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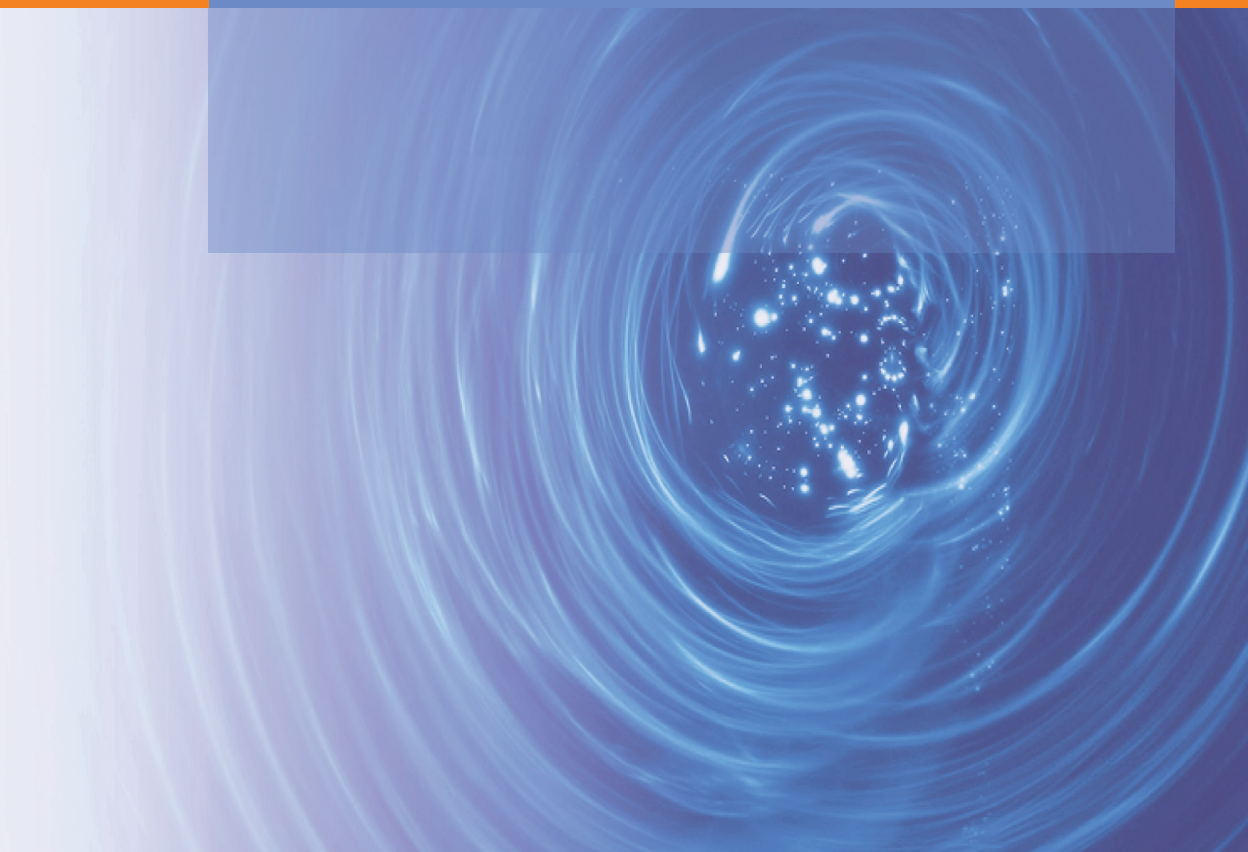
DEVELOPING QUALITY CULTURES IN TEACHER EDUCATION: Expanding Horizons in Relation to Quality Assurance

Edited by
Eve Eisenschmidt and Erika Löfström



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Edited by Eve Eisenschmidt and Erika Löfström

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Introduction

The Teacher Education Policy in Europe Network (TEPE) was established with the overarching aim to develop teacher education policy recommendations at institutional, national and European levels. TEPE is an academic network that builds on previous European collaborative initiatives on teacher education policy, e.g. TNTEE and EUDORA. Today, its central goals relate to[1]:

- Advancing research in and on Teacher Education
- Increasing mobility and extending the European Dimension in Teacher Education
- Enhancing quality through the renewal of evaluation cultures in Teacher Education.

The inaugural meeting of the TEPE Network took place in autumn 2006 in Tallinn, and a few months later the first Annual TEPE Conference was held at the University of Tallinn, Estonia. The second conference was held at the University of Ljubljana (Slovenia) in 2008 and the third one at Umeå University (Sweden) in 2009. A colloquium was organised at the University College Dublin (Ireland) in 2010. The fourth Annual TEPE Conference was held at Tallinn University from September 31 to October 2, 2010. The fifth conference was held at the University of Vienna (Austria) from May 13–15, 2011 addressing the theme Research-Based Teacher Education Reform: Making Teacher Education Work. At this point, TEPE has established itself as a network of regular supporters, conference visitors and contributors. The sixth Annual conference is scheduled to be held in Warsaw, May 17–19, 2012.

The theme of the 2010 conference in Tallinn: "Developing Quality Cultures in Teacher Education: *Expanding horizons in relation to quality assurance"*, continued and built on the themes of the prior conferences. The quality of teacher education has been a matter for debate both nationally and at the European level. The Bologna Declaration[2] of 1999 called for the promotion of European

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1 http://tepe.wordpress.com/

2 http://www.bologna-bergen2005.no/Docs/00-Main_doc/990719BOLOGNA_DECLARATION.PDF

co-operation in quality assurance in education. Cooperation within teacher education is challenged by the diversity of approaches and systems implemented. The Eurydice 2010 report on the impact of the Bologna Process states the following:

> **"**The growth of external quality assurance in higher education has been one of the most notable features of the Bologna decade... Ensuring and improving quality of higher education and establishing quality assurance systems remains a high priority for many countries... While it is a moot question whether quality in higher education has improved during the past Bologna decade, there is no doubt whatsoever that quality assurance has seen dramatic developments. In higher education, quality assurance can be understood as policies, procedures and practices that are designed to achieve, maintain or enhance quality as it is understood in a specific context" (p. 24).

It is time to focus on teacher education. What are the policies, procedures and practices through which quality is achieved, maintained and enhanced in teacher education? The questions addressed during the conference included: What do teacher educators understand as high quality teacher education? How can quality be assured, enhanced and researched? What are the feasible measures to develop quality cultures within teacher education, including initial teacher education, induction to the profession and continuing professional development? The papers in this publication will shed light on these questions.

This is the third monograph published as a contribution to the Teacher Education Policy in Europe Network. Its predecessors, *Teacher Education Policy in Europe: A Voice of Higher Education Institutions* (Hudson & Zgaga, 2008) and *Advancing Quality Cultures for Teacher Education in Europe: Tensions and Opportunities* (Hudson, Zgaga & Åstrand, 2010) have both addressed topics highly relevant in the current discourse and policy agenda. (e.g. Commission of the European Communities, 2007).

This volume contains fourteen papers analysing aspects related to teacher education and policy. Most papers describe a European context; however we also have a contribution from Chile encouraging us to reflect on teacher education policy in Europe in relation to global concerns and challenges.

A selection of papers addressed questions pertaining to teacher education at the national policy level or in terms of quality assurance frameworks. Dennis Beach and Carl Bagley analyse the Swedish teacher education policy trajectory in terms of the conditions that it has created for sustained development, institutional re-contextualisation and for developing the knowledge base in the teaching profession. In her paper Joanna Michalak discusses the latest proposals of the Polish Government on the improvement of the quality of higher education and the implications they entail for the higher education institutions providing teacher education in Poland. Marco Snoek raises the question about in-service Master's qualification programs and their impact on the professionalism of teachers. The paper describes the contents and conditions for successful in-service Master's level qualification programs, and proposes a frame of reference for analysing such programs.

With the increasing pressures for following up quality in different areas of teacher training and teaching, the need to develop and analyse quality assurance frameworks has emerged. Quality assurance frameworks are addressed in three of the papers, one of which focuses on post-initial teacher education, and two of which focus on the expanding area of e-learning initiatives. Pieter-Jan Van de Velde and Floris Lammens describe the quality assurance framework developed for Flemish post-graduate teacher training programmes for people with professional skills or with an academic degree targeted for teaching in the second or third grade secondary schools. The authors share the experiences of the cooperation between the quality assurance agencies and the teacher training institutions. Mario Brun and J. Enrique Hinostroza present the Chilean system of quality assurance in education with a focus on ICT in teacher education. Their study on the availability and use of ICT in the initial teacher training institutions raises discussion on the utilization of standards and the integration of ICT in teacher

education as a means to improve quality. Marit Dremljuga-Telk, Ene Koitla, Kerli Kusnets, Marge Kusmin, Margus Niitsoo, Lehti Pilt, Toomas Plank, Merle Varendi, and Anne Villems describe the process of quality assurance of e-courses in Estonia. They describe the development of the process and discuss the experiences gained over the past years. The rapid increase of e-learning initiatives has led to the need to identify and disseminate the best practices in e-learning course design and instructional materials.

Different aspects of teacher education and curricula were addressed in a number of papers. The first paper by Jens Rasmussen and Martin Bayer presents the results of a comparative study of the content in teacher education programmes for primary and lower secondary teachers in four countries, namely Denmark, Canada, Finland and Singapore. The latter three score highly in international comparisons, such as PISA and TIMMS. Notwithstanding differences in certain areas, the authors conclude that at times, greater differences can be found between the four individual countries.

Describing the case of one institution, Anneli Kasesalu, Sirje Piht, Piret Lehiste, and Rea Raus report the findings of a study that investigated teacher education graduates' experiences concerning their readiness to enter the teaching profession. The authors view the novice teachers' experiences from social, professional and personal perspectives reminding us of the many-faceted nature of quality in teacher education. The paper by Sheila Henderson and Brian Hudson builds on the findings of a set of studies exploring the mathematical competence, confidence, attitudes and beliefs of primary student teachers. The authors point out the importance of acknowledging student teachers' beliefs about teaching and learning mathematics as well as about the nature of mathematics itself in order to encourage professional competence development and quality teaching. Iuliana Marchis investigates the self-regulated learning of teachers of mathematics in Romania, pointing out the important relationship between teacher competence and student learning. Liliana Ciascai and Lavinia Haiduc describe a study on pupils' attitudes towards natural sciences and opinions about the

teaching of natural sciences in Romania. The learners' perspective highlights the attitudes toward the national curricula and teacher training at the receiving end of the education.

In the last section, the papers describe innovative initiatives in teacher education providing documented examples of best practices in developing quality cultures within teacher education. Margus Pedaste, Äli Leijen, Aili Saluveer, and Janika Laur describe three cases in initiating changes in teacher education applying transformational leadership in the context of a matrix management system. The authors analyse the challenges and opportunities for change in the light of what this change entails for the quality of teacher education. Leadership is an element present in the last two papers as well. Elaine Wilson describes a case of university – school network partnerships as an arena for formative reflection and learning. The collaborative model takes advantage of opportunities for learning in authentic contexts to enhance quality cultures in teaching. Estela Pinto Ribeiro Lamas and Lourdes Montero Mesa analyse the design, development and evaluation of the joint doctoral programme in Didactics Perspective of Curriculum Areas. The authors highlight the aspects of the process and the programme itself that have contributed to quality cultures emerging and thriving.

All papers have been peer reviewed. As editors of this volume, we would like to extend our thanks to reviewers of the manuscripts for their work in supporting the authors as they developed their papers.

September 2011

Eve Eisenschmidt and Erika Löfström

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Part 1

NATIONAL POLICIES AND QUALITY ASSURANCE FRAMEWORKS

New Threats in Advanced Knowledge-based Economies to the Old Problem of Developing and Sustaining Quality Teacher Education

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ABSTRACT

Certain common elements can be identified regarding teacher education programmes and their development in advanced knowledge-based economies, by which we mean nation states that are thoroughly reliant on knowledge production and communication for economic growth and the smooth running of institutions. They have their basis in three ideas. The first is the recognition that facts and principles that are acquired through the long process of systematic inquiry and stringent investigation and scientific analysis are increasingly essential for economic growth and social, technological and cultural development. The second is a recognition of the relationship between formal education (schooling) and economic production and the third is a recognition of the role of teacher education in respect to this relationship and the value of placing this education inside the modern university. These ideas can be expressed as follows (also Brante 2010, Beach 2011):

- Scientifically developed knowledge about teaching as a profession is necessary and desirable for the continuous improvement of professional knowledge for teachers, which is in its turn essential to guaranteeing the quality and consistency of critically reflective teaching, professional learning and school development.

- Scientific autonomy is essential to the development of this knowledge
- Active and collective student involvement should be guaranteed and
- It is the state's responsibility to provide and protect the necessary preconditions for the free and open delivery of this education and to guarantee the appropriate conditions for its evaluation and continued further scientific development.

These ideas are also reflected in European Union recommendations for teacher education (e.g. EC 2010) where they are described as a means to improve teacher professional competencies and cross-national comparativeness in teaching in Europe's schools. They concern the promotion of scientifically founded professional values as part of the development of an international tradition and culture of reflective practice that will assist teachers to be autonomous learners who can engage in research, develop new knowledge, are creatively innovative and can take a leading and active part in school improvement in collaboration with colleagues, parents and others on regional, national and European levels. Bernstein described the development of this kind of knowledge as a defining component of what he termed a *Regional Mode* of knowledge and as formed when vertical scientific knowledge discourses and their concepts and practices meet fields of practice and their forms of communication (Beach 2005). The medical sciences are taken as the prime example of regional knowledge modes by Bernstein. Our submission considers this development in teacher education and takes Sweden as its main focus. However, we feel the developments we describe may relate and apply even to other countries.

From a starting point to a turning point

Our analysis starts from the 1974 Teacher Education Inquiry (SOU 1978:86). From this inquiry (and to some degree perhaps even earlier than this: Beach 1995, Eriksson 2009) and up to and including the 1997 Teacher Education Commission (LUK 97: SOU 1999:63) teacher education policy writers in Sweden seemed to be trying to establish foundations for a regional knowledge base in teacher education as outlined above, as a central part of the education of all teachers and for all pre-service teacher education

(Carlgren 1992, Eriksson 2009, Beach 2000). Recent policy seems to have abandoned these aims (Sjöberg 2011, Beach 2011). This is most clearly exemplified in relation to a recent Green Paper (SOU 2008:109) and the subsequent government White Paper (*Top of the Class:* Government proposition 2009/10:89) that was based on the recommendations of the commission (Ahlström 2008) and its statement that knowledge about the professional, societal and institutional context of teaching – what was termed general pedagogical knowledge in previous Green and White papers (see e.g. SOU 1952:33, 1965:29, 1978:86, 1999:63) – has little real significance for the quality of teacher-work and that providing student-teachers with an understanding of the social, sociological, political, ideological, cultural and economic landscape in which they and their pupils live, work and learn has little effect on effective pupil learning. Instead, as also Sjöberg (2011) shows us, subject knowledge and vocational pedagogical skills are emphasised as of singular importance (e.g. Proposition 2009/10:89, p 9, p19, p24, p 26, p 41) as is organising teacher education in accordance with current school and pre-school organization (e.g. op cit, p 12, p 18, p 25).

