. (2016), we used a mixed-method approach within a 1-year longitudinal design, using teacher questionnaires, blog assignments, and a focus group interview, to evaluate PLC effectiveness. Future studies on across-educational-level PLC effectiveness should also explore the added value of using observations (of teacher and student behaviour), student questionnaires, student interviews, and student tests, allowing a better across-method comparison. Moreover, we experienced a high dropout rate in our two pilot PLCs, especially in the PLC with the more dense course. Many teachers dropped out because of illness or inspections in their schools. Future studies on across-educational-level PLC effectiveness should investigate PLC effects in more and larger groups and adapt the preset time schedule if assignments fall in periods of school inspections, which we were not able to do. Finally, our study was set up for reasons of piloting, with 'full' intervention taking place in school year 2017-2018. We had a small sample of teachers willing to participate in our pilot intervention, and no control group. Future studies on across-educational-level PLC effectiveness should add a control group of teachers not participating in the PLC, in order for teacher knowledge, skills, attitudes/beliefs, teaching behaviour, and student results to be compared.

5. Acknowledgements

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Innovative approaches to teaching music in elementary school – opera in music classes

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Abstract: This paper discusses the issues in innovative approach to teaching music in elementary school, with a special emphasis on the treatment of the opera. The authors make the following classification of operas suitable for teaching in music classes: (1) operas in which children have secondary/supporting roles (small solo roles or children's operatic chorus); (2) operas for children performed by both adults and children, and titles are intended for children; (3) operas that are aimed at and performed by children. The paper proposes various possibilities for enriching the traditional approaches to processing opera content, through student's involvement in opera performances, through correlations with different subjects, through the use of educational technology and through visiting live opera performances. The paper points out that this innovative approach to opera in school will contribute to achieving the following goals: developing student's musical taste, establishing criteria for evaluation of music which belongs to different music styles and creating future operatic and concert audiences.

Key word: correlation, music classes, educational technology, opera.

1. Introduction

Music is an important part of human culture and an integral part of almost every human being. It fulfils various physical, cognitive, emotional and social functions, and listening to music is one of the most common forms of engagement with music (according to Dobrota and Reić Ercegovac, 2016, p. 9). It is indisputable that every child has the right on music education, regardless of the level of development of his musical abilities. Every child has the right to familiarize and engage in valuable music, to develop musical tastes and to establish criteria for the evaluation of music which belongs to different musical styles.

Elementary music education involves two fundamental principles. The first is a *psychological principle*, which says that students love music and want to actively participate in music, and the second is a *cultural-aesthetic principle* that directs student

to become a competent user of music culture (The Curriculum for Primary Schools, 2006, p. 66).

Teaching music in classroom is realized through four teaching areas: singing, playing, listening to music and the elements of musical creativity. Students sing composed and traditional songs, play their rhythm and meter, listen to the composed and traditional compositions, observing different musical-expressive elements in them and engage with the elements of musical creativity. The subject teaching is based on the open model in which the obligatory part refers to introducing and listening to music, while the teacher is free to choose the mode of active making music (The Curriculum for Primary Schools, 2006, p. 66). Therefore, besides introducing and listening to music, students can sing, play music, learn music, play music games and participate in free, improvised rhythmisation, moving to music, dance and playing. Music education in class and subject teaching is mainly based on the tradition of western classical music, which is accepted in a certain way as a musical universe, as something superior to other types of music (Becker, 1986).

Music education in both classroom and subject teaching needs to be continually modernized through the use of teaching technology, respectively different teaching media, primarily audiovisual (Cassidy and Geringer, 1999; Dobrota, 2013/2014; Tomaš and Dobrota, 2015). Examples of such media are the interactive music games *The Nutcracker*, *Four Seasons* and *The Magic Flute*, and Disney's animated "concert" movie *Fantasia* (1940), which includes eight musical works: J. S. Bach: *Tocatta and Fugue in D minor*; P. I. Tchaikovsky: *Suite The Nutcracker*; P. Dukas: *The Sorcerer's Apprentice*; I. Stravinsky: *The Rite of Spring*; L. van Beethoven: *The Pastoral Symphony*; A. Ponchielli: *Dance of the Hours*; M. Musorgski: *A Night on the Bare Mountain*; F. Schubert: *Ave Maria*. By applying such media music teaching becomes more interesting, classical music is closer to students, they are aesthetically educated and they develop their musical abilities.

2. Children's musical preferences

Musical preferences represent short-term estimates of liking, while musical taste refer to relatively steady, long-term behaviour and valuation, respectively more permanent dispositions representing the totality of individuals' preferences (Mirković-Radoš, 1996). There is a large number of music-pedagogical researches focusing on issues of musical preferences (Dobrota and Reić Ercegovac, 2014, 2015, Teo, Hargreaves and Lee, 2008), since understanding and insight into children's musical preferences is a significant guideline for music pedagogues and teachers while selecting examples for listening. Namely, children will enjoy music lessons only if they are surrounded by the music they love and they respond positively to it.

The results of investigations of children's music preferences can be grouped into several groups. First, elementary school students mostly prefer popular and rock music styles, and preferences for such music are increasing with age (Brittin, 2000; Jellison and Flowers, 1991). Furthermore, younger children prefer audio-visual music

fragments, compared to audio recordings of the same musical works (Brittin, 2000; LeBlanc et al., 1988; LeBlanc et al., 1996; Montgomery, 1996). Concerning music preferences and music-expressing elements, the results show that children prefer the music in fast tempo and familiar music, regardless of the style of music to which such music belongs (Demorest and Schultz, 2004; LeBlanc, 1981; Montgomery, 1996). Finally, children's musical preferences are significantly influenced by the age and gender of the child and the performing media (LeBlanc et al., 1999; McCrary, 1993).

Starting from Hargreaves' (1982) term of *open-earedness*, LeBlanc (1991) emphasizes the listeners' tolerance towards different musical styles and points out that younger children are more open to different music styles. This knowledge is of great importance to music pedagogues in order to keep children surrounded by high quality and diversity musical works from the earliest days.

Finnäs (1989) finds that music education insufficiently affects the students' preferences of classical music. Burrack and Maltas emphasize the importance of early contact with valuable music. Those individuals who are in childhood more often exposed to opera art and are more likely to visit opera performances at an adult age (Burrack and Maltas, 2006, 82). Sims (1992) emphasizes the importance of active participation in music activities, accentuating that performance, listening and perception of music is of extraordinary significance for developing the ability to analyse, evaluate, perceive and understand such music. Similarly, Rose and Wagner (1995) think that the students' negative attitude towards different musical styles are directly related to the lack of previous experience with the same styles. On the other hand, Burrack and Maltas (2006) do not find the connection between previous experience with the opera art and the reception of opera works for children of elementary school age. In their research, it was found that children without previous experience with the opera responded positively to the lively performance of children's opera at their school. Miller (1984) finds out that younger children are more likely to accept opera and opera singing compared to the older ones, and emphasizes the need for the early introduction of opera in children's world.

Wolf (1999) emphasizes that children of elementary school age who are participating in the *Creating Original Opera* project, in which with the assistance of teachers create and produce a new opera, not only successfully and efficiently cooperate to solve artistic tasks but become more consistent in quality results, more active in role-changing and question-building, more constructive in commenting, more capable of drafting previous attitudes than students who do not participate in that project. Leung and Kier (2008) find that children and young people who are listening to classical music, opera and other musical-scene types are more often socially engaged.

3. Opera in music teaching

Opera is a complex theatrical, musical-scene work, dating back to the 17th century, combining music, visual art, dance art and literature. According to the Curriculum for primary schools (2006), students meet for the first time with the opera fragment in the

fourth grade of elementary school (Verdi: *The Choir of the Gypsy* from the opera *Trubadur*).

In the fifth grade, it is foreseen to listen to the performance of *The spinning chorus* from the opera *The Flying Dutchman*, R. Wagner; *The Huntsmen's Chorus* from the opera *Oberon*, C. M. von Weber and, as part of the theme of *The Music Composition*, the *Toreador Song* from the opera *Carmen*, G. Bizet.

In the sixth grade, within the theme of *Shaping a music piece*, students are introduced to the Orpheus aria *Che faró senza Euridice* from the opera *Orpheus and Eurydice*, Ch. W. Glucka. The most opera works students get acquainted through the theme of *Singing voices* (W. A. Mozart: *The Magic Flute*, Queen of Night's aria *Der Holle Rache*, Sarastro's aria *O Isis und Osiris*; G. Rossini: *The Barber of Seville*, Figaro's aria *Largo al factotum*; G. Puccini: *Turandot*, Kalafa's aria *Nessun dorma*; G. Verdi: *Rigoletto*, Gilda's aria *Caro nome*; G. Verdi: *The Trubadur*, Azucena's aria *Stride la vampa*; G. Verdi: *Traviata*, Germont's aria *Di Provenza il mar*, I. Zajc: *Nikola Šubić Zrinjski*, Jelena's Song, G. Bizet: *Carmen*, Carmen's Aria (*The Habanera*)).

In the seventh grade, as part of the theme of *Instruments*, students listen to *Carmen*, *Marche et Choeur des gamins: Avec la garde montante*, G. Bizet; *Aida*, 2nd act *Marccia trionfale*, G. Verdi; *Prelude* of the 3rd act of opera *Lohengrin*, R. Wagner; *Barber of Seville*, don Basilio's aria *La calunnia e un venticello*, G. Rossini; *Carmen*, 2nd act: *Chanson Amoureuse...ce n'est pas une raison*, G. Bizet; *Boris Godunov*, end of the 2nd prologue, M. P. Musorgski; *Tosca*, 1st act, completion of the scene in the church, G. Puccini; *The Magic Flute*, the finale of the first act *Das klinget so herrlich das klinget so schön*, Papageno's aria *Ein Mädchen oder Weibchen wünscht Papageno sich*, W. A. Mozart.

Opera as a musical-scene work is introduced in the eighth grade of elementary school and within that theme, students listen to the numerous pieces from different operas (W. A. Mozart: *The Magic Flute*, G. Puccini: *Turandot*, V. Lisinski: *Porin*, G. Bizet: *Carmen*; Rossini: *Barber of Seville*, G. Gershwin: *Porgy & Bess*, J. Gotovac: *Ero the Joker*, I. Zajc: *Nikola Šubić Zrinjski*).