The professional knowledge that is given most value is once again described as founded on the subject knowledge domains of university singularities (e.g. physics, history and geography) together with some technical knowledge related to how to deliver/ communicate subject knowledge effectively to pupils (Sjöberg 2011). This is against the grain of earlier policy developments and it may, in line with for instance Beck and Young (2005), help make future teachers and their practices more easily economically managed and controlled and more susceptible to political manipulation and economic exploitation (also Codd 2005).

This shift has strong consequences for professional knowledge. As is suggested by for instance Apple (2001) and Ball et al (1994, 1996) in relation to developments in the USA and UK respectively, it suggests how neo-conservative standards about subject knowledge value and discipline together with new-managerial aims and technologies for increasing 'efficiency, speed, and cost control' now prevail (Apple 2001, 192) and have 'replaced more substantive concerns about social and educational justice' (ibid). These are important points that signal that there has been a clear turn of interests in education (Antikainen 2010) that as Apple says (2001, 189) is crucial to recognize in any attempt to think through the

running of the education systems in the future. More not less power is being consolidated within the national administrative structure of education and more time and energy are being spent on controlling performances and public image. Scientific content for teachers in teacher education relating to education and teaching as political and sociological objects of knowledge is being removed and replaced by subject and performance content at the same time as other changes in the political economy of the education landscape may render the sociological, political and ideological knowledge that has been lost more valuable and necessary than ever before.

Why professional knowledge needs a scientific foundation

Bernstein's (1990) stages of development model for teacher education has been a useful analytical tool in the production of the present paper. Here, as also in 1999 (pp 157c159), Bernstein distinguishes between 'two fundamental forms of discourse' in relation to university based professional education that reflect a dichotomy between academic- and common-sense knowledge (Beach 2005, Eriksson 2009). The first discourse is a horizontal discourse. This discourse is embedded in everyday language. It both relates to and expresses common sense understandings of on-going everyday social practices and is directed towards immediate practical goals. This common-sense knowledge is likely to be oral, local, context dependent and specific, tacit and contradictory across but not within contexts according to Bernstein, who also suggested that this knowledge modality won ground with respect to the professional knowledge base of teaching in teacher education in the same period as managerialism and economic steering made heavy inroads into education institutions.

The second form of discourse is called a vertical discourse. This kind of discourse is developed from the integration of expressions of meaning in a particular specialised field or area to form a coherent, systematically principled and explicit structure that is hierarchically organised and expressed through a specialised language with its own particular syntax and grammar (Bernstein 1996, 170–171). This structure of discourse is characteristic of the regional knowledge mode presented earlier and the academic mode, and is found in and is characteristic of the academic and

professional disciplines (e.g. physics, mathematics, history and medicine, law respectively). It comprises knowledge that is sequentially ordered in a curriculum for communication processes according to a logic of transmission oriented toward the production of highly specialised texts and practices that are strongly embedded in particular social and institutional sites (Bernstein 1990).

The difference in the two forms of discourse (i.e. horizontal and vertical) is important according to Bernstein. Horizontal discourses form and are based on knowledge that is local and tied to a specific practical context. They are less 'powerful' than scientific knowledge, in that they are less systematically formed and lack an anchoring dimension of specialized inquiry and systematic evaluation controlled by a professional hierarchy of socially and politically legitimated expertise (Beach 2005). This Bernstein adds is not insignificant from a policy perspective, not the at the present time, as these absences mean that the knowledge interests of the discourse, if not the discourse itself, can be more easily maneuvered by Governments and other organizations outside of academia and more easily influenced through lobbyist activities from powerful interest groups, like national organizations of Trade and Industry for example. Indeed according to researchers such as Beck and Young (2005), the policy formation of a horizontal discourse as the basis for a field of professional knowledge can be understood as part of a move to open up professional educational fields and activities to such influences more easily.

In short, what we are trying to say is that horizontal (tacit) knowledge is not related primarily by an integration of meanings through research based scientific analysis but through the functional relations of segments or contexts of knowledge to everyday practices, and that what is acquired in one segment or context, and how it is acquired, may bear very little relationship to what is acquired or how it is acquired in another (Bernstein 1999, p160). This is a development that is highly pertinent currently or school and pre-school professionals, who are losing contact with critical scientific professional content knowledge just at a time when private forces are entering fields of practice as owners and controllers of production on a large scale basis with extremely negative consequences for professional identities, practices and values in the interests of private profit (Codd 2005, Ball 2007, Beach 2008, 2010, 2011).

Our argument here is not that horizontal knowledge discourses have no value as a basis for professional knowledge of practice (praxis knowledge: Beach 2005, Brante 2010). On the contrary there is always tacit knowledge and horizontal communication of this knowledge within a profession, and such communication processes and the knowledge carried by them is invaluable and essential (Erlandson and Beach 2008). Our point is rather that there is a danger when such knowledge dominates professional knowledge, that both the knowledge of transmission and its pedagogy can become segmented, easily displaced and discontinuously applied (with strong local and regional variations) in a manner that contravenes the idea of a scientifically unified teaching profession with a shared corpus of professional scientific knowledge and a common (and even international) professional knowledge foundation similar to that of the medical, vetinary, economic, engineering and Law professions.

What we mean is that a horizontal discourse on its own gives a very poor foundation from which to develop shared scientifically formed and communicated professional knowledge and skills for reflective praxis. A vertical discourse is needed as well, in the form of an explicit, systematically principled and hierarchically organized knowledge structure (as in the natural sciences) that provides a grammar and robust conceptual system (syntax) that can be used to describe, model and theorize from empirical situations in a manner that helps us to understand and talk collectively about what is good education and also what are the characteristics, origins, ('hidden') aims, interests and effects of suggested and ongoing policy changes sufficiently well, to be able to robustly question and if necessary challenge, oppose and modify them for scientifically well founded reasons (Kallos 2009). In the words of Apple (2001, 195) such knowledge is of crucial importance to the question of whether students in and after teacher education programs will understand the ideological and political restructuring that is going on all around them and be able to grasp and deconstruct the larger forces involved in this and concerns whether they will have the tools to connect local with global tendencies and to think critically and strategically in the interests of improving their practices to better serve the broad cross-section of pupils they will meet now and in the future (Beach 2011).

Bernstein (1999, p159) describes a structure 'of specialized languages with specialized modes of interrogation and specialized criteria for the production and circulation of texts' as an example of the kinds of knowledge and knowledge practices involved, and it is clear that through the inception and inclusion of educational science components in teacher education over the past 40 to 60 years, teacher education was moving in these directions in several European countries (Hopmann 2001). Unfortunately, as for instance also Garm and Karlsen (2004) and recent policy developments suggest (such as the directives given to and recommendations from the recent Teacher Education Commission in Sweden – HUT 07), teacher education appears to now be moving toward a narrower focus upon measurable skills with less emphasis on broader educational sociological, philosophical, political and ideological issues (i.e. a large part of the conventional educational sciences). Technical professional knowledge and competence, together with a focus on outcomes and external control is becoming more dominant. This is eminently clear from the content of the Government White Paper *Top of the Class* (Government Proposition 2009/10:89) that ensued from the recommendations of HUT 07.

Turning the clock both forwards and backwards

Bernstein (1990, p 157) discussed the training of teachers in respect of horizontal and vertical knowledge discourses (or profane and sacred knowledge, after Durkheim) as structurally homologous to the organisation of knowledge in the medieval university in studies toward the priesthood, and he used the terms the Trivium and Quadrivium of teacher education with respect to this, to show a dislocation between two different components in this education. These were firstly a general component concerned with educational sciences and 'inner control' (cf. critical/reflective practice) and secondly a component related to individual and relatively independent discourses in the subject specialisations that students would be expected to teach in schools. The content, forms of communication, relative distributions of and relations between these dislocations have varied over time according to Bernstein, who also identified five steps to this development (p 158).

It is the content of the Trivium and its relationship to the Quadrivium that are currently being significantly changed (Beach 2011). Bernstein's five stages are:

1. A stage where the same agent covered both dislocations in one institution
2. A stage where lecturers were specialised to one or the other side of the dislocation
3. A stage where agents became constituted in terms of specialised discourses in the philosophy, sociology, psychology and history of education
4. A stage involving the development of a new body of re-contextualised knowledge between the discourses of education studies and those of the individual school subjects. In e.g. England this re-contextualised knowledge was termed curriculum theory in e.g. Germany, Norway and Sweden it became known as didactics. This new subject became increasingly technified in terms of its relationship to the subject components of the education according to Bernstein
5. A stage when the specialised disciplines of educational studies become weakened as 'political, cultural and academic sites' (Bernstein 1990, p. 161) in a manner that left psychology as the only remaining education specialisation and allowed the training of teachers to become predominantly technically oriented with the professional training dimension once again being predominantly carried out in schools through apprenticeship-like-learning guided by experienced teachers.

Stage five is clearly present in several respects with regard to White paper recommendations like Proposition 2009/10: 89, not the least in terms of descriptions of the common education science core of teacher education and the relationship between this core (in quantitative and qualitative terms) and that of subject specialisations like subject theory and subject didactics (Beach 2011). This is clear in at least two ways. Firstly, the common core content has been reduced in volume by 20% and secondly arranged horizontally in relation to not less than 8 different thematic and 18 sub-thematic areas (from special education to grading and assessment and sustainable development), none of which can because of this be in any way dealt with as specialisations (i.e. can

be developed as vertical discourses in teacher education) and many of which can be traced back to initiatives and interests that have developed outside of academia, as part of a horizontal discourse (e.g. of entrepreneurialism, individual choice and personal conflict resolution).

These developments move the professional knowledge base back toward a technical relationship to subjects and weak structures of knowledge (e.g. weak grammar, poor insulation, indistinct concepts, local regulation) in educational studies (Trivium). Bernstein describes this development as forming a neo-medieval educational arrangement that allows employers, the media and practitioners a greater say than educational scientists and researchers in what constitutes professional knowledge, skills needs and practices. Subject knowledge has once again become the primary (perhaps only) vertically anchoring pillar of the scientific knowledge base for secondary- and upper-secondary level teachers whilst there is now effectively no such base at all in the other teacher education categories, which have moved closer to a vocational-professional model.

Bernstein's concept of re-traditionalisation to may describe the developments we can see here (Beach 2005), which represent a bifurcation of teacher education with the potential to lead to a reaffirmation of the specialized cultural identity of future primary teachers in practitioner-fundamentalist terms, in a manner that may even encourage the formation of a conservative and reactionary practitioner power against scientific educational/professional knowledge in teacher education (Beach 2005) and a back-to-basics movement concentrating mainly on teaching discipline and the three Rs. Teaching has been (re-)vocationalised and a craft-apprenticeship relationship has again become the main characteristic for the development of professional (Trivium) knowledge. In the secondary sector things are equally bad. All you need to know to be a teacher in secondary school now is the subjects you will teach and knowledge of how to teach them together with the 'skills and courage' to be able to grade pupil performances and uphold classroom discipline and order. In whose or what interests these changes may operate in an era of (increased) economic privatization and profit is well worth thinking about here.

Bernstein discusses a traditional craft apprenticeship as the specialized practice nearest to a horizontal discourse and as an example of a knowledge structure with weak grammar and tacit transmission. This knowledge is learned 'on-the-job' and is less systematically structured, more concrete and more distinctly related directly to a specific practical context than is scientific knowledge, as it is primarily communicated through activities connected to the use and exercise of situational terms, abilities and skills that are directly linked to a material base and an immediate concrete situation. This sets particular limitations. The knowledge developed and communicated has difficulty transcending its specific contextual and connotative origins and their economic (production) relations (Beach 2011) and can be more easily influenced by business and even religious and ideological interests (Beach 2011). Knowledge in subjects becomes the only formally communicated scientific knowledge of education and the main gauge of school and educational performances.

Secondary/subject teachers may feel they benefit from developments such as these as the re-emphasis on subject knowledge as the key content in the professional knowledge base appears able to provide them with status (through a specialist identity) in relation to other teachers and this may account for the support such changes often obtain from subject teacher associations like 'Lärarnas Riksförbund' (The National Association of Teachers). However this 'lift' may need rethinking, as the move (back) to the subjects actually divorces the scientific element of the knowledge base from educational praxis in schools in a manner that may not prepare secondary teachers well *either* for understanding pupils from different social backgrounds and cultures and their learning needs, differences and interests, *or* for understanding subject history (and politics) and other aspects of the social geography of their profession and the working conditions they will meet in the profession in the future (Ahlström 2008, Kallos 2009). Rather than providing a 'lift' of teacher knowledge and status, as is suggested in the Government White Paper (Top of the Class) itself and by NAT support, the changes may instead leave beginning teachers unprepared for consciously defining, scientifically appraising and where necessary accountably changing their practices in order to improve the

learning performances of all learners in rapidly changing circumstances (Sjöberg 2011). This is otherwise one of the claimed intentions with the reform at hand, and it may even render them even less able than they are today to control and safeguard the evolution and development of the conditions of labour and employment in schools and other institutions in which they will carry out their professional activities.

Discussion: Summing up

This chapter concerns the value of scientific research about the teaching profession and teaching and learning practices as content in teacher education for teacher work on the one hand, and recent policy changes in Sweden in relation to (and legislating in favour of or against) the conditions necessary for the sustained development, communication and institutional re-contextualisation of this research as content in teacher education on the other. We have suggested that until quite recently policy development has increasingly favoured the development of conditions of development for this kind of scientific content (Beach 2011), but also that there has recently been an about turn and a 're-traditionalisation' of teacher education (Sjöberg 2011). Bernstein's distinction between vertical and horizontal discourse has been important to our analysis. This distinction is closely related to a distinction between esoteric and mundane and sacred and profane knowledge from Durklheim and others (also Bernstein 2000, 29–30).

Esoteric knowledge is produced within the 'scientific' fraction of the political and cultural superstructure. It is mediated by theoretical concepts and general principles and has some partial autonomy from both the practical, social and material base of production because of this. Bernstein describes this autonomy as the 'distance' between a vertical (scientific) discourse and the 'real world'. It is often considered to be a problem by teachers and student teachers, who talk about the problem of coupling the general principles expressed in and by university content to what teachers do as professionals in the schools they work in (Eriksson

2009). However, Bernstein regards this distance as an important creative space in discourse where new concepts and principles can emerge and where generality can be achieved.