Although already from the first grade of elementary school students are beginning to adopt the key terms associated with the opera (singer, choir, soloist, conductor, composer), only in the sixth grade, inside the activities of *listening to and introducing to music*, the theme of *singing voices*, concepts are adopted such as are soprano, mezzo-soprano, alto tenor, baritone, bass, choirs (mixed, male, female, children). The adoption of the above mentioned key terms makes the following formulation of educational achievements: recognition of singing voices on musical examples (Curriculum of Primary School, 2006, 74). In the eighth grade of elementary school, in the activities of *listening and introducing to music*, theme of the *music-scene type*, students learn about opera, operetta, musical and ballet. Within the educational achievements of the student is required to recognize the fundamental features of the specific musical genre (parts/overture, acts, images, arias, duet, trio, quartet, choir, ballet fragments, composer, librettist, performers/orchestra, actors-singers, major composers) and knowledge of at least two full musical examples (arias, overtures, opera numbers) at

the recognition level. It is emphasized that it is not necessary to memorize verbal definitions, but to know in their words to determine the musical type (opera, operetta, musical, ballet) since the ultimate goal is the music (The Curriculum for Primary Schools, 2006, 77).

Given the importance of active engagement of students for perception and understanding of different operatic titles, we will consider the different possibilities of their inclusion in the opera.

1. *Involvement of students through works where children have secondary/supporting roles (small solo roles or children operatic chorus).* These are for example the titles: G. Puccini: *La Bohème*, G. Puccini: *Tosca*, G. Puccini: *Turandot*, M. P. Musorgski: *Boris Godunov*, A. Berg: *Wozzeck*, R. Strauss: *Der Rosenkavalier*, J. Massenet: *Werther*, G. Verdi: *Otello*, G. Bizet: *Carmen*, W. A. Mozart: *Die Zauberflöte*, G. Verdi: *Macbeth*, P. I. Tchaikovsky: *The Queen of Spades*, G. C. Menotti: *Martin's Lie* and others.

2. *Involvement of students through works for children in which performers are adults and children, and the headlines are intended for children.* These are the titles: B. Britten: *The Little Sweep*, B. Britten: *Noye's Fludde*, G. C. Menotti: *Amahl and the Night Visitors*, G. C. Menotti: *The Boy Who Grew Too Fast*, G. C. Menotti: *The Singing Child*, E. Humperdinck: *Hansel and Gretel*, J. Bingham: *Old Befana*, J. Bingham: *Daniel's Gift*, D. Burry: *The Hobbit*, D. Holman: *Doctor Canon's Cure*, J. Dove: *The Adventures of Pinocchio*, M. de Falla: *El Retablo de Maese Pedro*. In such works we also include puppet opera, such as R. Ayres: *Peter Pan*.

3. *Involvement of students through children's play that are intended for children and performed by children.* Such titles are J. Bingham: *Anniversary Tales*, Bingham: *Barrington Bunny*, J. Bingham: *The Legend of the Bluebonnet*, J. Bingham: *The Changeling*, J. Bingham: *Char Face*, G. C. Menotti: *Chip and His Dog*, H. Krása: *Brundibar*.

Bearing in mind the thinking of Sloboda (1990), who points out that certain musical experiences in the course of music education may develop a negative attitude toward music, it is important to look for alternative, more adequate ways of working on such content when getting acquainted with opera art. Traditional approaches of learning the opera contents in elementary school, which include the study of the historical development of opera art, the acquaintance of the famous opera composers and their works, the structure of the opera, the artists and persons involved in the preparation and performance of the opera, can be supplemented and enriched in such a way that this complex artistic work becomes closer to students.

One of the ways of approaching to opera is to involve students in the performance, through students' participation in the children's operatic chorus, or through solo roles in operas for children or in children's operas. Participation in such extracurricular or outside school activities is based on the free choice of students, so their intrinsic motivation is great, so students in much easier and more extent way acquire knowledge (Proleta and Svalina, 2011). Krnić and Lučić (2016) emphasize that participation in the children's chorus can accomplish many music teaching tasks, such as material tasks (introducing different musical works, discovering and knowing the

role of actors in creating opera, recognizing and differentiating singing voices and musical instruments etc.), functional tasks (forming, developing and enhancing vocal abilities, developing group music ability, developing ability to perform music of different tempos etc.) and educational tasks (developing interest and love for the opera and other aesthetically valuable music, developing the need of active music making, routing to valuable music experiences etc.).

Within the framework of the (two-part) children's school choir, it is also possible to get acquainted more closely with, for example, G. Bizet's opera *Carmen*, in a way to elaborate the choral section of *Avec la garde montante* (*The New Guard*). Children choir in opera *Carmen* has two performances: in the first and the fourth act. In the first act the choir plays a role of children playing on the street and imitating the change of guards singing the choir piece *Avec la garde montante*. In the fourth act the children's choir is part of the people who are welcoming the participants of bullfighting in the choral section *Les voici!*. In the choral section *Avec la garde montante* there is a two-part children's choir, the tone distance of the I. voice is from c^1 to a^2 , and the tone range of the II. voice is from c^1 to fi^2 . If necessary, the teacher-choirmaster can transpose a passage so that the range of the tones adjusts to the extent of the children's voice. The tempo and character of the music section are close to the students of elementary school. With the realization of different music tasks processing the fragment from the opera, it is possible to achieve correlation with the teaching of a foreign language (French).

Furthermore, during the processing of *Overture* from the opera *Carmen*, after recognizing the atmosphere, performers, tempo and dynamics of composition, it is possible to process the musical form of the fragment (a a b a c c a'). After learning the music form, the students, with the help of the teacher, create the choreography and divide into three groups corresponding to each of the three parts of the musical form. In this way music teaching becomes more interesting and creative, students develop music memory and correlate with the teaching of Physical education. If the musical structure of the work is attempted to be displayed by different lines or colour contrasts, correlation with the teaching of Visual arts has been achieved. There is also the possibility of achieving correlation with the teaching of History, for example, during the work of H. Krása: *Brundibar*, since the opera was premiered by children in the Czech concentration camp in Terezin.

Another way to approach the opera titles is to use the various video clips from animated films (Petrušić, 2017) (Table 1).

Table 1. Animated movies with fragments from the opera and links of video clips

Animated movies	Opera	Video clip
Mickey Mouse	G. Verdi: <i>Rigoletto</i>	https://www.youtube.com/watch?v=8cZiPmQUsdM
Looney tunes	R. Wagner: <i>Ride of the Valkyries</i>	https://www.youtube.com/watch?v=LHivHuPFBqA

Tom&Jerry	W. A. Mozart: <i>The Marriage of Figaro</i>	https://www.youtube.com/watch?v=OFFOHqx520E&list=PLB8OjFJQpi9bQe3nmnH6rOlyDjSf7Bqli&index=3
Animaniacs	G. Verdi: <i>Rigoletto</i>	https://www.youtube.com/watch?v=PCctvotr8g
Tom&Jerry	G. Bizet: <i>Carmen</i>	https://www.youtube.com/watch?v=TKlfkklDANo
The Simpsons	R. Leoncavallo: <i>Pagliacci</i>	https://www.youtube.com/watch?v=kvikOWNVEac
Bugs&Bunny	G. Rossini: <i>The Barber of Seville</i>	https://www.youtube.com/watch?v=gt1V61SPI_w
Mr.Bean	G. Puccini: <i>Gianni Schicchi</i>	https://www.youtube.com/watch?v=sobMrIgwOWA
Bugs&Bunny	G. Rossini: <i>The Barber of Seville</i>	https://www.youtube.com/watch?v=AOtOpCAigq0
Mickey Mouse	G. Rossini: <i>William Tell</i>	https://www.youtube.com/watch?v=pLvnCxVds2c

Finally, it is possible to organize a visit to the live performances of the children's opera and operas for children, as well as those works in which children have their roles.

4. Conclusion

Music teaching at all levels of education needs to be continually modernized in order to make students more interested in. This is particularly important in the context of high school education since the popularity of music teaching in that age, compared to elementary school age, is significantly reduced (Harland, 2000, Ross, 1995, 1998). Although such trends can be explained by the differences in the motivation of students for learning different subjects at different stages of development (Dobrota and Reić Ercegovac, 2016), the reason for such a situation can be found in the dissonance between the music students listen to in school and in their leisure time. Boal-Palheiros and Hargreaves (2001) point out that listening to music at home and at school fills out different functions because listening at home is associated with emotional pleasure, while listening to a school is associated with motivation for learning.

Approaches of introduction to opera, based on the study of its historical development and context, opera composers and their works, and its structure, must be modernized and supplemented by the use of teaching technology, by visiting the live performances of children's opera and operas for children, by involving students in performing certain parts of the opera and by achieving correlation with other subjects. If we deal with the operas on this way, we will certainly contribute to the development of students' musical taste, establishing criteria for the appreciation of different styles of music, as well as creating a future opera and concert audience.

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How can music teach social behaviour?

Supporting children's wellbeing through music therapy

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Abstract:

Without supporting the holistic wellbeing of vulnerable children in schools, they cannot access education fully. In an age where IT, television and mobile phones take children's attention so much that they are not practicing the necessary social skills for adult life and not staying connected to their own emotions, these social issues are only becoming more problematic. Music plays an important role in children's cognitive and social development as documented in the professions of music education, music psychology and music therapy. Music can be seen as a *social* behaviour, where we engage in musical *interaction* with other people. Music therapists specifically use the social and communicative features of musical interaction to help children or adults develop socially and emotionally. Through descriptive case studies from the author's own music therapy practice, this paper highlights the ways music can support children's social-emotional development and educational attainment. It is part of our responsibility as educators to take an interest in children's social-emotional development as much as their intellectual development. Music classes should not only be for teaching technical skill, but should be seen as an opportunity for developing essential social behaviours in children.

Keywords: music therapy, music education, mental wellbeing, improvisation, singing.

1. Introduction

The role of music in children's cognitive and social development is a well-documented issue in the profession of music education, music psychology and music therapy (Bunt & Pavlicevic, 2001; Hallam, Cross, & Thaut, 2011; Juslin & Sloboda, 2001; McPherson & Welch, 2012). Through reference to case studies of music therapy work, this paper will explore how classroom music lessons can be used to better support children's wellbeing as well as their musical knowledge.

Music can take many forms in children's lives. We often think about music as a passive mode of entertainment, such as listening to music in our home, on the car radio, or through headphones. Yet, we can also think about music as active, where we create music ourselves through learning an instrument. But most importantly, music can be seen as a *social* behaviour, where we engage in musical *interaction* with other people. It's something we do together.

When we interact musically through singing, playing or moving together, we are practicing skills of listening, waiting, turn-taking, cooperation, concentration, adapting to others, spontaneity, leading and following. All of these are social skills, which are essential for everyday work and play.

Music therapists specifically use these features of musical interaction to help children or adults develop socially and emotionally. In London, UK, there is a small community of music therapists working in mainstream schools to support children with a range of emotional, social and behavioural needs due to a learning disability, physical disability, autism or significant psychological trauma. Each of these 'conditions', whether mental or physical, neurological or behavioural, can be helped in music therapy (Bunt & Pavlicevic, 2001; Kim, Wigram, & Gold, 2008; Raglio et al., 2016).

2. Literature review

2.1. What is music therapy?

Music therapy is classically hard to define due to its intrinsically and necessarily client-led approach. The British Association for Music Therapy say that,

"...music therapists draw upon the innate qualities of music to support people of all ages and abilities and at all stages of life; from helping new born babies develop healthy bonds with their parents, to offering vital, sensitive and compassionate palliative care at the end of life. Everyone has the ability to respond to music, and music therapy uses this connection to facilitate positive changes in emotional wellbeing and communication through the engagement in live musical interaction between client and therapist. [...] Central to how music therapy works is the therapeutic relationship that is established and developed, through engagement in live musical interaction and play between a therapist and client. [...] Using music in this way enables clients to create their own unique musical language in which to explore and connect with the world and express themselves (BAMT, 2017).

In the UK the music therapy profession is regulated by the Health & Care Professions Council and the term 'music therapist' is a protected title for use only by those with a 2-year Master's Degree in the subject. It is regarded a highly specialised therapeutic training designed to support and protect the vulnerable people with whom music therapists work. However, there is much music teachers can learn from the techniques, approach and ethos instilled in music therapists from their training.

In practical terms, music therapy involves the therapist and the client (or clients) making music collaboratively together – it is musical interaction in a safe, private and confidential setting. Both therapist and client may sing, move or play a range of small percussion instruments, the piano or guitar. Most music therapy practices in Europe are also based on free musical improvisation (Aigen, 2005; Nordoff & Robbins, 2007). The flexibility of musical improvisation allows music to be spontaneously improvised using whatever the child is able to do. Music therapists are trained to be very musically flexible so that they can connect with each client as a unique individual, rather than forcing the child or adult to fit into a pre-defined method of learning. Not only does

the act of interacting musically enable children to practice social skills, but it also helps them to express themselves on an emotional level, since music is regarded as a form of human communication and expression (Cross, 2005; Cross & Woodruff, 2009; Juslin & Laukka, 2003; Pavlicevic, 2000).

2.2. Childhood wellbeing

Without supporting the holistic wellbeing of vulnerable children in schools, they cannot access education fully. According to a UK government study, children who have been adopted or who have suffered a childhood trauma are 51% less likely to meet educational norms. Children who have been bullied have significantly lower exam results at age 16. Children in schools, which specifically aim to boost children's social and emotional confidence, have exam results that are on average 11% higher (Patel, Flisher, Hetrick, & McGorry, 2007).

In an age where IT, television and mobile phones take children's attention so much that they are not practicing the necessary social skills for adult life and not staying connected to their own emotions, these social issues are only becoming more problematic (Harrison, Burns, McGuinness, Heslin, & Murphy, 2006).

Since children and teenagers still consider music fun – it still has the 'cool' factor – it can be a perfect way to connect with marginalised children. Although working one to one with children musically is most likely not something that classroom music teachers will be often be doing in schools, there are elements of this type of musical interaction that we can extrapolate for full class music lessons. Particularly, the following case studies are designed to highlight the importance of music education and musical interaction for supporting the whole child.

Through descriptive case studies from the author's own music therapy practice in UK schools⁷, this paper aims to highlight in what ways music can support children's social-emotional development and educational attainment and to highlight the worth of understanding how music education can be adapted to support children's emotional development as much as possible. It is important to train teachers how to use their musical skills and how to engage children musically in lessons, because it is part of our responsibility as educators to take an interest in children's social-emotional development as much as their intellectual development.

3. Results

3.1. Case study 1: musical improvisation

⁷ Audio/video examples for each case study are available directly from the author, using the contact details provided. Audio/examples will be provided only under the strictest conditions of confidentiality in accordance with the consenting permissions provided for these recordings.

Karl⁸ was referred to music therapy because he used to argue continuously with teachers and peers. He has a difficult relationship with his parents and has witnessed domestic violence on several occasions; teachers told me that they'd observed that Karl lives within a very strict, controlling family environment. All Karl's negative classroom behaviours seem to be a rebellion to his upbringing, traumatic experiences and view of the world. He was unable to take instruction from anyone and was always doing his own thing. He used to walk out of class when he didn't enjoy the lesson. As a result, he was excluded from the school several times for his uncooperative and aggressive behaviour. At 11 years old, Karl was getting ready to move to senior school and the teachers were concerned with how he would manage the transition to a new environment.

When I first met Karl, he was excited to have the opportunity to play instruments, however, he was only able to play on his own and did not listen or respond to any of my music ideas and changes in tempo, key or mood. He preferred to play fast, unrelenting rhythms with no spaces on the percussion instruments. It felt like he was blocking me out.

Through accompanying Karl's playing, allowing him to play how he wanted, rather than forcing him to listen and change, he started to feel supported; we began to build a trusting relationship in our music therapy sessions. Through feeling safe and supported, Karl started to acknowledge me more in his musical improvisations by leaving spaces in his playing for me to have a 'solo' moment. If I initiated a faster or slower tempo or a change in the mood of the improvisation, Karl began to change he playing to fit with mine. He started to show more awareness of me and accepted that we were making music together.

In addition to his musical changes, Karl's physical body language changed. Instead of facing away from me, he chose to sit opposite me so that he could watch what I was doing clearly. Throughout our improvisations he would frequently look at me to make sure we were totally in time and synchronised.

I challenged Karl's flexibility and ability to cope with changes that were not in his control by introducing new musical ideas and encouraged him to change patterns when he got stuck or repetitive. He became much more accommodating and cooperative with me musically but also with other people in his daily interactions in the classroom environment.

This intervention transformed Karl's experience of himself. He learned that he can achieve more if he actually works *together* with people. The skills he learned through the free improvisation in music therapy sessions transferred directly to his daily life and learning at school.

⁸ All names and other identifying features have been changed in order to protect the anonymity of the children depicted in these case studies.

3.2. Case study 2: giving space

Ben is 7 years old. He was referred to music therapy because he wouldn't speak to anybody; he was described as an elective mute – a person who chooses not to speak in certain circumstances, usually due to trauma or severe anxiety. In the classroom, Ben was very shy and withdrawn. He couldn't make friends with the other children and would start to cry if any teacher or child put pressure on him to speak or interact. This obviously affected his ability to engage in classwork at school, since he was lonely, unhappy and anxious.

In music therapy, Ben did not speak at all at first. He sat next to me at the piano with in a curled up body position; he seemed terrified at the prospect of having to make any sounds. I started by gently encouraging Ben to choose an instrument. I felt it was important to take away any expectation of speech or vocal sounds in order to form a trust first. For several sessions Ben only played instruments and made no vocal sounds at all apart from giggling on occasion. He was clearly enjoying our non-verbal musical interactions.

As an initial step towards speech, I encouraged Ben to singing wordlessly. I sang a phrase to 'ahh' and left a space for Ben to complete the second phrase; Ben just looked at me, clearly aware he was supposed to fill in the space... I sang again and left a space. This time Ben hummed a phrase without opening his mouth!

Eventually he was comfortable to hum known songs with me. Over time, Ben started to sing open vowels (ahh, ohh) and later, we improvised nonsense gibberish. I never encouraged him to sing actual words since it seemed less frightening for him if he didn't use real words. This had continued for several weeks, so I decided Ben was ready for me to introduce words and singing. Each week I used a hello song and a goodbye song – this is standard practice within music therapy work with children since it frames the session and the familiarity and predictability brings a sense of safety for the child. I encouraged Ben to use words by singing a phrase of the song but leaving a space at the last syllable of the sentence ("It's time to say good_bye_"). The musical harmonies and phrase leading towards the final syllable of the phrase create an almost instinctive 'filling in' response from the child. It is hard not to complete the phrase! Ben started by singing one syllable at a time in the song but over time sang whole phrases of the song on his own. I was mindful to accompanied Ben's singing in a very flexible tempo on the piano, so that he didn't feel rushed and could singing at his own pace.

Ben rediscovered his voice in music therapy. He grew in confidence in using his voice and initiating conversations. He began to talk to trusted adults in the classroom and around the school and eventually made a friend in his class. Ben is still a shy child, but by giving him space and time to interact at his own pace, he will grow in confidence.

3.3. Case study 3: singing

Felicity has mild cerebral palsy – a physical condition which affects the movement and contractions of muscles in the body. In addition to her legs being affected by her

condition, it affects the muscles around her vocal chords so it takes a lot of effort for her to speak. She usually says only 3-4 words in a sentence before giving up. She was referred to music therapy, not because of her physical condition, but because her limited ability to communicate meant she had difficulty making friends and had very low self-confidence.

In music therapy Felicity enjoyed expressing herself through singing. Since she did not have the muscle tone for good vocal control, Felicity could not control the pitch of her singing, however I could hear her pitch going up and down in the correct melodic contour of songs she knew. Felicity would sing for the full 30-minute session, taking deep breaths in between phrases. Eventually, she built up better vocal strength, and was able to sing full phrases lasting several seconds each – much longer than her faltering speech. The harmonies and continuous chords sequences in my piano playing motivated her to keep singing and not give up.