The aim of (the introduction of) a vertical discourse is to provide a critical distance for educational thinking and analysis from the world of practical action of socially organized learning in present day schools in class based, hierarchic societies (Beach 2005). It is meant to be a tool to help teachers not just to begin to reflect over but also to begin to systematically understand the way formally endorsed educational aims like integration, authenticity, autonomy and the development of a democratic basis for learning within a broadened concept of an education for all, can be theoretically critiqued and practically rethought, re-worked and re-enacted in order to be more sustained and sustainable (Beach 2011). As we suggested earlier, in vertical discourse the knowledge produced may open up possibilities to resist what seem (otherwise) to simply be policy imperatives, by enabling people to recognise and challenge the values and interests that are at play in them. It may therefore be recognised as more powerful – perhaps dangerously powerful to Governments and others Bernstein argues - when compared to horizontal knowledge. Bernstein further suggests that this is visible in that although the line between esoteric and mundane knowledge is sometimes unclear and changes over time and between societies, all societies have clear boundaries and distributive arrangements which regulate access to the domain of esoteric knowledge and (thus) the legitimisation (or alternatively questioning) of professional action it allows (Brante 2010).
This is less clearly the case with the mundane knowledge contained in, carried by and shaped through horizontal discourses. Horizontal discourses do not provide access to powerful systems of meaning and they may make it difficult to select relevant knowledge in unfamiliar contexts or to engage in the critical enquiry of reflective professionalism. As suggested in Beach (2005), like the prisoners in Plato's Cave, horizontally communicated practical discourses can easily leave us severely limited by our everyday experiences, commonsense understandings and predominant media articulations of value (hegemony), and therefore less able to deconstruct and eventually act against them.

The re-assertion of horizontal discourse seems to us to be what recent policies like Government Proposition 2009/10:89 seem to be set on accomplishing (Sjöberg 2011), together with the re-separation of forms of teacher preparation and teacher work into categories corresponding to divisions in the school system (pre-school, primary school, middle-school, secondary school, upper-secondary school and recreation center).

Building on Bernstein's analysis we suggest that student teachers need access to a vertical discourse or several reasons. One is that such a discourse can provide them with mechanisms for generating new knowledge beyond specific and isolated contexts. Another is that it can counter the tendency to reduce access to important forms of knowledge with which to challenge reactionary kinds of traditionalism and the status quo. As already stated, this is particularly crucial at present for teacher education. Following proposition 2009/10:89 teachers may enter the profession without a significant scientific element to their professional knowledge base at exactly the same time as their fields of practice re being opened up for political and even economic influence and exploitation through privatisation and new economic management. This process is sometimes referred to as proletarianisation. It is an aspect of the pacification and control that has been identified in relation to the teaching profession in a European perspective (Garm and Karlsen 2004, Beach 2008, 2010) and elsewhere (e.g. Codd 2005).

Bernstein notes that the interests that help constitute the horizontal discourses that act on vocational knowledge are often constructed and distributed outside of and even independently of universities as pedagogic re-contextualizing fields (Ahlström 2008, Kallos 2009). This is against the unity of teaching and research in the modern concept of the university and may be linked to instrumentalities of the market and reflected in things like on the job training, practice modelling and mimetic learning that are developing rapidly internationally as commercially sold commodities (often with help from media political plays on emotions and fears about (un)employability).

These generic modules are generally developed around so-called key and core skills that are abstracted from specific occupations or fields of study on the basis of similarity. They are marketed

through various private consultancy services, even if some institutions of higher education are also now developing regional knowledge and training centres and institutes to compete on these markets. This is particularly evident in later developments in knowledge economies (Bernstein, 1996), which openly embrace the saleable concept of trainability as a commodity product in professions-educations even for universities (pace Government Proposition 2008/09:50) and recommend a strengthened employer voice (pace Government proposition 2006/07:43) that is fully demand-led and focused on practical vocational skills.

In line with Bernstein, through these developments weak grammars and tacit transmission are likely to become more characteristic for professional knowledge in the future than they are today. And this is exactly what can be seen we suggest in the most recent teacher education proposition in Sweden *Top of the Class* (Proposition 2009/10:89) and the deliberations of the Commission that preceded it (HUT 07 - SOU 2008:109).

Vocational training was the fundamental pedagogic objective of the phase of teacher education prior to stage one as described by Bernstein (1990, 1996), but it is also what phase 5 developments seem able to amount to when they are analysed critically. This is highly problematic for professional knowledge. Professional development is turned backwards against aims of critical reflection and analysis that were endorsed until recently (pace e.g. SOU 1978:86, 1999:63), toward generic modes that are constructed from relations of similarity between elements of different practices that have been abstracted from their original contexts in a way that silences their cultural bias (Beach 2005). Current policies clearly legislate in favour of and legitimate a re-vocationalised teacher education professional content (Beach 2011) and the transformation of the teacher role into one of a managed professional (Codd 2005). But if the ambition is to develop a teacher education that is both critical and reflective politicians and policy-makers at national and European levels may need to consider wholeheartedly rejecting this development in favour of an education with a strong conceptual structure (syntax and grammar) and a highly developed vertical discourse as in a regional knowledge modality.

In Sweden the previous teacher education reform from proposition 1999/2000:135, and particularly the Green Paper preceding it (from LUK 97: SOU 1999:63), aimed to continue a move toward a regional modality that had been set in motion by earlier reforms, as did similar propositions appearing in other European countries like Finland and Ireland (Houtsonen et al 2010) and Spain, Portugal and Greece from the seventies to the nineties (Müller et al 2007). Recent reforms go the opposite way. There is now no recognition of the value of the scientific study of education and education systems for the development of professional knowledge at the policy level and a vocational model has once again become predominant in a manner that creates a vacant intellectual space around practice waiting to be filled with whatever temporary contents the market, or institutional, or governmental imperatives may dictate (Beck and Young 2005). This is clear in for instance Sweden and Norway at the present time (Garm and Karlsen 2004, Ahlström 2008, Kallos 2009) and it filters down to the subjective level of teacher consciousness (Houtsonen et al 2010).

A highly developed regional knowledge base doesn't mean ignoring academic subjects or denying them value. Teacher education institutions of high quality have normally included a highly challenging subject curriculum (including subject didactics) alongside their theoretical professional-knowledge base content area (Educational Science). But in balance!

Current policies are tipping this balance. Teacher education institutions offering a high quality programme should, we suggest, recognise the threat of this 'tip in the balance' and respond by reasserting the value of scientific professional knowledge. Two further criteria can be recognised here for teacher education institutions. These are firstly an extremely strong research culture that is highly relevant for the development of the professional knowledge base and the profession and a majority of staff who are research active and who regularly publish research papers in high-quality peer-reviewed journals. They are secondly a symbiotic relationship between research and the teaching of education studies in relation to this. They were both visible previously, as in SOU 1999:63. They are now absent (see SOU 2008:105). According to Apple (2001) this represents a subtle but crucial shift in

emphasis that is not often openly discussed. However, at a time when the very meaning of democracy is being changed, we cannot afford to ignore these radical reconstructions. Too much is at stake if we do.' (Apple 2001, 194–5).

Conclusions

Although not in a simplistic or linear way the changes we have described may we feel reflect (or be part of) the rise of the neo-liberal university idea. This idea is becoming increasingly apparent in higher education policy development today, not the least in terms of discourses of management and control, which have been shown to seriously threaten academic independence and the free growth and exchange of knowledge as well as active student involvement in curriculum development and evaluation. Clear examples of this development appear in Sweden in recent government propositions such as *Top of the class* (Government proposition 2009/10:89), *Freedom to choose – increased influence by universities on the appointment of university board members* (Government proposition 2006/07:43); *A boost for research and innovation* (Government proposition 2008/09:50); and *Freedom and influence - abolition of compulsory student-union membership* (Government proposition 2008/09:154). These examples all derive from commissions of inquiry established by the 2006–2010 right wing government and the Green Papers that were written by these commissions. Right-wing governments have been the ones who have historically acted most obviously in support of neo-liberalisation in education and the Welfare State more broadly both globally (Harvey 2006) and in Scandinavia (Bengtsson and Wirtén 1996, Beach 2010, Antikainen 2010).

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Teacher Education in the Context of Improving Quality in Higher Education in Poland

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ABSTRACT

The purpose of this paper is to examine opportunities and limitations which the latest proposals of the Polish Government concerning the improvement of the quality of higher education may create for the teacher education in Poland. Therefore, some challenges that teacher education in Poland is facing nowadays in the context of improving the quality of education at the higher education level are discussed in the paper. The assumption which underlies the presented considerations is that the quality of university and college teachers' work – especially of teacher educators – and the resulting quality of education in the Institutions of Higher Education have an impact on the outcome of future teachers' education and their professionalism.

Key words: teacher education, quality of teacher education, teacher educational policy, teacher professionalism, higher education.

Introduction

In this paper I wish to focus my considerations on – in general terms – the issue of a quality of teachers' education, which is one of the key subjects appearing in the current debate on the directions of educational policy in the EU. I pay special attention to opportunities

and limitations which the latest proposals of the Polish Government concerning improvement of the quality of higher education may create. In the central point of the discussion undertaken in this text I place challenges that education of teachers is facing nowadays in the context of improving the quality of education at the higher educational level.

In the discussions on education in Europe, it is pointed out that quality end efficiency of education is to a large extent dependent on teachers' professionalism and the degree of professionalisation among teachers. Teachers' work is recognized as the most important factor influencing the quality of education at school (Abbott, 1988; Darling-Hammond, 1999; Hattie, 2003). At the same time it is stressed that the quality of teachers depends on the quality of their teacher education and this is reflected in recent European policy documents published by the European Commission (European Commission, 2005; 2007) and the European Council (European Council, 2007). Scientific research on teachers' educators shows that the quality of university and college teachers' work – especially of teacher educators – and the resulting quality of education in the institutions of higher education have an impact on the outcome of future teachers' education and their professionalism (Buchberger, Byrne, 1995; Buchberger at all, eds., 2000; Korthagen at all, 2006). Thus the issue of improving the quality of teachers' education is a priority and one of the main goals of the process of reforming educational systems in European countries. The attention devoted to the quality of teachers' work and the quality of education is reflected in research priorities concerning teaching, learning, teachers' professional development and school leadership, which is, for example, exemplified by the project entitled *Teaching and Learning International Survey*, launched in 2006.

1. Teacher education in Poland: towards improving quality

This section explores elements characteristic of teacher education in Poland. It describes some of the main features of teacher education and the main assumptions concerning the work of teacher educators in Poland and its conditions. The considerations presented below

focus on Polish educational policies and practices forming the structure of the national and institutional contexts for teacher educators' work and identities.

1.1. Context for teacher education – the latest proposals of the Polish Government concerning improvement of the quality of higher education

The current context for teacher education in Poland is partly shaped by shifting social, economic and political circumstances, whether local, national or global in nature. Following the downfall of socialistic regimes in 1989, system transformations have taken place primarily in political, social, cultural and economic areas in Poland. New political legislation became the basis for changes in Polish education. From being a centrally planned, hierarchical and closed educational system, it has been transformed into a more open and highly decentralised system of governance.

In the current legal environment, all issues connected with the system of higher education are regulated in the Act of 27 July 2005 Law on Higher Education and in the Act on Scientific Degrees and Titles of 14 March 2003. The higher education in Poland is one of the most dynamically developing areas of social life. In the last 20 years, rapid quantitative and institutional changes have taken place. Since the beginning of the change in the Polish political system (the new legislation: Higher Education Act of 12 Sept. 1990, uniform text published in the *Journal* of Laws of the Republic of Poland of 1990, No 65 pos. 385 and Educational System Act introduced on 7. September 1991) the number of students has increased almost fivefold and more than one third of this rise consists of students from non-public institutions of higher education.

Table 1. The number of the institutions of higher education in Poland

Academic year	Institutions of higher education in total	Non-public institutions of higher education
1992/1993	124	18
1995/1996	179	80
2000/2001	310	195
2005/2006	445	315
2008/2009	458	326

Source: http://www.nauka.gov.pl/szkolnictwo-wyzsze/dane-statystyczne-o-szkolnictwie-wyzszym/

This impressive and abrupt increase in the number of university and college students in Poland has brought about many various positive effects: made higher education more accessible, postponed introduction of great numbers of young people into a very difficult job market and improved the earnings of numerous university and college teachers. However, it has also produced negative outcomes: manifold and long-lasting overburdening of higher education teachers, delayed their development and declined the level of their scientific work; as a result the quality of studies has decreased especially at very popular specializations[1] and the value of their diplomas and degrees has become impossible to measure.

While identifying the weaknesses of the Polish system of higher education, the following elements should be looked into:

- *Lack of qualitative mechanisms in the financing system*: at present there is no special financial support that would reward an institution for its quality of research and education, and also the significance of qualitative elements in the current algorithm for dividing stationary financial support is negligible.

[1] Nowadays, students in Poland are educated on over 200 specializations, including some unique ones and some macro-specializations. The greatest number of students studies at the following specializations: economic and administrative (23%), social (23%), pedagogic (12%), liberal (8.8%), engineering and technological (6.8%), medical (5.8%), IT (4.9%), services (3.7%), legal (3.1%) and environmental protection (1.4%) (other specializations are attended by 16.4% of students).

- *Low rate of internationalization of studies*: the index that is often used to measure the level of internationalization of higher education is the ratio of foreign students to the whole student population. In Poland it amounts to 0.5%. It is 0.9% in Slovakia, 3.3% in Hungary, 6.3% in the Czech Republic and the average index for the OECD countries amounts to 9.6%. These statistical data show that educational offer at Polish universities and colleges remains comparatively unattractive for foreign students.
- *Incorrect structure of educational specializations*: social and pedagogical specializations are disproportionally popular, especially in the non-daily form of studies, which does not meet employers' expectations. There are too few graduates from scientific, technological and health-oriented specializations. For the state, it means endangering future rate of socio-economic development, and for individuals it means that having a degree increases earnings in Poland only by 28%, while in the USA by 76.8%, in Portugal by 68.8%, and in France by 64.4%. What is more, Poland is ranked 19 in the EU as far as the level of adjusting higher education to the needs of economy is concerned.
- *Complicated academic career path*: in Poland, in the last 20 years the number of defended doctoral dissertations has risen threefold, which has not been reflected in an equally rapid increase in the number of university teachers with the title of a habilitated doctor – permitted to, for example, do their independent scientific research or performing supervisory functions. As a result of this slowing down of an academic career, the age structure of the Polish academic and scientific community is very unfavourable. University teachers and scientists gain independence at a very late age. The deficit in the influx of young university and college staff is especially visible in comparison with rapidly rising number of students that has taken place in the last 20 years.
- *System of managing the institutions of higher education*: almost all international organizations' reports, such as OECD's or World Bank's ones, that regularly evaluate Polish higher education stress the need to modernize structures of the institutions of higher education, which in their present form do not facilitate building up their international position.

- *Weak link between the institutions of higher education and their socio-economic environments*: still the collaboration of the institutions of higher educations with the employers' community from public, commercial and non-governmental sectors is too weak. The educational offer of the majority of Polish universities and colleges is arbitrary; it is inflexible and rarely externally assessed in terms of educational results. In terms of research, Polish institutions of higher education, apart from very few exceptions, created too weak institutional mechanisms of gaining funds (contracts) for research and preparation of expert opinions for external institutions, especially commercial ones. Moreover, the OECD indicates the need to create greater employers' engagement, both public and non-public, in creating and evaluation of university and college curricula.

According to the Ministry of Science and Higher Education, increasing the quality of studies and of efficiency of the higher education system in Poland becomes a priority. Nowadays, work on amendments to the Higher Education Act in Poland is taking place. The suggested legal changes result from the need to adjust Polish higher education system to an unprecedented scale of increase in the number of tasks which it is facing and also to harmonize it with the solutions introduced in the European High Education Area.