I built a very trusting relationship with Felicity; she began to use the sessions to express her emotions and express how she was feeling about difficulty situations at school and at home. Towards the end of her course of music therapy she expressed that she was worried about leaving school and losing her friends. I told her to make up a song about how she felt about leaving school. Felicity's words and thoughts when she sang songs showed she was very emotionally mature for her age. The words and phrases she improvised spontaneously were articulate and beautifully expressed. No teachers had realised Felicity was capable of expressing this depth of thought because her low confidence and physical issues prevented her from doing so. Her confidence rose through her time in music therapy – she started showing more interest in writing – she became more motivated to write down her creative ideas and stories.

3.4. Case study 4: creative expression

Kieran was referred to music therapy because of anger management issues; he is 9 years old. He has witnessed and experienced first-hand violence in his family. As a result, he can be very depressed and withdrawn but also can over-react and get extremely angry in the classroom. His inability to regulate his emotions stopped him from learning and reaching his potential.

When Kieran first came to music therapy, he would not speak to me. He ignored me and sometimes gave one-word answers. He seemed to be very physically tense and wound up. So, I encouraged him to engage in sessions through playing the drums as I felt the physicality of drumming would help him to relax and release frustration. While he played the drums, I played the piano and challenged his musicality by changing tempo and musical mood frequently. He was musically gifted with rhythms and able to create intricate rhythmic patterns naturally – the sessions gave him an outlet for creative expression. He was able express how he felt – angry, sad, frustrated – in a positive way through free and creative musical interaction. Kieran relaxed in our sessions and generally seemed much more open to connecting with others in general. I let Kieran lead our music therapy sessions with his ideas – the spontaneous musical

improvisations inspired him to have more creative ideas for stories and songs. We wrote song lyrics and even improvised lyrics and raps spontaneously.

Given the support, skills and opportunity to be creative, Kieran showed himself to have an extreme talent for rapping and song writing. He became much more positive generally and his talent for writing lyrics transferred to the classroom as she started showing more interest writing stories and coming up with ideas in class. Music therapy truly gave Kieran a creative voice, developed his imagination and helped him overcome his emotional difficulties to discover his own potential.

4. Discussion

The case studies illustrated the change that can be stimulated through various modes of musical engagement and in interaction in a music therapy context. Particularly the themes of musical improvisation, space, singing and free creative expression were highlighted.

4.1. Musical improvisation

To successfully freely improvise music in groups, children have to pay attention to each other because there is no shared knowledge of what will happen next. When children learn how to improvise musically, they become more aware of the impact of their *own* actions and more aware of *other people's* actions and intentions. They are practicing the skills of being empathic (Rabinowitch, Cross, & Burnard, 2013). Improvising, being spontaneously creative and working together in the moment are skills children can learn from music lessons. Instead of being focused on playing 'correct' notes or getting a melody 'right', giving children the opportunity to freely create music together in groups leads to an increase in social skills (Burnard, 2002; Kim et al., 2008; Pavlicevic, 2000).

4.2. Giving space

Music constructs the notion of time differently – and it can make timing flexible. It is therefore a perfect medium for helping children to adapt and work at a slower pace – literally a slower tempo. Timing is important for all aspects of communication – particularly conversation, since humans perceive each other to be engaged, trustworthy or agreeable based on shared timing between where tempo is shared between people in conversation (Hawkins, 2014; Knight, Spiro, & Cross, 2017; Ogden & Hawkins, 2015). The pressure to get results in the education sector encourages teachers to push faster and harder on students, and this results in children getting left behind or feeling the pressure too much at too young an age (Natvig, Albrektsen, Anderssen, & Qvarnstrøm, 1999).

4.3. Singing

Singing is physiologically good for us – it gets our breathing deeper, our brains get more oxygen, we feel more alert (Clift & Hancox, 2001) and can even lower inflammation in the body (Fancourt et al., 2016). Much research says that singing

together in groups makes us feel more connected and more cooperative with each other (Weinstein, Launay, Pearce, Dunbar, & Stewart, 2016). So singing, chanting, rapping is something we shouldn't overlook in schools – getting them physically and creatively involved in these activities is vital to children's educational welfare.

4.4. Creative expression

Many people consider creativity to be an intrinsic ability of certain people with unusual talents. In fact, this is not the case – creativity is a way of thinking and expressing. It is about discovering and inventing new things, which motivates us to be imaginative and inventive. It is a vital part of child development since it encourages friendships, collaboration and cooperation (Kirschner & Tomasello, 2010; MacDonald & Miell, 2000; Odena, 2012). When provided with the opportunity to be expressive and creative, children can achieve in new ways. Giving the opportunity for song writing or free self-expression is very important for imaginative development (Mayers, 1995; O'Callaghan, 1997).

5. Conclusion

To summarise, music can be something we listen to, something we play, but importantly it is a social behaviour. The case studies outlined in this paper have highlighted the importance of music in the social and emotional development of children. Particularly we looked at the importance of musical *improvisation* in groups, the importance of singing, and the importance of giving space for creativity.

Music education can teach children how to play instruments and how to read music, but if we use music lessons in a more interactive, freer way, it can offer children so much more. It doesn't matter what kind of music is being played, what style or what instrument. The important part is *how* you are getting children to interact musically together.

As teachers, we have a responsibility to explore our own musical skills so that we can inspire children. We can use classroom music lessons as a way of teaching children social skills for life. Music classes should not only be for teaching technical skill, but should be seen as an opportunity for developing essential social behaviours in children.

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Collaboration to improve literacy: making learning sustainable in schools

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Abstract:

Despite large-scale educational improvement programmes, competence in literacy remains low in Indian government schools. This is attributed to poor contextualization and lack of ownership by the community. In this scenario, a project was launched in an under-resourced rural area to enhance literacy among underprivileged children, through an inclusive design, developed with community support. To be sustainable, the intervention needed to be valued and owned by stakeholders. Hence, a novel entry point was deployed by establishing libraries to support literacy in schools with community involvement. A local team was trained to support this endeavour in 30 schools. Assessments of children's literacy levels showed significant improvement compared to control schools. The community's willingness to contribute on an on-going basis, local support to acquisition of books and teachers' incorporation of this process in the next years' plans indicate potential for sustainability. I was involved as the Human Development specialist in the team.

Keywords: collaboration, library, literacy enhancement, primary education, rural community

1. Literature review

Large-scale educational improvement programmes have been implemented in India for long; however, learning achievement continues to be low in government schools. Research has demonstrated that a strong relationship exists between reading literacy and student academic success, since reading as a skill is utilized in every academic subject area. (Espin & Deno, 1993; Vilenius-Tuohimaa, Aunola, and Nurmi, 2008 and Duru & Koklu, 2011). The mastery of reading skills also grants students access to increasingly complex knowledge in academic subject areas. Children who have not developed some basic literacy skills by the time they enter school are three to four times more likely to drop out in later years (Kirsch et al., 2002). Children who are routinely read to day in and day out—and immersed in rich talk about books and the various activities in which they are engaged—thrive and those children with less exposure to books face tougher learning challenges in school and beyond (Campbell et al., 2002; Dickinson, McCabe, & Essex, 2006; Neuman & Celano, 2006).

Hence this project sought to identify grassroots interventions that would create interest in books among children, support reading both at home and school, improve reading levels and in the long run lead to enhanced learning achievement. In this scenario, a project was launched to enhance literacy among underprivileged children, through an inclusive design, developed with community support that would be sustainable.

There has been recognition of the critical importance of reading in India and a country-wide Early Grade Reading Programme is in operation under the country's Education for All (EFA) initiative Sarva Shiksha Abhiyan (SSA). Schools have also been supplied with libraries as part of the implementation of the Right to Education Act of 2009. Many NGO programmes supporting reading are also being run. Some well-known one are USAID, Read India Alliance, Pratham and Millennium Alliance.

The paper focuses on government primary schools in rural Varanasi, India. The location of the project was representative of under-resourced areas in India – marked by poor infrastructure, teacher vacancies and inadequate facilities (especially books and other learning materials) and 'traditional' didactic pedagogy with the teacher as central and a source of knowledge. With most of the students being first generation school-goers, there was limited support for learning at home. The project is being implemented by team Ignus Pahal (a guild of resource persons supporting education) for the past one year. I was involved as the Human Development specialist in the team.

As stated earlier, learning levels are low in government schools, repeatedly shown by national level surveys. Currently two large-scale learning assessments are conducted in India (Banerji and Walton, 2011). One such programme is Pratham/ASER Centre's Annual Status of Education Report (ASER) that has been brought out annually since 2005. ASER is the largest annual household survey in rural India that focuses on the status of children's schooling and basic learning. According to ASER (2016), the 11th edition of the report that collected data from 589 rural districts of India, the proportion of all children in Class V who can read a Class II level text (book) declined to 47.8% in 2016 from 48.1% in 2014. This means every other student is unable to read something meant for someone three classes below.

The second large-scale learning assessment is conducted by National Council for Educational Research and Training (NCERT). National Achievement Survey (NAS) is carried out every three years, since 2001-2002 for different grade levels. The survey is conducted by the NCERT every three years. The report on the fourth and latest cycle of the survey, tells us that most Class 5 students have scored between 0 and 50% in reading comprehension, mathematics and environmental studies (NCERT, 2016).

There has been continued effort through Sarva Shiksha Abhiyan (SSA), the "Education for All Movement" which is India's largest programme aiming to achieve universal primary education. It was launched in 2002 of by the Government of India, which was preceded by investment in elementary education under the DPEP (District Primary Education Project which was funded by the Government of India, the World Bank, European Commission and UK government's DFID) for about a decade. While the

inputs of SSA have contributed to increased enrolment and attendance, and in some cases to improved learning, however, overall learning levels have continued to remain low.

The inputs from SSA have been in two categories. One is in terms of provisioning and entitlements, which include schemes such as the mid-day meal scheme, infrastructure, grants for school maintenance and teaching learning materials, supply of free textbooks, uniforms, scholarships, etc. The second set of inputs in SSA are capacity building and quality improvement programmes, which includes in-service training of teachers, school leadership development, training of School Management Committees, Early Grade Reading Improvement Programmes (Padhe Bharat, Badhe Bharat, Ministry of Human Resource Development, Government of India, 2016), special budget allocations for Learning Enhancement, and specific activities for disadvantaged groups such as girls, tribal children, working children, children with disabilities, etc. However, the lack of contextualization and poor ownership by the community have prevented many of the inputs from attaining their full outcomes (Weiss, Lopez & Rosenberg, 2010).

Hence the design and development of the reading improvement programme in the Ignus Pahal Library Programme in Varanasi focused on the two key considerations of stakeholder ownership and contextualization identified in the discussion above. The intention was to achieve improvement in targeted reading levels and have an inclusive design with the project being developed with community support and based on their aspirations. The long-term objective of this reading promotion programme is to enable overall learning outcomes over a three to five year period. Though the team had a strong understanding of how reading develops and learning levels improve, it also believed that success would hinge on ownership and community response. Hence an 'emergent design' was adopted where the team went in with ideas to be explored along with stakeholders and finalized options in partnership with them. This paper focuses on the first phase of the initiative, the first two years. The objectives of this phase were as follows.

2. Objectives

1. Make a contact with the community to understand their views, concerns and suggestions regarding their children's performance in school.
2. Understand their views on education and elicit their aspirations and what they valued in terms of their children's education.
3. To assess whether the idea of a library and reading promotion would be supported by them in school and at home, and the role and responsibility the community would be willing to take in successfully implementing the programme.
4. To develop a sustainable programme by including the stakeholders such as families of children in school, the larger village community, and the school.

5. To put into practice a process that enhanced children's interest and teacher capacities for increased engagement with reading and ensuing activities for language development.

Regarding reading improvement in children's abilities, the objectives that emerged over several interactions and discussions with the community were as follows:

In the targeted schools the objectives for reading improvement were:

- i. The average number of pages accessed per child will be significantly higher when compared to control schools.
- ii. Basic reading skills (word and alphabet recognition, ability to read short, simple sentences, connecting graphics with words) will be significantly / measurably higher.
- iii. Higher order skills (reasoning, problem-solving, creativity) will be much more strongly present among children.

3. Methodology

3.1. Context and participants

The area chosen for the project was rural Varanasi, the peripheral region outside the municipal limits of the city of Varanasi in Uttar Pradesh in North India. Three blocks in the district were taken, with the focus on thirty villages spread across them. The team had been working in the region for long and was familiar with the community and schools in general.

The villages had populations ranging from 5,000–15,000. Majority of the children were from scheduled tribes, backward classes, Muslim communities, with more than 50% being girls. Nearly all were from poor families. Parents were busy earning livelihoods and unable to support children at home. The colourful books excited children's curiosity and initially they treated them like toys, looked at them, shared, and gradually moved to reading.

In each village school one government school was selected. The interesting part was that the choice of school depended on the teachers and Head Teacher and communities volunteering to be part of the programme. A total of 72 schools volunteered – however; in the first phase only 30 could be taken on basis of commitment shown, logistical considerations and resources available. As stated earlier, these were government primary schools, with students from classes 1-5. The number of children enrolled in each school varied from 100–250 and the number of Head Teachers and teachers was 96.

Contact with the community included the participation of community leaders, elders, local government representatives, school management committee members, youth groups (including both young women and men) and women's groups. Besides the school staff, around 80-300 people per village participated in the project to various degrees of involvement. They contributed in different ways (such as running the library after school hours, getting involved with children in reading, advocating

among others to support regular reading at home, arranging space for reading, or even becoming readers themselves).

The total number of participants per village therefore ranged from 190 - 560

3.2. Method

The process of engagement with the community with a view to improving reading levels of children took place over the following phases:

3.2.1. Initial contact and pre-launch activities (six months)

A note on the concept of the programme was developed and widely circulated in the area. Team members visited a large number of villages to spread the word. At least two meetings were held in each village to establish contact and gather community views. At most places, concerned parents, community representatives and youths would gather in large numbers on hearing that something related to education and school was taking place. This enthusiastic response added momentum to the effort. A larger meeting of school heads and their SMC representatives was then organized and the emerging programme was discussed in detail. The commitments needed from both sides – the school community and Pahal – were discussed in detail and schools requested to volunteer. A ‘social contract’ was entered into – that is, each school’s representative publicly declared their support. School heads and SMC members also signed a document permitting Pahal members to visit their schools and work with children and teachers.

3.2.2. Establishing the libraries (two months)

Books were sourced using Pahal’s funds as well as from donors and publishers. The objective was to create sets of 120-250 books per school, with the books being selected carefully keeping in mind children’s age level, cultural context and reading levels. Books in English were also included as there was a demand for it and the team also felt it added value. Each school was provided its specific set of books and made its storage and handling arrangements before the launch.

The opening day of the library was made a festive occasion with the whole village invited to participate. Parents and large number of community members turned up for the special occasion. The books were formally taken out before everyone, shown around and then handed to children and circulated among parents and others. Pahal team members sat with children conducting impromptu story-telling sessions, discussions on pictures in the books, and helping them read on their own. As the community soaked in the books, many questions, comments and laughter could be heard. After an hour and a half, the gathering, which was spread out, would come together to discuss how the library should be run.

3.2.3. The Reading Programme (6 months)

The programme included activities such as visits to schools by team members, teachers’ professional development for developing early literacy and teacher training for specific classroom activities for literacy.

During visits to schools by team members, provision of libraries was followed, for an initial month or two, through intensive school visits by the Pahal team. In these visits reading related activities were conducted with children using the library as a base. The activities enabled learning in general as well as early grades reading in particular by using students' experiences and knowledge and introducing reading through student-generated texts (i.e. meaningful speaking-listening activities where what students say is written on the blackboard and used as the text to teach reading – which is now more possible since students already know what the symbols on the board signify). Thus overcoming issues of home vs. school language (most students do not speak the textbook version of the language at home), as well as lack of contextualized material (there is not much print material / children's literature that originates in the socio-economic, cultural and geographical contexts of marginalized children). Additionally, incorporating real life and purposeful use of language from the very beginning in the class was adopted in the programme.

For teachers' professional development for developing early literacy among children, in the initial phase of two months Pahal members worked with children in the schools, also served as an on-site exposure for teachers on how the material may be used and reading enhanced through regular classroom processes. During this phase teachers observed and participated as much as they could understand. Shortly after the launch of the library, teachers were provided with a yearly calendar of book-related activities along with a short, user-friendly manual. In the third month, teachers were invited for a three-day workshop. Using a participatory and experiential process, teachers were oriented on how children learn, how reading develops, and how to incorporate the library as well as provided activities in their regular teaching-learning processes. For follow up and mentoring, Pahal members continued to visit and work with children, teachers and community. Each school was visited at least once a week (usually twice), with Pahal members spending 3-4 hours in the classroom. During this, each class of children would be interacted with and discussions also held with teachers. Often, 'support sessions' would be conducted, where teachers taught with Pahal members observing them, offering real-time feedback to enable teachers to improve during the conduct of an activity and experience success. (Making teachers feel successful was a key principle of teacher development).

Finally, the teachers were trained for literacy activities to teach children. The overall approach was a whole-language-approach that foregrounds meaning and units of meaning such as words and sentences rather than looking upon letters as discrete entities. Oracy was considered the key to enabling literacy. Some of the activities done (initially by Pahal members and later by teachers) included the following:

- Conversations and discussions: about pictures, stories, characters, their names, appearances, qualities, specific features, about the opening and the ending, comparison, giving their opinions, and so on.
- Naming things, making words: coming up with words starting with the same letters as their names, or their family members' or teachers' names led children to

explore various words on their own. From here they moved on to making sentences and paragraphs, and later writing them as well.

- Reading sentences: Some of the books lend themselves to children guessing the meaning of sentences (due to pictures or repetitive patterns). Books being read aloud followed by discussions also leads to children understanding / identifying specific sentences.
- Narrating-reciting: From the collection children grew fond of reciting some 50 poems and 20 stories, which helped them become more articulate as well as enhanced their oral language skills.
- Reading and writing: Reading and writing in small groups – about characters, events, writing out stories or descriptions in their own words, summarizing or giving a title, and so on.
- Making questions for each other and answering them: this was a significant activity from the beginning and graduated from oral to written forms as children's literacy skills developed
- Grammar in usage: A number of grade appropriate grammar related aspects could be brought out naturally during the course of activities above.

3.3.3. Challenges

Some of the challenges faced were related to bringing together diverse stakeholders who have had a long history of not being able to work together. Logistics and transport were difficult to organize as the roads were not good and resources were limited. Teachers have participated in on-going (state-provided) in-service training over the years and often found it irrelevant, which made them suspicious of any professional development input. Winning their confidence, demonstrating to them in their own classroom that the advocated process was effective as well as practical in their contexts. However, once convinced, teachers have responded enthusiastically. Further generating support for children at home also took time. Finally, since fieldwork is difficult to control and requires a responsive approach depending on the evolving situation and needs, 'neat' designs of implementation and research was not always possible.

4. Findings

Substantial changes in teaching-learning processes, school environment and community support to school became visible. Assessments of children's reading levels were carried out. Six months after the libraries started, students registered a significant improvement in grade-specific reading and writing skills, compared to other schools without the intervention. The findings have been discussed with respect to changes observed at different levels: Table 1 highlights key changes among different stakeholders.

Table 1. A summary of behavioural changes observed among different stakeholders

Stakeholders	Changes observed
Children	<ul style="list-style-type: none"> • Became more articulate; were able to talk about the books they read and their textbooks too • Developed an interest in reading (would ask for books). • Were more collaborative in groups • Were seen to tell their families about what they were learning (reported by parents)
Teachers	<ul style="list-style-type: none"> • Keen to learn how to conduct reading related activities and then conducted them with children (asked to be trained) • Classes were better organized / managed, and more time was spent on learning • Teachers were seen to use the Pahal library books in the class • Books that had been supplied by the government for school library now began to be taken out and used by teachers
Community	<ul style="list-style-type: none"> • Libraries were established by the communities and School Management Committees and, in 14 schools, also run them • Donated books, storage and helped out in other ways, including maintenance • Got involved in reading and also listening to children read aloud

All this led to the development of a learning environment and a learning community. This was crucial in enabling teaching-learning processes to gain depth and sustainability. Some crucial aspects of stakeholder's involvement have been depicted in Table 2.