The proposed amendments to the Higher Education Act, which are to be officially introduced on 1. October 2011, concentrate on three areas:

- efficient model of managing higher education,
- dynamic model of academic career,
- effective educational model.

One of the key means aimed at achieving the aforementioned goals is the creation of reasonable financing mechanisms for higher education based on the outcomes of research and teaching work. In order to achieve it, the financing system is to be altered in such a way that greater and greater part of funds will be distributed through competitions and tenders, and the scale of state financing will depend on the quality of results, both in teaching and research.

The second key means of achieving these goals is to integrate curricula with the European High Education Area and thus increase students' and university and college teachers' mobility through: i) deregulation of teaching standardization and increasing the autonomy of institutions of higher education in terms of creating specializations and curricula in accordance with the National Qualification Framework within the Bologna Declaration; ii) closer links between institutions of higher education with external sector and economy through including practitioners in the work on university and college curricula and teaching; iii) greater internationalization of institutions of higher education through involving foreign university and college teachers an Polish ones working abroad in the national education and wider opening of institutions of higher education to foreign students; iv) shortening career paths of researchers and teachers through simplifying habilitation procedure for Polish scientists and researchers and equating the status of independent scientists and researchers working in Poland and abroad.

The proposed systemic solutions, which in an evolutionary way will modify legal environment in which Polish institutions of higher education function, endeavour to provide:

- better quality for Polish students, thus better preparation for changing economy;
- opportunity for Polish scientists and researchers to participate in the greatest world research projects;
- prospects of steady development of Polish institutions of higher education and constant increase in their teaching and research potential.

1.2. Teacher education: overall characteristic (institutional structure)

Teacher education is part of a Polish educational system and it reflects the characteristics of this system. The current context for teacher education in Poland is the result of a radical reform process, driven by repeated state interventions.

The concurrent model of teacher training is a dominating model of teacher training in Poland. It applies mainly to training in pedagogical institutions including teacher training (pedagogical) academies, teacher training colleges, foreign language teacher training colleges, but it also occurs in all higher education institutions. In the framework of each study area the students have a choice of teacher specialization, which means that they can acquire their teaching qualifications during studies, parallel to their subject related training. For those who graduate with no teaching specialization and later decide to undertake the teaching profession, it is possible to acquire teaching qualifications during postgraduate studies or during in-service training. This constitutes an element of the consecutive teacher training model.

In Poland, pre-service teacher education is provided within two sectors of education: the higher education sector and the school education sector. Thus, the teacher training is offered within university type HEIs (those having rights to confer the academic degree of doctor) namely in universities, technical universities, polytechnics and academies, and in non-university HEIs (with no rights to confer the academic degree of doctor). These HEIs function in both public and non-public higher education sector. Those functioning within the school education sector are teacher training colleges and foreign language teacher training colleges.

In-service teacher training is not obligatory in the Polish education system, however, it is indispensable for the teachers' professional promotion. In-service training is provided within two paths: as complementary education and as staff development. Complementary education covers the courses of study which lead to a higher level of education or additional qualifications, and staff development covers the forms of refreshment, which enrich the working techniques of teachers within the qualifications they already have. The financing of complementary education and staff development is guaranteed in the Teachers' Charter, which provides that the state budget allocates for this purpose an amount equal to 2.5% of the planned expenditure on teachers' salaries. These amounts can be increased through additional allocations by local authorities, donations and sponsoring.

Complementary educational courses are provided by higher education institutions and colleges as evening or extramural studies. Teachers choose the field of study or specialization depending on the level of education already achieved and their individual needs. Since fees are charged for evening and extramural studies, a scheme has been established under which the teachers following such studies receive co-financing to the tuition fee. Each school education superintendent has a certain amount of funds available for this purpose and, respecting the relevant priorities defined in the institution's rules, grants, on the basis of a special committee's decisions, co-financing of tuition fees for the teachers who apply for them. The top priority is to enable teachers to acquire higher-level education and/or additional qualifications within specializations where a given region has a shortage of teachers.

Staff training is provided by higher education institutions within post-graduate studies and teacher training colleges, which offer relevant courses, but the main providers of this type of in-service training are in-service teacher training establishments. Higher education institutions provide complementary education and staff development courses independently within their autonomy.

The National In-Service Teacher Training Centre, called Centre of Education Development (Ośrodek Rozwoju Edukacji), functioning within the school education sector, supports reforms in teacher professional development and provides special conferences, meetings and staff development courses for the whole country, often together with foreign institutions or within the framework of international educational programmes. The Regional Centres of Teaching Methodology, run by respective regional self-government authorities, provide staff development courses and, though on a limited scale, complementary educational courses within specialisations which are in short supply in a given region.

1.3. Challenges of Teacher Education

The changes in the field of teachers' education that undertake the issues of quality, especially in the process of preparing teachers for work in their profession, require some longer consideration over possible answers to a few 'always alive' challenges, which may be presented in the form of the following questions:

- Where should teachers be educated?
- Who should educate teachers?
- What should be the content of such education?

1.3.1. Where should teachers be educated?

The research findings (Wilkomirska, 2005) show that the participants of the study (experts on education and teachers' employees) most often talk about these alternative: university education *vs* more practical professional education (e.g. at colleges) and teaching subject matters *vs* teaching teachers' skills. Today, future teachers can obtain required qualifications at universities, polytechnics, pedagogical academies, physical education academies, agricultural academies, professional institutions of higher education and colleges. Educating teachers in many various institutions has some advantages, e.g. better situation of graduates who are prepared for two professions on a job market. However, it also has disadvantages: most often inadequate quality of education and lack of connection with the needs of a job market. What is interesting, most experts and school principals decisively favour concentrating teachers' education at universities due to a relatively high quality of education. It is worth reminding here about such European trends as lengthening the time of education to 4-5 years and increasing its status to a university degree.

Determining what higher education institutions should be permitted to educate teachers has, to some extent, an impact on decisions about such aforementioned factors as recruitment and selection. In Poland, we do not possess any centralized forms of limiting access to any kind of higher education. One exception are medical studies. Such open access is inevitably beneficial to all wanting to learn as long as possible.

Future teachers are recruited mainly on the basis of the educational achievements on *matura* examination (final exam, entitling pupils to admission to higher education). In practice, it means that they are recruited without any introductory conditions, which increases the danger and size of negative selection for teaching profession.

1.3.2. Who should educate teachers?

Another dilemma concerns the issue: 'Who should educate teachers in Poland?' Such an issue needs an attempt to look first at who and what teachers in Poland are and what their status is. In Poland, according to the different institutions of teacher education, we can identify teacher educators, who are:

- Academic teachers (faculty members in such higher education institutions as for example universities and pedagogical academies; academies of physical education; technical universities; academies of fine arts and academies of music; teacher training colleges foreign language teacher training colleges) for student teachers, who are responsible for teacher preparation and provide course work and conduct research as professional studies, some of them are student teachers supervisors;
- School teachers who empower and support student teachers in their practices of classroom teaching and other aspects of their professional work. They provide instruction or supervision of clinical experiences of the prospective teachers. They are student teachers' advisers;
- Staff from different agencies who design, implement, evaluate professional studies for teachers and provide in-service teacher training (e.g., staff from regional centres of teachers professional development)

Most new teacher educators who work at higher educational institutions enter them without doctoral level qualifications or other sustained experience of research and publication processes. Teacher educators are not necessarily required to have practical experience of teaching or to hold a school teaching qualifications. According to the Act of 27 July 2005 Law on Higher Education, on entry to higher

education new teacher educators must have at least a Master's degree in a subject or in educational studies. Usually these teachers educators have gone straight from university to being a teacher in higher education. These teachers are a majority. A further type of teacher educators consist of those who were previously experienced teachers in primary and lower and upper secondary education. Before moving into higher education this group has often obtained PhD degrees. These teacher educators form a minority of teachers at all teacher education institutes in Poland.

There are no explicitly stated national professional standards for teacher educators in Poland. According to the Higher Education Act of 27 July 2005, all teacher educators who are academic teachers are obliged to upgrade their professional qualifications. Article 134 of this act ensures academic teachers' right to a research leave. The appointed academic teacher can receive, once every seven years, a paid research leave up to one year in duration. An academic teacher working on their habilitation thesis can receive a research leave up to 6 months in duration. Moreover, they can, upon rector's consent, receive unpaid leave for research purposes. All these regulations apply to those teacher educators who are academic teachers. It means that those teacher educators who are academic teachers have to take care of their professional development and they can expect support from experienced academic teachers holding the academic title of professor or an academic degree of 'doktor habilitowany' (habilitated doctor) as these teachers are obliged to participate in development and training of research staff.

The higher education institution in which the academic teacher is employed on the basis of appointment constitutes their primary place of employment. Academic teachers normally have close links with their home institution, but many of them take additional employment in other higher education institutions or outside the education sector (as experts, consultants, specialists, etc.). The phenomenon of additional employment was largely influenced by the development of the non-public higher education sector after 1990, with the non-public schools becoming an extremely absorptive labour market and simultaneously offering in many cases much higher salaries than those in public schools.

Teaching in teacher education is seen as a complex task, involving a wide range of pedagogical knowledge, skills and understanding. Teacher educators' work on pre-service courses generally includes: teaching students in higher education institutions, supervising students on school placements, engaging in research, service to the school sector and service to higher education institutions. In addition to teacher educators' teaching and service roles, teachers educators, especially those who work at universities, are required to be active in their research pursuits and publish their work in accepted academic formats. So, in many ways teacher educators' work is similar to that of other academic staff in that they teach and research, including publishing papers and books and presenting papers at conferences. As the above account shows, in Poland the ways of understanding teacher educators' work are closer to the conventional academic model of teaching, research and service to the university. Most Polish teachers' educators centre their wok around their teaching and researching roles.

The general expectations are that most teacher educators will facilitate the learning of student teachers through reflective practice as a model of the good practitioner. Discourses of reflective practice are central to the ways in which teacher education and working in schools are understood. However, the existing conditions in which teachers' education takes place in Poland (especially great numbers of pedagogical students in higher education) result in such situations as:

- reduction of face-to-face contacts between students and teachers;
- domination of subject knowledge and necessity to obtain competences over learning from experiences and biographical or social learning;
- superficial of fictitious decisions on curricula - "technology of agreement"

These kinds of trends may reduce learning in teachers' education organized within higher education institutions and lead to domination of 'transmission-qualification' learning over 'biographical-context' learning.

1.3.3. What should be the content of teacher education?

In Poland, the higher education institution's autonomy is restricted to legal regulations: the directive of the Minister of National Education and Sport of 7 September 2004 on standards of teacher's education (Journal of Laws of the Republic of Poland, No 207. pos. 2110) and the directive of the Minister of National Education of 12 March 2009 on particular qualifications required from teachers and determining certain schools and cases in which teachers without higher education degree or graduation from teachers' education institutions can be employed (Journal of Laws of the Republic of Poland from 2009, No 50. pos. 400). The former one determines thematic groups of education, minimum numbers of teaching hours, general content of education and quite imprecisely 'the personal profile of a teacher'. The latter one indicates the qualifications that teachers working in particular types of schools should have. In teacher's education – according to the standards of education – the emphasis should be placed on practical skills and an academic and scientific basis and provide teachers with the competence and confidence to be reflective practitioners and discerning in managing information and knowledge. Teaching profession should be placed within the context of lifelong learning. Therefore, teachers' professsional development should continue throughout their careers. Teachers need to be committed to the process of lifelong learning. These principles of education policy ensure the status of the teaching profession and recognize the role of teachers as key factors in educational change. Apart from the subject related and pedagogical training (psychology, pedagogy and teaching techniques) – the teacher has to learn how to use ICT in teaching and acquire good command of at least one foreign language. These new skills have been considered to be indispensable in working with a pupil in a modern school.

The research shows (Wilkomirska, 2005) that there is a number of necessary changes which ought to be introduced into the teachers' education curricula. Polish higher education is not varied enough and only a little competitive as far as educational offer is concerned. To a large extent, it results from the restrictions imposed in the field of methodology through defining educational standards for each specialization.

As far as curricular content is concerned, one can state that subject education must be stronger combined with methodological education, practice at school, basic curricular content and examination standards. The researched support introduction of education in a few related subjects and giving students some knowledge about methods of integrating subjects. They understand that such changes would mean extending curriculum and increasing the number of classes. As far as psycho-pedagogical education is concerned the researched wish to have classes assisting in coping with behavioural issues. In order to tackle these issues one needs to be able to recognize emotional problems and know how to reduce tension causing behavioural disorders. Students must be closer to school and participate in its life.

2. Conclusions and proposals

The changes proposed by the Polish government are to contribute to creating better conditions for functioning of institutions of higher education through improving the effectiveness of public money spending on higher education in Poland. These changes are primarily – as it is assumed by educational policy-makers and creators of these changes – pro-qualitative in nature.

Thus the financing of higher education is to be first of all connected with promoting the best organizational units within institutions of higher education and the best students and doctoral students in such a way as to stimulate competition among them concerning level of scientific research, of methodology and studying. Many reforms proposed by the government aimed at reinforcing educational quality seem justified in view of the present reality and can lead to positive changes approved of by the society. In the area of teachers' education these changes should be expressed in the form of:

- **appropriate selection of staff that educate teachers** through creating effective conditions for the elimination of pathological employment of university and college teachers on many positions (the governments premises for changes include stricter procedural rules for employing on many positions).

- **mastering curricula for teachers' education** through introducing the National Qualification Framework into practice. This framework may assist in weakening the restrictions on curricula connected with standards of teachers' education. The education assessment will be moved – as it is shown in the government's proposals for higher education – from processes to educational results.

The analysis of teachers' education in Poland contrasted with other European solutions shows that it is worth – in addition to benefits brought about by changes introduced by educational authorities – considering a few solutions which has not been used in Poland yet.

1. **Limiting** number of students/candidates for teachers in institutions of higher education depending on the demand for teachers and simultaneous significant increase of funds for education (introducing independent financing line). The Ministry of Education would sign contracts with institutions of higher educations offering particular teachers' education curricula (a kind of licence for educating teachers). Universities and colleges would declare their annual recruitment limits. Non-governmental agency would probably be better, but we do not have such ones in Poland and then we would certainly have to introduce new significant legal regulations. Both these solutions require prospective policy of employing teachers, constant monitoring of needs and flexible responding to the threat of teacher deficit.

2. **Selection** within an institution of higher education not only at the level of an entrance exams, but also in relation to a choice of teachers' education. Universities and colleges should take into account student's academic achievements prior to the recruitment process so that only the best can have a chance to become teachers. A smaller number of students should be provided with very good preparation for work at school through expanding educational offer by contents lacking nowadays.

3. **Increasing the level of qualification requirements**. Following the example of most European countries, the requirement for teachers of obtaining Master's Degree to be able to teach at the lower secondary level and higher. Then this requirement should be gradually expanded among primary school teachers.