Table 2. Involvement of village in the reading programme

Stakeholders	Involvement in the reading programme
Teachers	2600 children reading books at home or school 60 children involved in library management
Teachers	30 assistant teachers help in library programme 60 teachers involved in reading improvement
Community	A few members maintained evening libraries 1000 members involved with helping children read

4.1. Measurement of reading improvement

A comparative analysis of children's reading levels was undertaken after the programme had been in operation for 6 months. To measure the change in reading, two control schools were selected along with two project schools, the number of children selected were 20 each in control and project groups. An effort was made to ensure that schools were as similar as possible in terms of location, number and background of children, infrastructure, number of teachers and teaching-learning hours actually utilized.

Pahal members had visited the control schools once a month (so that children would be familiar with them). In both sets of schools a trial test was conducted to familiarize

children with the testing process so that their performance would be optimized. At all times, the effort was that the test should be seen as a friendly activity rather than something that would evoke fear. It was presented more as a set of interesting activities rather than as a test. Due to limitation of time and budget an initial testing was carried out with a small sample size. The team was trained on procedures of selection and testing, creating an achievement test and hence, this being their first such exercise, only 20 children in each group were selected.

To test if the results were significant, the Mann-Whitney test was applied. The Mann-Whitney two-sample rank-sum test is a non-parametric alternative to the independent samples *t*-test and does not share the independent samples *t*-test's distributional assumptions (Conover & Iman, 1981).

A Mann-Whitney two-sample rank-sum test was conducted to examine whether there were significant differences in Reading Scores of class V of Project group and Control group. The results of the Mann-Whitney *U* test were significant, $U = 126.5$, $z = -2.00$, $p = .045$. The mean rank for group Control was 16.82 and the mean rank for group Project was 24.18. This suggests that the distribution of Reading Scores of class V for group project is significantly different from the distribution of Scores for control group. Table 3 presents the results of the Mann-Whitney *U* test.

Table 3. Mann-Whitney Rank Sum Test for Reading Scores of class V by Control & Project group

Variable	Mean Rank		<i>U</i>	<i>z</i>	<i>p</i>
	Control	Project			
Reading Scores class V	16.82	24.18	126.50	-2	.045

The reading tests were carried out with a larger sample of four schools each from control group and the project group. The total number of children in the control group and project group were 80 each. The average test scores of children from the two groups are presented in Table 4.

Table 4. Average scores in reading skills in project schools and control schools:
Comparative results

	Language competency	Project children (scores)	Control children (scores)
1	Picture reading	86.25	79.15
2	Letter, word and sentence reading	85.10	76.95
3	Comprehending age-appropriate text and answering questions	70.31	55.42
4	Writing on one's own	65.81	48.56
5	Increase in vocabulary	87.32	73.69

It was also noted that in control schools I-IV that the scores on each type of reading test were lower than the project schools I-IV that participated in the Pahal library reading programme.

5. Conclusion

Teachers in control schools had also received training and other inputs from SSA. However, the Pahal library project had a greater degree of stakeholder involvement and responsiveness to their needs and interests. The fact that parents got involved took the reading experience outside school into children's homes (including where non-literate parents asked children to read out books and other materials such as newspapers to them). Teachers who often do not convert in-service training inputs into changes in their classroom processes, more readily took up these activities as they saw them working with their children and found that their task became easier. The practice of collaborative learning led children to apply it in other subjects, in the playground and elsewhere.

Pahal team members also worked with children and community members on how the library may be run, records kept, maintenance undertaken, and how readily children (and community members) would take responsibilities. The intention was to create self-sustaining learning communities. Critical assumptions underlying the study were that pedagogy developed by Pahal, teacher training and teacher support materials will prove practical and effective in bringing about the transition intended. It was also assumed that the adoption of advocated methodology by teachers will lead to improved overall learning, and enhanced reading levels in particular. The availability of books will lead to more children engaging with it, and more teachers using it to help children learn, and that this will contribute to a measurable improvement in early grade reading levels. Findings at different levels show that these assumptions were found to be true.

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Re-conceptualizing the role of a school pedagogue during the transition to school

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Abstract:

The educational practice during transition to school noticed across the Croatian CSE indicates that transition process is perceived through children's school readiness. During the process of starting school, school pedagogue is usually the first person that has direct contact with children through assessing their abilities and consequently, their readiness. School pedagogue has a role of a diagnostician labeling children as ready or unready for school. School pedagogues regularly use a handbook comprised of non-standardized tests to do so. The literature shows that testing children's readiness with no consensus on definition of readiness, with no clear methodology and with arbitrary interpretation of already questionable results, gives a false image of a child. Socio-constructionist paradigm states that testing children in that manner gives no information on true learning process and children's prior experience as guiding lines for teachers to ensure continuity and children's future development. That is why during child's transition to school, a school pedagogue has to surpass his role of a diagnostician of children's level of readiness and take a central role of a professional developer insuring the quality of teachers practice. This paper tends to give the theoretical background on assessing children's abilities prior to starting school as well as school pedagogue's role in that process. It also provides alternatives to traditionally based roles of a school pedagogue by evoking a pedagogue as a professional developer.

Keywords: quality of practice, readiness assessment, school pedagogue, sense of belonging, changing paradigm, transition to school

1. Introduction

The educational practice during transition to school noticed across the Croatian compulsory school education indicates that the *transition process* is not perceived as significant. But, on the other hand, *starting school assessment* is being considered more than significant. The difference here is being made between starting school as a one-day-check-up, and starting school as a transition process that involves different stakeholders from different mezosystems surrounding the child. When children are starting school, they are transitioning from different environments (home, preschool,

kindergarten) where they had multiple roles and experiences. They were included in predominantly accepting culture and viewed mostly *as child as nature* or *as child as a knowledge and culture constructor* (Dahlberg, 2013). The year that children become school-bound, the shift happens in an adult perception of a child and it is being viewed *as child as a culture reproducer* (Dahlberg, 2013). The process of starting school that is dominant in Croatian educational system is seen as a one moment in time or a one-day-check-up. Children are exposed to various forms of testing and assessment and the results are then usually used to label children as (un)ready for school. The results are also used as a screening tool for potential learning difficulties. The child has a very challenging role to demonstrate all of his competencies during a one-day-assessment which causes a lot of stress for the child, his family and EC educators. Starting school assessment is considered a major milestone not only for children, but also for their families as well as early childhood educators since assessment is planned to show the level of children's overall competencies achieved during early childhood. The child has no opportunity to engage in a purposeful activity other than assessment and testing in relation to school demands. The school pedagogue is usually the first educator that has direct contact with children through assessing their abilities and consequently, their readiness for school. This paper examines the approach to starting school assessment seen in the Croatian educational system as well as the role of a school pedagogue as a facilitator of this potentially damaging practice. It also provokes re-thinking of the school pedagogue's role in the transition process and proposes an alternative – *school pedagogue as a professional developer of transition practice through focusing on collaboration with teachers in creating the environment of empowerment for children*.

2. Starting school in Croatia and school pedagogue – raising the questions

In order to fully understand why this approach to starting school process is being contested, it needs to be explained how the starting school practice in Croatian compulsory education functions, who is considered to be a school pedagogue, why the focus of pedagogues direct educational work should be on teachers and what is considered to be the environment of empowerment for children.

2.1. Starting school practice in Croatia

In Croatia children are starting school around 6 and a half years of age. The law states that if a child turns 6 years of age until the March 31st, it is bound by law to start school in September of the same year. Over the recent years and attempts to introduce a new curricular reform, there was an idea to lower the starting school age of children to 6 years of age (all children who turn 6 years of age until September are bound by law), meaning that children would be subjected to testing and assessment by the time they are around 5 and a half years of age (in May). The plan to implement the curricular reform is still present and if it comes to pass, the start of the reformed schooling system is planned for the pedagogical year of 2020/2021. To this day, all children that are starting school are obligated to go through assessment of their intellectual,

psychological, sociological and physiological competences in relation to school demands. During the month of May, preschool children are being assessed by an MD (physiological development) and school pedagogue and/or school psychologist (intellectual, psychological, sociological development). Through assessment made by a school pedagogue, children can achieve a certain score which positions them in relation with other children. Basically, every child presents a certain number. School pedagogues regularly use a handbook comprised of non-standardized tests to do so (Oštarčević, 2008). Several problems are emerging when it comes to assessing and testing children prior to starting school. First problem is that there is *no consensus on definition of school readiness*. Reviewing all the relevant literature (Croatian regulations and laws, Croatian and world-wide pedagogical literature on transition theory and practice), one can conclude that there is no agreement on what is considered to be *school readiness*. Absence of a common definition, or even a common reflection on theory of transition to school, results in an arbitrary understanding of that concept. For example, on the one side, in Croatian handbook for school pedagogues, school readiness is defined as “(...) the optimal level of development of the various physical and psychological functions of the child that will enable him to optimally master the school curriculum. Maturity will depend on the biological development, but also on how much the environment allowed the child to master the necessary experiences. The term school readiness involves physical, intellectual, emotional and social maturity.” (Oštarčević, 2008, p. 5). Čudina-Obradović roughly states the same: “To be ready for school, the child must be ready in terms of health, its physical, cognitive (intellectual), social, emotional and motivational (development). If the child is ready, it means that it will have no difficulty adjusting to the school's tasks, it will have no problems meeting the teacher's criteria, that it will progress well in learning, and it will be able to show the results of that progress in objective tests and teacher assessments.” (Čudina-Obradović, 2008, p. 285-286). On the other side, Vandenberg, De Stercke and Gobeyn (2013) state that such an approach focused merely on child's level of readiness represents the *paradigm of readiness* and they associate it with the ubiquitous inequality that children are experiencing from their earliest years. The process of assessment and testing aims to evaluate the maturity of the child for compulsory school and its potential for further achievement only in contrast to school's demand. It proposes that readiness should be the descriptor inherent to the child and that the child is the only responsible actor of the transition process (the child needs to adjust, the child needs to meet the criteria, the child needs to show etc.). When considering school readiness not as a property of a child, but its whole environment, a new paradigm emerges – *transition as a pedagogical meeting place* (Dahlberg, 2013). To underpin the emergence of the paradigm of a pedagogical meeting place, transition to school should be understood in no ways connected with school readiness. A fluid and continuous process of pedagogical documenting as well as fully developed theory and practice of the pedagogy of listening, annuls the need for assessing and testing the school readiness of children prior to starting CSE. Equally, it annuls the need for the definition of school readiness since the new paradigm arises from contemporary image

of a child and is based in a different theoretical frame (socio-constructionist paradigm) than the traditionally based one (positivistic paradigm).