To conclude, I would like to emphasise that the portrayal of Polish education in the context of Polish educational reality and proposed government's changes in higher education indicates that the notion of *quality* is one of key ideas for debating on teachers' education in Poland. It is worth looking at the latest proposals of the Polish Government concerning the improvement of the quality of higher education and mentioning that the strategy of higher education development in Poland – as expressed in the documents devoted to changes in higher education – is verbalized in the language of economy, theory of organization and theory of effectiveness. The reforms are presented as giving higher educational institutions greater freedom in operational decisions and remove unnecessary constraints in financial and human resource management. However, it is crucial to see these reform processes as processes of re-regulation: not the abandonment by the State of its controls but the establishment of a new form of control. In this way, the state also provides a new general mode of less visible regulation, a much more 'hands-off', self-regulating regulation (Ball, 2003, p. 217). Recognizing the degree of 'competitiveness' in higher education as the most important indicator of 'quality' shows beyond any doubt that the quality of higher education will be achieved by promoting competition instead cooperation in this area and will be directed at assessing the effects of education.

However, educational literature shows that when educational quality is concerned, not only final effects should be taken into account, but also the quality of processes in developing, implementing and improving institutional activities. It is often the case that when speaking of teacher education and its quality, it is easy to revert back to such managerial concepts as quality control, quality mechanisms, quality management, etc. These concepts convey a technocratic and top-down approach in the development of 'quality assurance movement' in higher education. I assume that a focus on quality in teacher education should on the one hand always enhance and improve the current status and develop the systems that assure it, and on the other hand perceive the concept of quality of teacher education as an ongoing exercise (Michalak, 2010). It is not a state that is reached once and for all but one that needs to be pursued continuously. Therefore, we should rather focus our considerations on the process of creating the quality culture at teacher education, not only on the outputs.

Focusing attention on the process of building up the culture directed at achieving desirable quality of teachers' education shows that any cultural change requires engagement and ownership by all levels of staff within the teacher education institutions. When the student perspective is made central to the definition of quality it makes sense to use front line staff – teacher educators to be the architects of a quality culture. The teacher educators have the most frequent contact with the students. They engage on a personal level and obtain information that cannot be gained from impersonal surveys about the quality. They have intimate knowledge of what is required to meet and exceed students' expectations. Improving quality should be perceived as a way of teaching prospective teachers and teachers.

It is an interesting fact that so little space in educational literature and documents concerning educational policy (Snoeck & Žogla, 2009; Snoek, Swennen & van der Klink, 2010) is devoted to conditions conducive to becoming a university teacher/teacher educator. This situation seems disturbing especially in relation to the role ascribed to academic teachers in shaping desirable practices in the area of higher education that translate themselves into creating high quality education in lower level schooling. In view of inadequate number of research projects on inclusion into the profession of teacher educator and on their constant professional development, there exists an urgent need to pay adequate attention to the profession of teacher educator and teacher educators themselves. Therefore, it is necessary to undertake research on the quality of teachers' education and professional development of teacher educators. In view of the challenges that higher education is facing nowadays, the questions about how much teacher educators are engaged in their own professional development and in what way their process of becoming teacher educators is shaped arise. What speeds up and what slows down the course of this process? How do teacher educators cope with university everyday life which forces them to constantly balance between the traditional academic *sacred* and the contemporary *profane* posing a series of economic challenges. How do they cope with the antinomy between the mass reach of education (mass, anonymous audience), and the sense of the need to notice and take into account a personal, individual entity of a student/future teacher? What problems feed personal pedeutological reflection of teacher educators?

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Raising the Professionalism of Teachers? Content Elements for Post-initial Master's Level Programs

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ABSTRACT

In the European policies to increase the quality of teachers, much attention is given to the upgrading of qualifications. However, in European debates on teacher education, e.g. within the context of the Education & Training 2020 program, discussions about the qualification level are mostly restricted to initial teacher education. This raises the question what possibilities there are to raise the qualification level of teachers already working in schools.

From this perspective, there is a need to take a closer look at in-service Master's qualification programs, at existing arrangements and programs, at their focus and their impact on the professionalism of teachers.

The paper addresses issues with respect to the conditions for successful in-service Master's level qualification programs and reflects on content elements that should be part of the curriculum of these programs. In answering the question what content elements should be part of in-service Master's programs that extend the minimum standards for teachers, the paper focuses on the 'secondary role' of teachers that extends beyond the primary process of teaching and learning and connects this to the concept of extended professionalism (Hoyle 1975, Stenhouse 1975). The paper concludes with a frame of reference that can be used to analyse the contribution of in-service Master's level qualification programs to the professionalism of teachers.

Key words: Master programs, teacher professionalism, in-service learning.

Introduction

The Bologna process has created a higher education area with qualifications at the Bachelor's and Master's level. This has lead to a growing variation in Bachelor's Master's level programs in all higher education areas including teacher education. As a higher qualification can contribute to an increase in the quality of teachers, many member states develop policies on Master's programs for teachers to raise the overall qualification level of teachers. However, the strategies that are used by member states can differ.

In a response to the Commission's communication 'Increasing the Quality of Teacher Education', several member states have decided to raise the minimum qualification level to the Master's level. In other countries the initial qualification level for (part of the) teachers remains at the Bachelor's level, while new post-initial courses are developed to create in-service opportunities for teachers to raise their qualification level. Although this second strategy, focusing on in-service Master's qualification programs seems less ambitious then the first strategy aiming at ensuring a Master's qualification for all new teachers, the second strategy is important as it focuses on all teachers that already work in schools.

In European debates on teacher education, e.g. within the context of the Education & Training 2020 program, discussions about the qualification level are mostly restricted to initial teacher education. The ETUCE policy document on teacher education in Europe (ETUCE 2008) does state that the qualification level for all teacher education programs should be raised to the Master's level, but in the chapter on continuous professional development of teachers, no reference is made to a Master's level for teachers already working in schools. The Dutch teacher union AOb went one step further, emphasizing in a manifest published in 2006 that every teacher in school should have the right and opportunity to follow a qualification course at Master's level during his/her career (AOb 2006). But still this manifest left the initiative to individual teachers and did not outline a policy strategy on raising the qualification level of all teachers in schools.

The need to include teachers working in schools in the policies to raise the qualification level of the teaching profession, is underlined by the findings of the TALIS survey, where teachers reported 'qualification programs' and 'involvement in individual and collaborative research' as the professional development activities with the highest impact on their development as a teacher (European Commission 2010).

From this perspective, there is a need to take a closer look at in-service Master's qualification programs, at existing arrangements and programs, at their focus and their impact on the professionalism of teachers.

As the start of a wider study on in-service Master's level qualification programs, this paper will analyze issues that need to be taken into consideration in such a study.

The first part of the paper will focus on issues with respect to the conditions for successful in-service Master's level qualification programs. The second part will focus on issues with respect to the content of in-service Master's level qualification programs. The paper will create a frame of reference for a comparison of in-service Master's programs in Europe with respect to their contribution to the professionalism of teachers

Time, Money and Motivation: conditions for successful Master's level qualification programs for teachers in schools

The European policy focus on initial teacher education at Master's level can be understood from the fact that organizing initial teacher education at Master's level is less complicated than in-service programs: students are not yet employed at schools, so there is no complicated balance between study and work, or, in the case of school based programs, that balance is an integrated part of the curriculum.

This is different for in-service programs: teachers are employed at schools. In-service Master programs need a large investment of study time (typically 60 or 90 ECTS in part time programs spread

over 2 or 3 years). To be able to invest that study time, three options (or a combination) are possible:

- A reduction in teaching hours. This creates a problem for schools as the salaries will have to cover 'non-productive' time, while the remaining teaching hours need to be covered by replacement teachers that need to be paid.

  Another complication within this option are confliction schedules when study activities coincide with teaching schedules. *It is essential for teachers' continuous professional development to be planned in such a way that their absence from school does not have negative consequences for pupils and/or colleagues.(…) A fully qualified substitute teacher must take over the classes in their absence.* (ETUCE, 2006, p. 46)

  Within the TALIS survey, conflicting schedules are reported by teachers as the principal cause of unfulfilled professional development demands.
- A reduced contract. This creates a problem for teachers as it will imply a reduction of salaries. Many teachers will not be able or willing to accept a reduced salary.
- A reduction of leisure time. In this option, the teacher will concentrate study time in evenings and week ends. This option might work for some teachers but not for all, as in many cases the responsibilities of teachers (in assessing student work and preparing lessons) already extends into the evenings and week ends and teachers have private obligations (e.g. towards families with up growing children).

Example: School based in-service Master's program University of East London

To solve the dilemma of study time, the University of East London has developed an in-service Master's program which is focused at a school team as a whole. The program is run at the school location in such a way that the lectures and learning activities coincides with regular team meetings. In this way the program does not disrupt the schedule of the school and the team meetings will get a strong focus on collaborative learning

A second issue is the costs of qualification programs. A full Master program is expensive. Again the costs can be covered in different ways.

- In government funded Master programs, the government covers the costs for the program, either by funding the university, by funding the employer who pays the university or by funding the teacher (who then pays the university a course fee)
- In many countries, professional development of school staff is an integrated part of human recourse management and considered as an important element of school development. In such cases, schools cover the costs of professional development activities (while the government funding of schools also includes implicitly or explicitly a special professional development budget).
- Finally the costs of qualification programs can be covered by the teacher him/herself. This asks a financial investment from the teacher, while in return it might lead to a change of job or a raise of salaries.

In many cases the financial arrangement under qualification programs will be a combination of two or three of these options.

Example: Study vouchers for teachers in The Netherlands

To stimulate teachers to take up Master's studies, the Dutch Ministry of Education has created a voucher system through which each teacher can apply once during his/her career for financial support for a 1 or 2 year post-graduate qualification study. The annual (up till a maximum of three years) financial support covers two elements: the course fee for a maximum of 3500 Euro and replacement costs for a maximum for 160 hours.
In this way, the voucher system supports both the teacher and the school.
From the start in 2008, the voucher system has been very popular. In June 2010, 14.000 were using study vouchers.

An important issue in in-service professional development programs is the motivation of teachers to engage in these programs. Again different options are possible:

- The program is compulsory. The decision on this might come from the local or national authority or from the employer. In compulsory programs the motivation of individual participants might be a problem.

- When the program is not compulsory, the motivation might be extrinsic, because a Master's qualification might lead to a recognition and acknowledgement of the Master's level through a raise in salary scale, a change in roles within the schools (e.g. extended responsibilities, senior position, mentoring roles, et cetera) or a change of job (towards other schools, management positions, et cetera).
- Finally the motivation for participating in qualification programs at Master's level might be intrinsic, motivated by a need to deepen one's knowledge, to improve one's teaching practice, et cetera).

Example: Teacher profiles NL

In 2008 the Dutch Ministry of Education and the teacher unions negotiated the introduction of teacher profiles at different levels, connected to different salary scales. Agreements were made with respect to the targeted number of teachers at the different levels. As school heads lack clear, transparent and objective criteria to decide for promotion of a teacher to a higher profile, many school heads intend to use a Master's qualification as a main selection criterion for promotion to higher profiles.

A fourth issue in professional development activities of teachers is the balance in focus on individual professional development and on school development. While on the one hand individual professional development is intended to raise the competence or qualification of individual teachers, many professional development activities aim at impacting on the development of the school as a whole.

When the focus is on individual professional development, Master's program can aim at attracting individual teachers. The school context is seen as a context for applying new knowledge to support the individual learning process.

When the focus is on school development, the school is an essential environment for testing and applying new knowledge, assignments need to be negotiated with the school leader and impact of the course will increase when teams of teachers from one school are involved.

Examples: The role of schools in English and Dutch Master's programs

In The Netherlands the Board of Secondary Schools has initiated a tender for in-service Master's programs. The Master's programs had to contribute both to the professional development of teachers and to the innovation agenda in the schools. Underlying the Master's program is a three way agreement between the university, the student and the school leader. The thesis research must take place within the school and needs support from the school leader. The Master's student is expected to bring theory and experiences from the Master's program into school, to support and inspire colleagues.

The Master's program of the University of East London takes this a step further by not focusing on individual teachers, but on teams of teachers, creating a strong shared commitment and understanding within the team. As not all teachers might have the ambition to get to the Master's level, there is distinction between activities focused on the whole team and specialization with a deeper theoretical level and a stronger focus on research for those who want to graduate at Master's level. The topics of each semester are negotiated between the university staff and the head of the school to create a program that is relevant for the local context of the school.

Finally, both the TALIS survey as the ETUCE policy document emphasize the availability of suitable programs on offer as one of the key conditions for professional development of teachers.

This does also apply for in-service Master's qualification programs for teachers: these programs need to be available to teachers. This raises the question what the key elements of such programs should be.

The content of Master programs: the secondary role of teachers

In-service Master programs for teachers are intended to contribute to an increase of the qualification level of teachers, thus contributing to an increase of the quality of education. In most countries governments have developed minimum standards for teachers. In-service Master programs intend to exceed the minimum level. This raises the question what direction those added qualities take.

An analysis of minimum standards for teachers in several countries (Snoek et al 2009, Finnish Institute of Educational Research 2009) shows that most standards focus on basis competences in the teaching and learning process, while some standards address competences with respect to collaboration, innovation and reflection. In-service Master courses might on the one hand deepen specific competences that have been developed at the bachelor level or focus on the development of new competences.

In the debates on the roles of schools and teachers in society, the ambitions and expectations from the public and society are high. Teachers are expected to be open and responsive to the needs of their pupils/students, their parent, politicians and to society in general, to translate those to educational arrangements and to implement these in their curricula, to collaborate with colleagues, but also to engage the wider community in setting the aims and making the design of teaching and learning arrangements, to account for the quality and outcomes of their performance, to justify their activities through evidence from educational research, to be role models to their pupils and students with respect to transversal competences like entrepreneurship, lifelong learning, engagement in the civil society, etc. These expectations exceed the minimum standards that are formulated in many countries. Teachers are asked to be professionals in the wider sense, who are autonomous in their work, which is based on specialist knowledge, who are committed to and feel responsible for their profession and who account for their quality (Hoyle and John, 1995).

This wider perspective on the teacher's role is also recognized in the TALIS survey on professional development activities of teachers:

> *"This additional emphasis on secondary roles is also promoted as part of the modernisation of the teaching profession. They include teachers as researchers, as receivers of feedback from colleagues, as innovators, as active colleagues, as collaborators of principals, and as manifesting what is sometimes called "teacher leadership".(…) These two dimensions – professional development to stimulate the primary process of teaching and learning and professional development in terms of new*

> *secondary roles in schools – provide alternative scenarios for prioritising the content of continuous professional development." (European Commission 2010, p. 191)*

Within the context of the wider study on in-service Master's level qualification programs, the focus will be on this 'additional content', facilitating the 'secondary role' of teachers in schools.

The main question in the second part of this paper will try to answer what qualities are needed for this 'secondary role' and which should be covered in Master programs that focus on that secondary role. As the elements of that secondary role have much in common with Stenhouse's and Hoyle's concept of extended professionalism (Hoyle 1975, Stenhouse 1975), this question will be answered by analyzing the concept of professionalism.

Analyzing professionalism of teachers

The study of professions and professionalism has a long standing tradition in sociological research from the beginning of the 20th century (Evetts 2006, Crook, 2008). Sociologists have tried to identify the specific values that are connected to professions and at the same time tried to identify criteria to separate professions from other types of occupations.