The second problem is *absence of indisputable methodology behind assessing and testing children prior to starting school*. As mentioned above, lack of clear definition of school readiness is reflected in the methodological aspect of assessment and testing. It is obvious that the proposed methodological tools assist the school pedagogues in correlating the children's results with perceived school readiness. However, its validity and justification are compromised. Riley, Miller and Sorenson (2017) state that school psychologists are continuously pointing out the problem of inappropriate use of concepts of *testing* and *assessment* as synonyms. They find it important to distinguish the meaning of those two in order to respect all the methodological principles. Same authors are defining assessment as a "process of collecting data from different sources and by using a variety of sources/methods of appropriate purpose and purpose of evaluation" (Riley et al., 2017, p. 96). Testing is defined as "applying and scoring a selected test" (Riley et al., 2017, p. 96). They note that both procedures have *unique approaches* that provide equally *unique outcomes to the observed problem*. What is most important and what should be highlighted in the educational context is mentioned in Riley et al. statement that assessment "(...) must be related to instruction and intervention to improve and advance development, prevent delay and face disadvantages." (Riley et al., 2017, p. 96). When put in another words, the assessment is inseparable from the context, it is not a one-off and it must have a foundation in tangible action in practice. In the Croatian educational system, assessment is used only in principle (terminology), but not in real practice. In practice, assessment is based on *testing* of the child's abilities. It has no effect on affirmative reaction in practice (curriculum, individual approach etc.) but rather on the negative reaction (labeling children). In Croatia, there are tests of perception (testing the ability of visual discrimination), test of connecting dots (testing the graphomotor ability by using patterns to sketch characters), facts and concepts test (testing the knowledge of everyday facts and concepts), precursor test (testing the ocular motor coordination skills and fine motor skills) and numerical test (testing the counting ability and tasks of different complexity) that are used to determine the level of a child's school readiness. Tests were constructed in 1994 by Vlahović-Štetić, Vizek Vidović, Arambašić and Miharija (1995), and are commonly used today. The authors propose that the testing results are in a correlation with future school success. In reality, the results are aimed at unifying the children and their characteristics rather than emphasizing individual needs of the children and their different experiences. Testing is carried out without consideration of the context and is focused solely on presenting the child's abilities at one point of the developmentally very complex part of childhood. It also points out a one-dimensional understanding of a child's development. As mentioned earlier, these tests are used to assess intellectual, psychological and sociological development (i.e. the results can indicate a low level of child's social competencies which are assessed only in relation to the interaction child-school pedagogue). Dahlberg (2013), on Swedish example, also brought up testing of

six-year-olds (prior to starting school) in a relation with reducing the connection between preschool and compulsory school to the question of efficiency and ultimate impact. The ongoing practice of bringing the child's development process to a single number can also be seen in the educational policy in England where there is a struggle to stop the introduction of a baseline assessment for compulsory school enrollment (Roberts-Holmes & Bradbury, 2016). The same authors pointed out that proposed baseline assessment was in a direct conflict with already existing assessment of the development of children in the ECE system (based on Early Years Foundation Stage Profile). When researching the methodology of testing and assessing children prior to starting school, Roberts-Holmes and Bradbury (2017) showed that testing methodology is still underdeveloped and mostly in the function of education policy and not the development of the child. Bradbury (2014) points out that the teachers and educators are not content with current and proposed practice of 'assessing' five-year-olds, but at the same time they are indifferent to any kind of a reaction. Robert-Holmes (2015) called the overall world-wide occurrence of testing children from their earliest years, the *datafication* of children and of ECE system. In a school pedagogue's Croatian handbook for starting school (Oštarčević, 2008), Vlahović-Štetić et al. (1995) tests are used, but they are referred to as an assessment tools.

That leads us to the third problem, the *arbitrary interpretation of the results*. Since the mentioned handbook is a free-access collection of different tests (light modifications of Vlahović-Štetić et al. (1995) tests), school pedagogue can use any test he finds appropriate at any given time. He can alter the test, he can produce his own test as well as use no test at all. He is not obligated to use any prescribed methodological tool for assessing children's abilities prior to starting school. Even so, the Croatian reality shows that the majority of school pedagogues use some form of above mentioned test. The main problem is the overall need for *datafication* meaning that school pedagogues at the end of their assessment of children prior to starting school will produce, by their own discretion, a single number and/or an (un)ready label for a child. At this point, even though the process of assessment is dubious, one should mention that the educational policy should not insist on prescribing this form of 'assessment'. It will not fix the problem of lack of methodological knowledge, lack of respect for methodological principles and the fourth problem, the overall acceptance of a *false image of the child*. Assessment in the described manner gives a false image of the child meaning that at the end of the school enrolment process, school pedagogue, who took over a role of the main diagnostician, gives a diagnosis – child ready or unready for school. By doing so, he blocks all opportunities for recognizing the child as an active, thinking and competent being or an individual with multiple intelligences. He positions a child as a passive, immature and fragmented object of assessment. Moss (2012) states that this practice and theory of children development is foreign to the real child and says: "It applies a reductionist, fragmented and narrow approach, which is more about taming, controlling and predicting than creating learning based on movement, experimentation and meaning making." (Moss, 2012, p. 360). A false image of a child means that the child will be seen mostly through its assessment and testing

results and not its real capabilities, experiences and emotions. The research (Broström, 2016; Peters, 2010) shows that the elements that are considered necessary for achieving success in transition to school are actually based not in cognitive skills (assessed and tested prior to school), but rather in facing early positive experiences and achieving a sense of belonging. Peters (2010) broadly identified those elements as: “belonging, wellbeing and feeling ‘suitable’ at school; recognition and acknowledgement of culture; respectful, reciprocal relationships; engagement in learning; learning dispositions and identity as a learner; positive teacher expectations; and building on funds of knowledge from early childhood education and home.” (Peters, 2010, p. 15)

2.2. Who is a school pedagogue?

To recognize why the school pedagogue’s role requires a re-thinking, it needs to be understood that the vocation *a school pedagogue* is a particular one in the compulsory school system; one could say a school pedagogue is a central staff member of the school (not by any means in a direct way, but rather an implicit one) in charge with multiple roles. He is the main facilitator involved in every aspect of school pedagogical activities. His multiple roles are due to his multiple connections with principle, teachers, students, psychologist, special needs educator, MDs, families, local community and wider. He is a broadly qualified expert and not only in terms of pedagogy and pedagogical work, but also touching some aspects of psychology, social work and special need education as well (Staničić, 2005). Concisely said, he is working on developing every pedagogical aspect of the school and as such, in the Croatian educational system he is a valuable and indispensable staff-member of the school. In terms of children starting school, school pedagogue is usually the first educator to have contact with the child and his family. He organizes and implements testing and assessment. He also arranges children in classrooms in relation to score number children achieved to make a perfect gauss line – underachievers, overachievers and average. Some schools only have one class, but the arrangement of children by their competencies is still being used as one of the arguments for assessments broad use. School pedagogue also informs teachers of the child’s overall competences or of its achieved score number. For a teacher, that information is not particularly important since the teacher is mainly subject-oriented in his curriculum (in contrast to child-oriented curriculum). Nevertheless, it has a damaging *halo-effect* meaning that the information on children’s competences generates labeling of children even before the school actually starts (Petriwskyj & Grieshaber, 2011). Another rationale for assessing and testing children prior to school is early screening for potential learning difficulties even though the applied tests are not standardized or even intended for such use. Petriwskyj and Grieshaber (2011) call those strategies stigmatizing strategies and, similar to Vandebroek et al. (2013) readiness paradigm, they also see a problem in a binary construction of a child’s development. They call for an inclusive transition that is proactive and takes into account the overall context.

Even so, school pedagogue is considered to be the most competent expert when it comes to starting school. This paper proposes that he indeed should be one of the most

competent experts, but that the focus of his direct educational work should be the teachers and educational process, and not the child itself.

There are two opposing paradigms of the school pedagogue's role during starting school. The role the school pedagogue has today is mostly grounded in a *positivistic paradigm*. In a positivistic paradigm the child has only two options – to be ready or unready for school. School pedagogue, by using testing and assessing the child, gives a false image of the child to teachers, to his parents, to the school. The false image is based on the schools need to sets the benchmark with no regard of the children multiplicity. Therefore, the benchmark seems unjust, one-sided, methodologically very questionable, and in the end – purposeless for the child's development. Different understanding of the transition process of all stakeholders leads to different expectations from the child, the school (educators), the parents and the community. By the time of the first day of school, the child already has so much knowledge and experience and should not be viewed as *tabula rasa*. But in a positivistic paradigm, nobody is actually acknowledging the child as a competent individual. In contrast, a *socio-constructionist paradigm* states that testing children in the manner previously mentioned, gives no information on true learning process and children's prior experience as guiding lines for teachers to ensure continuity and children's development. As a responsible professional, a school pedagogue needs to embrace a multidisciplinary approach to assure multi-level strategies to transition process. Carr (2013) proposes three pedagogical areas where multi-level strategies can have an effect: *an educator as a researcher in action*, *open curriculum* (both ECEC and CSE) and *documenting as one of the basic tools during the transition process* (and beyond). Also, the emphasis must be on a shared responsibility for transition – mostly between ECEC and CSE, where a synchronicity of contemporary educational theory and practice has to be achieved. An idea of an educator as a researcher in action, opening of the curriculum as well as embracing the role of pedagogical documentation as a tool for children development and curricular co-construction, can be clearly seen in Croatian early childhood education and care system where a major shift happened in the 1990'. From then until now, Miljak (2009), Petrović-Sočo (2009), Slunjski (2016), Vujičić, (2016) and several other scholars in Croatia are continuously working hand-in-hand with early childhood educators on bridging the gap between theory and practice and enhancing the development of the contemporary paradigms in early childhood education. That constant and balanced work led to the development of the National curriculum for early childhood and preschool education and care (2014; 2017) which is one of the progressive national curriculums in line with world-wide contemporary ECEC curriculums (i.e. Te Whāriki, 2017). Seen through the prism of ECEC system where an ECEC pedagogue works closely in partnership with other ECEC educators (teachers, principals, scholars etc.), transition to school is transition from different paradigm, from different pedagogy and from different image of the child. A school pedagogue has a responsibility to guarantee a high quality educational practice for all children consistent with contemporary pedagogical research. Pedagogical research state that the child is not a binary construct but a person with multiple intelligence

(Gardner, 2000), that knowledge is not an imaginary object of transmission, but a process of transformation (Vygotsky, 1978), and that the image of a child that begins to emerge through assessment prior to starting school is a deleterious construct of more importance to educators than they are aware of: „Each one of you has inside yourself an image of the child that directs you as you begin to relate to a child. This theory within you pushes you to behave in certain ways; it orients you as you talk to the child, listen to the child, observe the child. It is very difficult for you to act contrary to this internal image.” (Malaguzzi, 1994, p. 1). With that in mind, it is now possible to envision and to recommend school pedagogues’ roles that are in line with Carr’s (2013) suggested areas of pedagogical action during transition.