As in most debates on professions and on professionalism the characteristics of professions are connected to positive and prestigious elements, many occupations have tried to identify their professionalism, thus trying to become part of the elite.
This applies also to teachers. In many publications that are focused on teachers, the use of the term educational professional is used deliberately to indicate and emphasize the prestige and status of the teacher. Teacher policies are full of 'professional standards', 'professional development', 'professional communities', etc.

In many of those publications it is unclear whether the concept of teacher professionalism is considered as an indication of the status quo or as an ideal concept that is worthwhile to strive for. As

a result the concepts of profession and professionalism have become diffuse and lack conceptual clarity. In this paper professionalism will be understood as the conduct, demeanour and standards which guide the work of professionals.

In the past century, the sociological discourse on professions and on the professionalism of teachers has used different and shifting perspectives, emphasizing different aspects of professionalism (Evetts 2006). In studying of relevant literature on professions, four different perspectives on professionalism can be identified:

Archetypes and attributes

One way of looking at the professionalism of teachers is by comparing them to classical professions like doctors or lawyers and to identify similarities and differences. Using these professions as ideal examples, typical characteristics were derived which could be used to separate between professions and non-professions and to identify similarities or differences with other occupations. In this approach, the focus is on identifying categories for occupational classification (Gewirtz et al 2009), where the classical professions are considered as archetypes of 'true professions'.

Typical attributes are (Snoek, Swennen, Van der Klink 2009):

- Professional autonomy, through professional monopoly of the members of the profession who have control over their own work
- Control over entry requirements to the profession and the further professional development of the individual members. Professions also have the power to judge, and subsequently even to exclude, members who do not keep to the professional standards and ethical code of that profession.
- An ethical code that is a means to win the trust of the public and public bodies (often governments) that have the power to license the profession and its members; and to serve as a guideline for good conduct of the members of that particular profession.
- A strong academic knowledge (Abbott 1988), formal knowledge or technical knowledge (Goodson & Hargreaves 1996). "Academic knowledge legitimises professional work by clarifying its

foundations and tracing them to major cultural values. In most modern professions, these have been the values of rationality, logic, and science. Academic professionals demonstrate the rigor, the clarity, and the scientifically logical character of professional work" (Abbott 1988, p54).

- Freedom of establishment. Members do not have a job contract but are independent and self employed.

When the teaching profession is held against the framework of characteristics of the classical professions, the conclusion is clear: teaching can not be regarded as a true profession. Teacher do not control the entrance to their occupation, they have no freedom of establishment, but are employed by schools. As a result teachers have only limited autonomy over their work. In many countries there is no ethical code for teachers. Also the academic level of the teaching profession is considered by many authors as limited (Verbiest 2007). It is still relatively rare for teachers to be research trained and/or to have carried out post-graduate studies (Erixon, Frånberg & Kallós 2001). As a result, teaching, like nursing, social work and librarianship, is often called a semi-profession (Etzioni 1969).

Although the fact that the comparison with classical professions is widely used in debates on professionalism, the approach is also criticized. Professionalism defined in this way is seen as an artificial construct with always contested definitions (Crook 2008), a shifting phenomenon reflecting whatever people think it is at a particular time (Hanlon 1998). It seems more useful to explore the characteristics to the teaching profession today, than comparing it to some proposed ideal (Whitty 2008).

High expectations in modern society

A second way of looking at professionalism of teachers is by focusing on expectations in the present day competitive society. Present day post-modern and neo-liberal society can be characterized by a stronger emphasis on economic and technological changes. Economic changes have led to a stronger globalized, market oriented and competitive perspective with stronger central regulations (Gewirtz et al 2009). This changing market oriented context for

society and schools has resulted in changes in the expectations not only towards school leaders, but also towards teachers, emphasizing accountability, rationality, competitiveness and control. (Evans 2008; Goodson & Hargreaves 1996; Robertson 1996).

In this approach the term 'new professionalism' is often used, indicating that the changing context of schools asks for a change in qualities expected from professionals, with a focus on effectiveness, accountability, national safeguarding and control:

- A strong focus on the quality of work and a stronger emphasis on output requirements.
- Public accountability, where teachers have to explicate how their teaching contributes to achieving the intended learning outcomes.
- Implementation of standards describing competences and qualifications of beginners and expert members of professions. For the OECD, the development of such standards has a high priority:

  'The overarching priority is for countries to have in place a clear and concise statement or profile of what teachers are expected to know and be able to do. This is necessary to provide the framework to guide initial teacher education, teacher certification, teachers' ongoing professional development and career advancement, and to assess the extent to which these different elements are being effective.' (OECD 2005: 131)

  Most of these standards have been developed by national governments with limited or no involvement of teachers (Snoek et al, 2009).

Especially in England it has been argued that these features of new professionalism lead to a de-professionalisation of teachers and an over-emphasis on the role of managers (Whitty 2008, Hargreaves 2000).

On the other hand, technological changes imply 'instantaneous, globalized availability of information and entertainment' (Hargreaves 2000). The knowledge society asks for other qualities of modern professions:

- Increased attention to the life-long professional development of professionals throughout their careers. It is generally accepted that in our knowledge intensive society, lifelong learning becomes essential for career-long professional development (European Council 2009; ETUCE 2008).
- A focus on new forms of relationships and collaboration with colleagues, students and their parents (Hargreaves 1994, p424). Whitty (2008) not only emphasizes collaborative professionalism between colleagues in the school in professional learning communities, but also 'democratic professionalism' including collaboration with stakeholders outside the school.
- Emphasis on improvement and innovation. Teaching is seen as a dynamic and innovative profession, where teachers will need to reflect on their own practice and contribute to the improvement and innovation of the profession.
- A knowledge base that is the result of research, experience and reflection. This feature of professionalism leads to appeals to involve teachers in action research, self-study and practitioner inquiry (Cochran-Smith and Lytle 2009, Loughran et al 2004, Ponte & Smeets 2009, Stenhouse, 1975)

Those seven features characterize the role of professions in a competitive knowledge society with on the one hand collaborative lifelong learning and innovations and on the other hand a focus on accountability with respect to outcomes and control of the quality of professionals through standards.

The logic of professionalism

A third approach focuses on fundamental differences between logics in the labour market. Although this approach tries to identify professions and non-professions, it differs from the traits approach as the focus is not on studying manifestations of occupations in order to identify categories to classify occupations, but to search for the underlying and more fundamental logics that can explain the manifestation of professions and non-professions.

Important work in this area has been done by Freidson (2001). He identifies three different logics, that of the bureaucracy, that of the free market and that of professionalism. Those different logics create different qualities that workers need to operate in each of these logics:

- In the logic of the free market, everyone is free to buy or sell goods and services. Nothing is regulated and customers make their decision rationally, based on financial concerns, emotional concerns and their previous experiences with products, services and providers. Free and unregulated competition will increase innovation and keep prices down. Customer preferences, satisfaction and choice, based on transparent information about quality and costs, determine which and whose service will succeed.

- In the logic of the bureaucracy, production and distribution of goods and services is planned, controlled and regulated by the administration of a large organisation, being governments, private firms or public agencies. The main aim of bureaucracy is to guarantee a reliable and transparent society with equal rights and equal access to all. Rules and regulations must safeguard that each individual is treated in the same way and does not have to depend on personal connections. Each organization 'is governed by an elaborate set of rules that establish the qualifications of those that can be employed to perform different jobs and that define their duties' (p1). Planning, supervision and standardisation assure customers the access to reliable services at reasonable costs. This is ensured by managers who control those producing the product.

- In the third logic of professionalism, workers with specialized knowledge have the power to organize their own work. They are privileged and exclusive, customers or managers can not employ anyone else. This privilege implies a system of self-control between professionals which prevents abuse of those exclusive rights, so 'customers and mangers can count on work of high quality at reasonable costs' (p2).

In Freidson's perspective, professionalism is connected to a distinct mandate where

> '*… an organized occupation gains the power to determine who is qualified to perform a defined set of tasks, to prevent all others from performing that task and to control the criteria by which to evaluate performance. (…) The organized occupation creates the circumstances under which its members are free of control by those who employ them.*"(p12).

The necessity for this third logic is lying in the fact that certain work is so specialized that its quality is inaccessible for those lacking the required training and experience which makes it impossible for customers to select the best services on the free market. At the same time, the application of the expertise of professions is so much depending on specific contexts that continuous judgement, adaptation and fingerspitzengefuhl of the professionals are needed, which makes standardization and bureaucratic control unsuited. According to Freidson, the work of professionals can not be standardized, rationalized and commodified (p17).

This is supported by Furlong (2000):

> *'It is because professionals face complex and unpredictable situations that they need a specialized body of knowledge; if they are to apply that knowledge, it is argued that they need the autonomy to make their own judgements; and given that they have that autonomy, it is essential that they act with responsibility – collectively they need tot develop appropriate professional values'.(p. 18–19)*

Both Freidson and Furlong argue that professionals need to control their own work given the ideal-typical character of the knowledge and skills they use and their right of discretion. Teaching asks for professional judgement and the use of professional intuition (Atkinson & Claxton 2000), which can not be standardized.
However, this professional control and occupational professionalism asks for a close interconnection and link between professional autonomy, competence and trust.

The ethical and altruistic character of professions and the role of trust

To strengthen this link between professional autonomy, competence and trust, several authors emphasize the moral character of professionalism. In this fourth approach to professionalism, the fundamental ethical and altruistic character of professions is emphasized (Crook 2008, Lunt 2008). This ethical and altruistic character is connected to the power imbalance between professional and client. The role of professionals in their service to clients (like the service of teachers towards parents and pupils/students) asks for professional autonomy, which needs to be compensated by public trust based on the rigorous use of an ethical code.

Therefore the public' strikes a bargain' with the professionals (Lunt 2008) in terms of a social contract negotiated by the state,

> *The essence of which is that professions are given greater autonomy than other social groups. They set their own standards, regulate entry into their own ranks, discipline their members, and operate with fewer restraints than the arts, trades or businesses. In return they are expected to serve the public good and enforce high standards of conduct and discipline. (Skrtic 1991, p87)*

This social contract creates a professional mandate for a profession. This professional mandate is based on trust of the public and state in the professionals. This trust is grounded in the altruistic character of the professionals. For professionals, the measure of professional 'success' is not the gains they win, but the service they perform (Crook 2008). Not the height of their incomes makes the work of teachers worthwhile, but the quality of the learning of their students. This altruistic perspective explains the public criticism of high and excessive incomes and personal career ambitions of politicians, doctors, school managers, etc. The main emphasis for professionals should be on a high level of personal integrity and on service to others, ahead of personal reward. In that respect, the teaching profession could be considered as a 'calling'.

Several authors have elaborated the concept of trust, identifying different forms of trust, which vary in the way in which the risks are accepted or dealt with (Bottery 2003, Byrk & Schneider 2002, Nooteboom 2006).

The theories on trust show the importance of competence, integrity and dedication of the members of a profession to gain the trust of the public and the state and to justify the professional mandate. The members of a profession have a large responsibility to live up to those expectations with respect to competence, integrity and dedication. This is both a responsibility of individual members of the profession and of the professional community as a whole, e.g. through public accounts of professional practice and outcomes which are based on evidence and research, but also through the use of ethical codes and sanctions that are used within profession. The rigorous use of such ethical codes creates an essential safety net in the power imbalance between the public and professionals.

Trust in dedication of the professional is according to Nooteboom closely connected to empathy of professionals for their clients. In the relation between the professional and the client or the society, the development of a shared understanding of professional practice is important. The professional plays a key role in creating this shared understanding. Bottery stresses the need for professionals to engage in the debates on new policies, not to question the right of politicians to set new policies, but to confront them with the effects of those policies on the level of implementation.

The contribution of in-service Masters to the professionalism of teachers

From our study of the literature on professionalism, a number of essential elements come up. Although the four perspectives on professionalism of teachers differ, they also add to each other providing in the combination a richer and more complete picture of the essence of professionalism of teachers.

In the classical perspective on professions, four essential qualities are emphasized:

1. Professional autonomy, through professional monopoly, control over their own work and freedom of establishment;
2. Control over the entrance to the profession;

3. Control over the central values and good conduct within the profession through the use of ethical codes, connected to sanctions for breaking the code;
4. A strong academic knowledge base that underlies professional activities.

The perspective of professions in present day post-modern and neo-liberal society have emphasized new elements:

5. Public accountability for outcomes of professional performance;
6. Lifelong professional development of the members of the profession;
7. Collaboration with colleagues and stakeholders;
8. Involvement in innovation of the profession;
9. Involvement in the development of the academic and practice-based knowledge base through involvement in academic research, action research and self-study.

The perspective of the different logics of market, bureaucracy and professionalism emphasizes the justification of a separate position of professionals, where the nature of their work and the expertise needed, makes it necessary to create a special mandate for professions and to grant professions a monopoly to safeguard the public for unqualified charlatans.

10. (Development of and membership of) professional societies that can take the responsibility for these elements.

However this mandate gives a special responsibility to gain the trust of public and state, emphasizing the ethical and altruistic character of the profession. This trust is based not only on a trust in competence, but also on

11. A focus on integrity and dedication of the professional

Again the role of ethical codes and sanctions within the profession is underlined. Bottery also underlines accountability procedures that provide evidence of the effectiveness of professional actions and the need of a strong research base for teaching as an instrument to strengthen the quality of professional performance and to account for the choice of interventions that are used within the profession.

Trust in the profession can further be strengthened through:

12. Commitment of the teacher to support both the public and the state in their understanding of educational matters;
13. Acceptance of the right of the state to set policies, connected to the drive of professionals to comment on the effects of such policies at the level of implementation.

When these 13 elements are translated from characteristics of a profession to qualities of individual professions, a frame of reference is created that can be used to analyse the contribution of in-service Master's level qualification programs to the professionalism of teachers:

Elements that contribute to the professionalism of teachers

- Knowledge:
  - Thorough knowledge of the subject
  - Thorough knowledge of the teaching and learning process (including being up to date with relevant outcomes of educational research)
  - Thorough knowledge of society
  - Knowledge of policy and organisation in education
  - Knowledge of practice oriented research methodologies
- Skills:
  - Able to communicate and discuss educational issues with a wider audience
  - Able to account the quality of work to the outside world
  - Able to participate in discussions on educational policy from the perspective of implementation in school
  - Able to conduct research within the practice of schools
  - Able to contribute to collaborative learning of professional communities
  - Able to translate outcomes of educational research to innovations in the classroom/school
- Attitude
  - Dedicated to the learning of pupils
  - Committed to the profession and the collective group of professionals
  - Willing to contribute to the collective knowledge of the profession
  - Committed to the ethical code of the profession and the integrity of his/her work
  - Willing to account the quality of work to the outside world
  - Focused on continuous professional development
  - Focus on improvement and innovation of teaching

Given the ambitions to raise the quality of teachers and the expectations of society towards teachers that extend the primary role of the teachers with respect to teaching and learning, it is essential to develop in-service Master's programs for teachers that already work in schools. These Master's programs should exceed the minimum standards and help teachers to take up new roles as teacher leaders with an extended professionalism. The presented frame of reference can help to develop, to evaluate and to strengthen such Master's programs.At the same time, the conditions for teachers to participate in such master's programs need to be addressed. The quality of education, schools and teachers will not be improved when we have developed powerful master's programs but no teacher is able to participate in these programs because of constraints in the financing and logistics of these programs.