2.3. Focus of school pedagogue’s work during transition (and beyond)

First, and foremost, a school pedagogue has to ensure an educational support to teachers. The focus of his direct educational work during transition should be on teachers who are developing the environment of empowerment for children. He needs to lead the teachers toward the development of co-operation, the development of professional competence, the development of culture of (understanding) knowledge and the transformation of culture of a learning community (Slunjski, 2016). That way he would not diagnose the children, but rather would be enhancing the quality of theory and practice. The shift needs to happen from fragmented analyzing the children toward mutually and holistically understanding the children, understanding their process of *making meaning* and learning process. ECEC teachers and CSE teachers work closely with children and they can best see and understand the child in context (rather than through isolated and fragmented competencies). But the CSE teachers in Croatian educational system are struggling with being constrained in their curriculums so they need an expert to help them and to *educate* them how to work together in an evolving schools, in opening the curriculum and in creating the learning community. Slunjski (2017) states that by engaging in a pedagogical action of constant research and development of one’s practice, the overall capacity of individuals and institutions is being built. She also points out that the capacity is seen mostly through participants who “connect and support each other in continuous learning and professional development based on strengthening their autonomy and emancipation.” (Slunjski, 2017, p. 868). During the transition to school (and beyond), a school pedagogue has to use his/her professional knowledge to create the conditions for teachers to explore their child-oriented practice. A school pedagogue needs to free the teachers from their preconceived ideas about the child as fragmented, passive, tabula rasa, and help them to learn how to understand the child as competent for meaning making. In line with contemporary research, the child needs to be seen as a whole, as a co-constructor of meaning, as a competent, active and experienced individual. The child is a valid knowledge- and meaning-maker and needs to be acknowledged as such. This approach is seen in some ECEC curriculums where the child is considered to be a valuable citizen. i.e. “Te Whāriki aspires for children to be competent and confident learners and communicators, healthy in mind, body and spirit, secure in their sense of

belonging and in the knowledge that they make a valued contribution to society.” (Te Whāriki, 2017, p. 51)

A school pedagogue's role in promoting *an educator as a researcher in action* is not a new concept. Slunjski says that “Action research enables the creation of a community of critical, self-reflective actors who can change the practice on a much wider scale than the individual, and gradually create a new, more human, and more democratic educational policy. The ultimate consequences of action research should be viewed in a much broader context than merely as a means of improving educational practice of certain institutions.” (Slunjski, 2017, p. 865). In the early years of compulsory schooling process, educational system should provoke children's' creative, critical and investigative nature rather than box their minds in a fragmented school subjects that are much easier to manipulate with. Action research allows the “examining (of) the existing practice in terms of promoting autonomy and emancipation of children as opposed to child manipulation in the organization of the educational process.” (Slunjski, 2017, p. 867). School pedagogues' methodological knowledge should be directed to that research that can have a long term tangible reaction (the development of educational quality) in real practice. Since the educational quality is not a concept that is static, once an institution achieves a certain level of educational quality, it should continue to strive for more development. Being content with the achieved high level of quality does not mean that the level will remain the same only by inertia, but rather it will start to decrease. Action research should be viewed not as a fragmented methodological tool used arbitrarily, but as a way of enabling constant re-thinking of the educational processes and consequently, creating the learning community. In terms of children's' transition to school, school pedagogue has to educate and support teachers on how to use action research in context, as well as engage in co-construction of the educational process of transition himself. It is a complex role in contrast to his role of a diagnostician.

In promoting an *open curriculum*, a school pedagogues' role is seen through connecting, respecting and understanding all stakeholders during the transition process as well as participation in co-construction of a transition curriculum. In a humanist-oriented curriculum, transitioning from ECEC to CSE should be seen as a continuous process of learning where all areas of children development are seen holistically. There should be no *schoolification* of ECEC (or dominance of ECEC pedagogy in CSE), but rather a mutual respect of the nature in which a young child constructs its knowledge. Slunjski says that „The way in which a child constructs his or her knowledge depends on his or her prediction and many other individual distinctions, the way in which he or she interprets a particular learning experience and the contextual characteristics in which that learning takes place. The correct way of teaching younger children is not by means of a lecture or a verbal lesson (Bredenkamp, 1996), since younger children learn to participate actively, i.e. by creating and collaborating with others (Bredenkamp, 1996, Rinaldi, 2006, Penn, 2008).” (Slunjski, 2017, p. 866-867). By entering a CSE system, a child does not automatically change its methods of constructing knowledge. Unfortunately, it is forced to abandon his or her authentic ways of thinking, learning

and meaning making to give way for fragmented, parceled-out and content-oriented curriculum. School pedagogue, by taking into account the contemporary research, has to develop such educational practice that fosters the creation of a pedagogical meeting place. The practice needs to be coherent with the context in hand (particularities of the environment and community) which means that there are no strictly prescribed methods on how the transition curriculum should be implemented. Somolanji Tokić proposes: “For example, using the children’s prior experience to co-construct the curriculum should be the main idea of starting school assessment. It should not be perceived as a starting point, but rather a continuity of children’s experiences.” (Somolanji Tokić, 2017, p. 212).

Documenting as one of the basic tools during the transition process should also be the basic tool for overall child’s development. Carr (2013) suggests that the pedagogical documenting should be done by all stakeholders – teachers, children, parents. That way it shifts from merely archiving children’s experiences to reflecting, understanding and developing the child’s interest and knowledge further. Somolanji Tokić says: “Only assessing the child has no purpose for his development, but if it is used in collaboration *with* the child and its environment to *understand* the learning process and to provide necessary support (seen through the socio-constructivist paradigm), it becomes a powerful tool for further development.” (Somolanji Tokić, 2017, p. 213). As a positive example, Carr (2013) suggests a New Zealand’s transition practice of *learning stories*. The stories present a platform on which a dialog is being fostered, knowledge is being co-constructed and a child sense of belonging is being developed. School teachers involved in learning stories projects report that it is not unusual for them to repeatedly return to children's learning stories portfolios well after the school year has started. Most importantly, stories are a tool of acknowledgment of the children’s experience both in and outside the school setting. These learning stories are one of the very interesting and innovative ways of dealing with the transition process. A school pedagogue has to have the proper methodological as well as pedagogical knowledge on using the pedagogical documenting as a tool of development. Firstly, he has to understand the main purpose of documenting. Secondly, he has to have an appropriate understanding of the children’s process of gaining knowledge. Finally, he has to have the appropriate knowledge on how to use that understanding of the children’s process of gaining knowledge to promote children development (scaffolding)

2.4. The environment of empowerment for children

When considering different roles of a school pedagogue during a child’s transition to school that are proposed in this paper, the emphasis is on the development of the teachers practice. The development of practice is always seen in respect with the children’s experience and ways of constructing knowledge, and not vice versa. In a transition process, the school (and other educational contexts) can offer an environment that is based on children’s’ multiple experiences and different ways of learning. Entering a new educational setting is going to be less stressful if the child is surrounded with the curriculum that draws its foundation from the child's authentic

experience. This approach enhances the child's self-esteem and self-confidence and encourages him to autonomously reflect and explore the new environment. By co-constructing the curriculum in that way, it is being showed to the child that he is a valuable, competent and an essential person of the learning process. The child is being given the power to construct his own understanding of the environment he is entering, making him in an active participant of his learning process. By exercising the control over his meaning making, he becomes an intrinsically motivated learner and researcher. The main role of a school pedagogue during transition to school is to enable the school teachers to develop such practice that is in the function of empowerment of all children.

3. Conclusion

Complexity of starting school and school's failure to acknowledge the starting school problem is why not only the school pedagogues', but all stakeholders' roles should be carefully considered and thought through. Research shows that testing prior to starting school is not a reliable indicator of children's later school success and that the testing results are a labeling act labeling children's capabilities as under, poorly or over developed (resulting in teachers who are unconsciously labeling *children* as under, poorly or over developed). Furthermore, it indicates that testing prior to starting school in some children affects their self-esteem and self-confidence as well, and that the testing results and labels are demotivating children in their learning process (and making them anxious because teachers are under or over estimating their capabilities). The question remains why the educational system is still using testing and assessing children's readiness for school if it is not doing anything meaningful for children's wellbeing. One should also point out that stratification in society should be prudently considered especially if it involves children. Starting school in Croatia's practice (and world-wide) does just that – stratification of children by their competences. As the school pedagogue is important educator during the process of transition to school, this paper proposes that the school pedagogue's role has to evolve from being a mere diagnostician toward a complex role of being a developer of quality of practice. There are several pedagogical areas during transition where multi-level strategies can have an effect: an educator as a researcher in action, open and flexible curriculum and pedagogical documenting as one of the basic tools during the transition process. By stepping away from a positivistic toward a socio-constructionist paradigm, a school pedagogue can foster an image of the child as a knowledge and culture constructor and work on reducing the gap between theory and practice both in the CSE system and between ECEC and CSE systems.

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