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Quality Assurance in Teacher Training in Flanders

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ABSTRACT

In Flanders two types of teacher training exist: 180 ECTS bachelor's programmes with a professional focus, preparing for pre-school, primary or first grade secondary school teaching and 60 ECTS post-graduate teacher training programmes for people with professional skills or with an academic degree aiming at teaching in the second or third grade secondary schools. This paper tackles the quality assurance (QA) system for the latter type of teacher training. It takes place at universities, university colleges and centres for adult education. The Flemish Decree on Teacher Training (2006) created a unified legal framework and set up expertise networks to foster cooperation between the three types of institutions, including sharing experiences and good practices in internal QA.

The Decree assigned the coordination of the external QA, to the QA units of VLIR (Flemish Interuniversity Council) and VLHORA (Flemish Council of University Colleges), both full member of ENQA and registered with EQAR. VLIR and VLHORA have assembled a working group, consisting of representatives from the three types of institutions, that adapted the existing VLIR and VLHORA framework for educational assessments in higher education, resulting in a framework which is 'fit for purpose' to evaluate the teacher training programmes. The assessment framework envisages grasping every aspect of a study programme, focussing not only on teaching staff and results, but also on aims and objectives, content, facilities and internal quality assurance. The

framework defines a modus operandi for an assessment panel of peers whose task is to evaluate the quality of a study programme, according to the criteria and in making recommendations for improvement, resulting in a public report. The assessment framework and procedures were approved by all stakeholders in October 2009. In 2011 and 2012 all post-graduate teacher training programmes at all 40 institutions in Flanders will be assessed. It is the first time that this kind an assessment is organised and the first time for VLIR and VLHORA to organise a clustered assessment of programmes organised by three different types of educational institutions. VLIR and VLHORA have established VLUHR as a structure for their common activities, including the assessment of the post-graduate teacher training programmes.

In this paper we describe the quality assurance framework we have developed, as well as share the first experiences of the cooperation between the two agencies and the three types of institutions.

Key words: teacher training – Quality assurance – cooperation between QA agencies – Flanders

Introduction

Education is a competence of the Flemish community. In this paper we will only focus on the situation in the Dutch speaking Community (Flanders). In Flanders two types of teacher training exist. On the one hand, 180 ECTS bachelor's programmes with a professional focus prepare students for a career in pre-school (age 3-6), in primary (age 6-12) or in the first grade secondary school (age 12-15) teaching. Those programmes are subject to the standard external quality assurance system in Flanders, based on external programme assessment and subsequent accreditation[1]. On the other hand, 60 ECTS post-graduate teacher training programmes are offered to people who have professional skills or have an academic degree, and who want to teach their field of expertise in a secondary school. To teach in higher education no formal teacher training diploma is required. This paper tackles the QA system which has been specifically developed for the latter type of teacher training, called 'Specifieke Lerarenopleiding' or 'SLO'.

[1] VLIR/VLHORA Handleiding Onderwijsvisitaties, September 2008, Brussels, http://www.vlir.be/media/docs/Kwaliteitszorgonderwijs/VLIR-VLHORA_handl1_def.pdf

Historical background[2]

Since 1929 universities used to organise a minimal academic teacher training for graduates who wanted to teach in secondary schools. Later, also university colleges ('hogescholen') were given the opportunity of offering teacher training programmes for their graduates. Since 1996 academic teacher training programmes comprise 34 ECTS. Most of those credits were dedicated to theoretical training, with a focus on pedagogy and subject specific pedagogy. The pre-service training was limited and in general seen as too small. Students most often took this teacher training during their master's degree or while already teaching.

Also centres for adult education have been offering teacher training programmes since long. They have a broader target group than universities and university colleges. Originally centres for adult education focused mainly on people who want to acquire the proficiency in pedagogy and didactics, required to teach in technical and vocational secondary schools. However, centres for adult education broadened their scope and also attracted university and university college graduates. Centres for adult education offered a more practice oriented programme than universities and university colleges. They organised their programmes mostly exclusively in the evenings and at weekends.

The 2006 Decree

In 2006 a new Decree on Teacher Training[3] was adopted. This decree created a unified legal framework for teacher training programmes at universities, university colleges and centres for adult education. This decree was the result of many years of discussion on how to organise teacher training. All post-graduate teacher training programmes are now offering the same 'Teacher' degree. The programmes were extended to 60 ECTS (1500 to 1800 hours of study load), of which 30 credits should focus on the theoretical basis

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[2] VLIR/VLHORA, Handleiding Onderwijsvisitatie Specifieke Lerarenopleiding, Brussels, October 2009, http://www.vlir.be/media/docs/Lerarenopleiding/VLIR-VLHORAH andleiding pecifiekeLerarenopleidingen-oktober2009.pdf

[3] Decreet betreffende de lerarenopleidingen in Vlaanderen, December 15th, 2006

of pedagogy and 30 credits ought to focus on practical training[4]. The credits for practical training relate to practical exercises at university, observation and student guidance, as well as to in-class teaching. The practical training can be offered in pre-service training or in in-service training. For pre-service training 20 to 60 hours of in-class practice are required from the student, together with other assignments. For in-service training 500 hours of (paid) teaching experience are required to fulfil the practical training in order to obtain the teacher training degree. The work invested in other assignments should be more limited than in the pre-service training.

Due to the increased work load for students who take their teacher training at universities and university colleges, the number of students taking a teacher training degree at these institutions diminished dramatically after the reform[5]. E.g. comparing academic years 2004–2005 and 2008–2009, student numbers in post-graduate teacher training programmes at universities went down from 4582 to 2087 and at university colleges from 950 to 487. Within centres for adult education the total study load did not increase that much. Student numbers apparently decreased less, although this evolution is difficult to analyse, because the number of students is calculated differently since the reform. About 8000 students are registered in 2008–2009, while roughly 11000 students were registered in 2004–2005 at centres for adult education.

So, since the 2006 Teacher Training Decree, the legal framework is largely the same for the 40 institutions offering post-graduate teacher training. To stimulate cooperation between the different teacher training programmes, the decree (financially) stimulated institutions to organise themselves in 'expertise networks'[6] with at least one university, one university college and one centre for adult education. These expertise networks should foster cooperation between the three mentioned types of institutions. Some of the main issues that are dealt with within these networks are internal quality assurance, sharing experiences and good practices, and preparing the external assessment.

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[4] Decreet betreffende de lerarenopleidingen in Vlaanderen, December 15th, 2006, Art.11 & 16

[5] Based on data provided by the Ministry of the Flemish Community, Department Education

[6] Decreet betreffende de lerarenopleidingen in Vlaanderen, December 15th, 2006, Art.12

External quality assurance in Higher Education

In Flanders the responsibility for internal and external quality assurance of the education is assigned to the institutions themselves. So, each institution is responsible for its own internal quality assurance. Additionally, each institution is required to submit its bachelor's and master's programmes to an external assessment on an eight-yearly basis and to act on the findings and results of this external assessment. Professional bachelor's teacher training programmes are subject to this system. Up to now, no institutional audits or institutional accreditation is required. The remit of organising external programme assessments was entrusted to VLIR (Vlaamse Interuniversitaire Raad – Flemish Rector's Conference)[7] for the Flemish universities and VLHORA (Vlaamse Hogescholenraad – Council of Flemish university colleges)[8], which are the consultative and advisory bodies of the universities and university colleges since respectively 1976 and 1994. Within VLIR and VLHORA a Quality Assurance Unit carries out the external assessments. Those two Quality Assurance Units are recognised by the Flemish Government, are full members of the European Association for Quality Assurance in Higher Education (ENQA) and are registered with the European Quality Assurance Register (EQAR). Recently, VLIR and VLHORA established a common structure VLUHR (Flemish Universities and University Colleges Council) which takes over the responsibility of VLIR and VLHORA in the fields of quality assurance and internationalisation.

The external quality assurance system serves a twofold purpose: it is intended to help improve the quality of education, and it helps the institutions to account for the way in which they address quality and quality assurance in the context of a programme.

Essential features of the external quality assurance system are that it takes a programme or cluster of programmes as its starting-point, that it is organised along inter-institutional lines and that it starts with a critical self-evaluation report which the programme coordinators are required to compose. A panel of independent experts,

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7 www.vlir.be
8 www.vlhora.be

composed in consultation with the institutions, then visits the programme(s), forms a judgement about the quality and formulates recommendations for improvement. The process is concluded with the publication of a public assessment report. The reports include a comparative description and comparative tables, but do not have the aim to rank programmes. The programmes are assessed according to 21 quality aspects, which together constitute a programme's quality profile. So, it is up to the reader of the reports to judge which aspects are most important for him/her and thus to evaluate which programme fits best his/her needs.

On the basis of the assessment framework and the panel's own *discipline-specific reference framework* (with this framework, the panel specifies the minimum discipline-specific requirements it believes the programmes should satisfy), the panel assesses the various quality aspects and explains its judgement on each quality aspect in the final report. The panel likewise expresses this judgement on a 4-point scale: unsatisfactory, satisfactory, good and excellent per aspect. At the overarching theme-level (staff, quality assurance, …) the score is unsatisfactory or satisfactory.

It is a deliberate choice to assign the external quality assurance to the umbrella organisations of the institutions. VLUHR believes that strong ownership in the programmes for the external assessment process, clearly contributes to the positive approach of the programmes towards external evaluation and creates the necessary openness to discuss potential measures for quality improvement, a vision which is shared by the Flemish Government. Therefore external assessments are organised by the umbrella organisations of the higher education institutions. Another way to ensure this ownership is the fact that programmes which have to be evaluated are requested to propose members for the assessment panel. They make a list of preferred chair persons for the panel and a long list of potential qualified panel members. On the basis of this list, the panel chair composes the panel. This composition has to be agreed upon by the VLUHR Board, before the panel members are invited.

A main objective of the external quality assurance system is for the institutions to account for the quality they offer, an independent

judgement is an essential feature of the system. Strict conditions are in place to guarantee that the proposed panel members are independent. Additionally, the independence of the panel members is checked by the Higher Education Recognition Committee (a standing committee of independent experts which gives advice to the Flemish Government on all kinds of higher education matters) before the assessment process starts. Since 2004, accreditation has been added to the external quality assurance system. So, all bachelor's and master's programmes assessed by one of the two quality assurance agencies in Flanders have to demonstrate their generic quality as a condition for accreditation. The assessment panels' judgements count heavily in this accreditation decision. Flanders and the Netherlands decided to have their higher education programmes jointly accredited, and to this end they established the Accreditation Organisation of the Netherlands and Flanders (NVAO)[9]. VLIR and VLHORA have developed a joint protocol for the assessment of higher education programmes, which describes the procedures for external assessments of higher education programmes, as well as the assessment framework. The assessment panels judge the programmes concerned on the basis of the six 'themes' (covering 21 'aspects') listed in the accreditation framework[10]. The assessment framework envisages grasping every aspect of a programme, focussing not only on the curriculum and results, but also on goals, staff, facilities and internal quality assurance. After the publication of the assessment report, the higher education institutions have to submit an accreditation application to the NVAO. The NVAO's decision-making is binary: either the programme receives accreditation or it does not. If the accreditation decision about a programme is negative, the board of the programme may submit an application to the Flemish government for a temporary recognition. A positive accreditation decision has an eight-year period of validity.

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9 www.nvao.net

10 NVAO, Accreditatiekader bestaande opleidingen hoger onderwijs Vlaanderen, September 1st 2009, http://www.nvao.net/accreditatiekaders-vlaanderen

External quality assurance for post-graduate Teacher Training programmes

Legal framework

The 2006 Teacher Training Decree[11] set the basic rules for teacher training programmes' external Quality Assurance. The methodology used was based on the assessment system for higher education, as described above, and thus on a self-evaluation, followed by an external assessment by peers. All programmes have to be assessed in one cluster and the report will be made public by the end of 2012. The main difference in comparison to higher education is that the assessment isn't followed by an accreditation procedure. The coordination of the external assessment has been assigned to the Quality Assurance unit of VLIR and VLHORA, later passed to VLUHR.

History

Although preparations for an external assessment of the teacher training at the Flemish universities started already in 2004, the external assessment itself has been postponed due to the thorough reform which was in preparation at that moment[12]. So, the planned external assessment will be the first external assessment focussing specifically on the quality of post-graduate teacher training programmes at the Flemish universities and at the university colleges. As the assessment framework is based on the one for higher education, central administrations and staff involved in other programmes at the involved higher education institutions, already have relevant experience in preparing the external assessment.

Until the new Teacher Training Decree came in place, post-graduate teacher training programmes offered by centres for adult education, were subject to inspection by the Flemish Government. Inspection was based on a Context Input Process Output-model (CIPO-model).

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11 Decreet betreffende de lerarenopleidingen in Vlaanderen, December 15th, 2006
12 Decision of the VLIR Board, February 8th, 2005

Each centre for adult education has been assessed at least once since 2000. So, these programmes have experience with external assessment, but change to a system of peer assessment, with a new assessment framework.

Common project

This assessment has been started as a common project of VLIR and VLHORA. In each organisation a project manager[13] was assigned to this project and a Task Force has been formed which has the responsibility to execute the assessment of the teacher training programmes. Although VLIR and VLHORA have a common protocol and procedures for assessing higher education programmes since 2004, the implementation has often proved to be slightly different. As a consequence, for this assessment, every step in the procedure has to be evaluated on how to design it best. It was decided to do this taking into account the specific characteristics of post-graduate teacher training programmes. Having to take conscious decisions on every step of the process, is very time consuming, but leads to carefully designed procedures and a process which should be even more *fit for purpose* than other assessments done by VLIR or VLHORA, a principle laid down in the ENQA European Standards and Guidelines[14].

Preparation of a protocol for external assessment of teacher training programmes

In preparation of the external assessment, VLIR and VLHORA gathered representatives of the teacher training programmes of all types of institutions and the Flemish Government. A working group of 15 representatives of the institutions[15], a representative of the Flemish Government and the project managers of VLIR and VLHORA

[13] Floris Lammens within VLHORA and Pieter-Jan Van de Velde within VLIR

[14] European Association for Quality Assurance in Higher Education, Standards and Guidelines for Quality Assurance in the European Higher Education Area 2009, Helsinki, 3rd edition, http://www.enqa.eu/files/ESG_3edition%20%282%29.pdf

[15] 5 representatives from the universities, university colleges and centres for adult education respectively.

was established. This working group met several times in 2008 and 2009 to adapt the assessment framework and procedures which VLIR and VLHORA are using for higher education programmes. Several meetings were needed to get to know each other better and to find a common vocabulary. Indeed universities and university colleges on the one hand and centres for adult education on the other hand have had for long a completely separate legal framework and did not work together that often until recently. So a certain time and number of meetings were needed to adapt the language used by VLIR and VLHORA to match it with the language used by centres for adult education. After this process, the protocol for external assessment of teacher training programmes (including an assessment framework and all relevant procedures) was approved by all parties involved (not only VLIR and VLHORA, but also the Steering Group Adult Education, who is representing the centres for adult education to the Flemish Government) in October 2009. In the end, the process has led to an assessment framework and procedures that are *fit for purpose*.

The adapted assessment framework envisages, as well as the original VLIR-VLHORA framework, to grasp every aspect of a study programme. It focuses not only on teaching staff and results but also on goals, content (the curriculum), facilities and internal quality assurance. The adapted framework consists of six themes covering eighteen aspects which will be evaluated by the assessment panels. The themes and aspects are indicated in Table 1.

The main changes, in comparison to the framework for higher education programmes, are related to three issues. First, the aspect 'aims and objectives' has been changed because for the teacher training programmes these are based on the specific legal framework, which includes a detailed set of competences which a teacher should have, resulting in *Aspect 1.1. Level and orientation of the programme and discipline-specific requirements*. The descriptors of the Flemish qualification framework cannot be applied to the teacher training programmes under evaluation, because these have not been integrated yet in the qualification framework. Second, no Master's thesis is required in teacher training programmes. The preparatory working group decided not to have separate aspects for

the practical component of the programme (pre- or in-service training), because this should be evaluated through the whole assessment framework and should not become isolated as one of the aspects. Third is the integration of the aspects 'quality of staff' and 'academic and professional orientation of the staff' in one aspect, as in teacher education didactic and pedagogic expertise are presumed to be both relevant for the way of teaching and the content of the programmes, resulting in *Aspect 3.1. 'Quality of staff'*.

Table 1: Assessment framework[16]

Theme 1 Aims and objectives of the programme
Aspect 1.1. Level and orientation of the programme and discipline-specific requirements
Theme 2 Curriculum
Aspect 2.1. Correspondence between the aims and objectives, and the curriculum
Aspect 2.2. Requirements for professional and academic orientation
Aspect 2.3. Consistency of the curriculum
Aspect 2.4. Size of the curriculum
Aspect 2.5. Workload
Aspect 2.6. Coherence of structure and contents
Aspect 2.7. Learning assessment
Aspect 2.8. Admission requirements
Theme 3 Staff
Aspect 3.1. Quality of staff
Aspect 3.2. Quantity of staff
Theme 4 Services
Aspect 4.1. Facilities
Aspect 4.2. Tutoring
Theme 5 Internal quality Assurance
Aspect 5.1. Evaluation results
Aspect 5.2. Measures for improvement
Aspect 5.3. Involvement of staff, students, alumni and the professional field
Theme 6 Results
Aspect 6.1. Achieved learning outcome
Aspect 6.2. Study progress

16 VLIR-VLHORA, Handleiding Onderwijsvisitatie Specifieke Lerarenopleiding, p.82, Brussels, October 2009, http://www.vlir.be/media/docs/Lerarenopleiding/VLIR-VLHORAHandleidingSpecifiekeLerarenopleidingen-oktober2009.pdf

Further on, some wordings have been changed in the underlying evaluation criteria and in the clarification which is provided for the assessment criteria.

Implementation of the assessment

Once the procedures were adopted in October 2009, VLIR and VLHORA started the assessment process itself. In defining the timing for the external assessment, a balance was sought between offering the programmes some time to implement the new legal framework on the one hand and keeping enough time for assessing all the programmes before the end of 2012 on the other hand. Indeed the Decree requires the assessment to be finalised by end 2012. Before this time the three phases of the process should be finalised (Preparation, site visits and reporting). In the **preparatory phase**, which lasted till March 2011, the programmes were informed about the assessment process, the assessment panel had been put together, the panel's inauguration meeting was held and the programme coordinators wrote their self-evaluation report. During the **second phase**, the project managers discussed the practical aspects of the site visit with the programme coordinators, the latter prepare for the site visits and, finally, the panel visits the programmes. This phase will last until Spring 2012. The assessment process is rounded off with the **reporting phase**, which will last until end 2012. It covers the compilation of the programme report, the feedback on the reports by the concerned programmes, the report's formal submission to VLUHR by the assessment panel, and the publication of the report.

The assessment panel

The post-graduate teacher training programmes at all 40 institutions involved are assessed by one panel of peers divided into five sub-panels. Every sub-panel gathers four peers, all independent experts in the field of education in general and more specific of teacher training and at least one student-member. A secretary who is employed by VLIR or VLHORA supports the panel. The team of panel chairs is responsible for the overall consistency of the

assessment process. In each panel it is tried to have expertise in pedagogy, didactics, international developments in teacher training, knowledge of Flemish secondary education and the needs in academic, technical and vocational education, the needs of adult learners and quality assurance.

The process has been difficult to find qualified and independent peers, mainly for panel chairs, as universities, university colleges and centres for adult education partly see different groups as peers. For universities, foreign academics are seen as the main group of peers. In university colleges also professional bachelor programmes in teaching (180 ECTS) preparing for pre-school, primary or first grade secondary school teaching are offered. So, staff members teaching in these programmes were seen as relevant peers – also by centres of adult education – but in the meeting with all programmes, it was decided that no staff of the involved institutions would be proposed, for reasons of independence. The three types of institutions proposed senior teaching and school management staff of secondary schools. Also inspection staff members of secondary and adult education have been proposed.

The representatives of all involved programmes could agree on a ranked list of potential chairs and a long list of potential panel members, all insisting on balanced sub-panels. After advice of the Steering Group for Adult Education and agreement by the Boards of VLIR and VLHORA, panel members were contacted and found during the summer and fall 2010. The Flemish Student Union (VVS), following its standard selection procedure for student members of external assessments, presented some potential student members. As the number of candidates did not meet VLUHR's expectations, a public call was sent to all programmes involved. This resulted in about 60 candidates for 10 positions (2 student-members per sub-panel, each taking part in half of the site visits).

To ensure the independent functioning of the assessment panel, safeguards are built into the whole assessment procedure. As described above, the programmes are only involved in the first phase of the selection of the panel. Chair persons have the possibility to add candidate panel members to this list. Incompatibility grounds

have been defined and the candidate panel members are required to sign a statement of independence as a precondition for joining the panel. Before the panel can officially start its work, its independence is checked by the Higher Education Recognition Committee. This bases its check on the members' curricula vitae, on the statements of independence, on the shortlists of candidate chairpersons and candidate members and on the Steering Group Adult Education, VLIR and VLHORA boards' decisions about these lists. After the composition of the panel was ratified by the Recognition Committee, the assessment panel has been instituted by decision of the VLUHR.

Once the panel was selected and approved by all relevant bodies, its inauguration was the next main step in the assessment process (March 2011). During the inauguration meeting the assessment process has been discussed in detail, the education field in Flanders has been presented, the panel members have been trained to use the assessment framework, the discipline-specific referential framework has been discussed and practical arrangements have been made. The discipline-specific reference framework has been based on the competences of a starting teacher, laid down in a decision of the Flemish Government, paying specific attention to some recent developments such as the multi-cultural nature and growing language heterogeneity, democratic values, competence based teaching, and ICT development.

Site visit phase

A preparatory discussion of the project managers and the programme coordinators marked the start of the 'site visit phase'. This discussion is meant to discuss the site visit schedule, the purpose of the various interviews and the groups who are expected to attend each interview. On the basis of this meeting the site visit schedule is adapted based on the specific features of the programme.

During the site visit, the panel will be able to refine their analysis based on the self-evaluation report, meeting all the stakeholders. The panels' task consists of assessing the quality according to the criteria and in making recommendations to improve the quality of the programmes. Depending on the number of students, the number

of locations on which the institution offers the programme and the number of trajectories it offers, the length of an assessment visit may vary from one to several days. The most common visit length is two days (for a standard trajectory). During the site visit the panel interviews various stakeholders, such as institutional management, programme management, staff involved in quality assurance, students, alumni, teaching staff, tutors responsible for guidance in relation to the pre- and in-service training and secondary school management. Other essential elements of a site visit are the panels' internal consultations, time to check additional information, an informal meeting with the stakeholders, a visit to the infrastructure, a free consultation period and any supplementary interviews at the invitation of the assessment panel. The panels' secretary acts as the contact person during this phase between the programmes and the panel for all practical difficulties, takes minutes of the internal consultations and of the interviews and oral report, makes sure that all themes are covered during the interviews and checks that the assessment protocol is applied correctly. For reasons of independence, but also to ensure his ability to monitor the progress of the interviews properly, the secretary does not participate actively in the interviews.

The assessment visit is concluded with an **oral report** in which the chairperson presents the first provisional findings, conclusions and recommendations to all interested stakeholders. No further discussion with the panel is possible during or immediately after the oral report.

Reporting phase

After the visits, the secretary of the sub-panel drafts a programme report, on the basis of the self-evaluation reports, the notes of the interviews held by the panel during its visits, the internal deliberation and the oral report. To guarantee consistency of the evaluations over the sub-panels, the draft reports of the first visit of each sub-panel will be discussed by the panel chairs as soon as they are drafted. Also after each semester of site visits, an editorial meeting with the panel chairs is planned. The panel members will be asked for feedback during the whole process. As soon as all

programme reports are drafted, an editorial meeting will be organised with the complete sub-panels to discuss the programme reports in detail and to check for consistency in marking. As far as possible, a broad outline of a comparative section for the overall report will also be discussed at this meeting. This section should give a presentation of the panels' main conclusions and recommendations. The panels' secretaries adapt the reports on the basis of the discussion at the editorial meeting and then present them to the panels for their approval. After they have given their approval, the draft reports are sent together with the associated score tables to the institutions.

Each institution receives its own programme draft report only. The institutions are asked to react to factual inaccuracies, and may also make comments of a substantive nature. They are also explicitly asked to indicate whether they have already initiated improvement measures in the time between the visits and the reaction to the programme draft report. The programmes' reactions are, subject to the consent of the institutional board, conveyed to the project manager, who passes them on to the panel members.

The panels discuss the programmes' reactions to the draft programme reports at a second editorial meeting. The sub-panels have the right to decide whether or not to take account of the programmes' comments. However, factual inaccuracies are always corrected. In a passage at the end of the draft report, the assessment panel can also indicate whether it assesses positively any improvement measure that the programme has reported. The report is not adjusted to take account of any developments which have taken place after the assessment visit, as the site visit is taken as the final evaluation moment. The panels' secretaries adapt the draft reports on the basis of the discussion at the editorial meeting, and then present them to the panel again for its approval. After this has been given, the institutions receive the final version of their programme reports, together with a response from the assessment panel explaining why they have or have not taken account of the programmes' comments; they also receive the general conclusions of the assessment panel.

The programmes are also asked to react to the comparative perspective and, if they are not satisfied with the extent to which the panel has taken their comments into account, they can use the internal appeal procedure or compile an appendix which is included as a reaction in the report.

After the editorial meetings, the project managers complete the assessment report with a foreword by the chairperson of the VLUHR and one by the chairperson of the assessment panel, the discipline-specific referential framework, the curricula vitae of the panel members and the site visit schedules.

As the final step in the assessment process, the project managers organise a formal handover and publication of the assessment report. With the formal handover of the assessment report by the chairperson of the assessment panel to a representative of the VLUHR board, the panel completes its assignment. The handover takes place in the presence of representatives of the institutions/ programmes.

The reports publication is consistent with the accountability function that the quality assurance system has in Flanders. This means firstly that the institutions are required to account for the way in which they use the public funding that has been allocated to them and the results they have achieved. Secondly, the students, their parents and employers are supposed to be informed via public reports about the extent to which the programmes meet the quality standards. On the day of the handover, the report is published on the VLUHR website. The Flemish Minister of Education also receives a copy.

Discussion and conclusions

The first clustered external assessment of all post-graduate teacher training programmes is a challenging process, both for the involved teacher training programmes and for VLUHR. VLUHR has invested much time to involve all stakeholders in the preparation of the process and to adapt the process to the specific needs of the post-graduate teacher training programmes. This is an interesting

learning process and has created a better understanding of the different types of institutions offering teacher training programmes and a *fit for purpose* protocol for the assessment. Also the strong involvement of all stakeholders in the composition of the assessment panel and its 5 sub-panels, will hopefully benefit a strong ownership of the whole process among all stakeholders.

A main challenge in the assessment process will be to guarantee consistency in focus and in marking between the different sub-panels and between the different types of providers, valuing also the differences. On the one hand much work is invested to come to a common approach between the former **VLIR** (university) and **VLHORA** (university college) approach. In general VLHORA has more detailed procedures, guidelines and formats, while VLIR has an approach which is a bit freer, based more on the panel members' and secretaries' expertise. Both approaches have their advantages and lead to good results. This sometimes makes it difficult for secretaries and panel members who are used to a certain approach to adopt a common approach. Thanks to many meetings and discussions, trust has been built and openness has been created and both sides are willing to give and take to develop a new and common approach. Often it is dealing with minor issues, such as using a standard preparation form, or not, the time for preparation for the panel during a site visit, etcetera. On the other hand also the approach of the different **sub-panels** should be consistent, to make sure that the impact of which sub-panel assesses a programme is minimal. Although the assessment framework is quite detailed, it leaves also room for interpretation by the sub-panels. To guarantee a consistent approach mainly the panel chairs and the secretaries have an important role. The visits have been scheduled so that the first sub-panel had 2 site visits (a university and a centre for adult education) before the other panels started. During the first site visit the two project coordinators joined the site visit to learn from each other and to come to a common approach of working with the sub-panels. After the first two visits a meeting with the panel chairs and the secretaries was held to discuss both the way of working and relevant aspects in the evaluation. As expected the approach of discipline-specific didactics is one of the main topics for discussion. Universities and university colleges have a long experience in this

field, while centres for adult education are generally more focused on general didactics. Also for instance the amount of training in schools, the involvement of secondary schools in designing the objectives and the curriculum, the way internal quality assurance is organised, didactic concepts differ greatly between institutions. It requires a lot of fine tuning to make sure every panel requires the same quality level on the diverse aspects of the assessment framework. It is also planned that secretaries will read at least two draft reports from every other secretary, to get a good insight in the elements taken into account in the other sub-panels.

Another challenge is the financing of the assessment. Although no specific funding for external quality assurance is provided in the standard funding of the programmes, the Government proved only be able to cater for about a quarter of the costs of the assessments for the centres for adult education. Universities and university colleges did not receive any contribution at all in the cost of the assessment.

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Research on ICT Integration for Enhancing Quality in Teacher Education: Nationwide Policy or Global Challenge?

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ABSTRACT

This paper presents the results of a study about the availability and use of ICT in the Initial Teacher Training institutions, carried out in Chile as part of the international project "*ICT in Initial Teacher Training*". The study, coordinated by the *Centre of Educational Research and Innovation* (CERI) of the OECD, stems from a concern shared by eleven European OECD member countries and Chile. Their concern is that they see a deficit in their initial teacher training systems in providing the vision, experience and skills required for enabling future teachers to integrate ICT into their professional practices in compulsory education (primary and secondary).

The study collected information through a survey involving 46 Initial Teacher Training institutions, and its results provide an in-depth picture of the factors relating to the use of ICT in teacher education, including descriptive information about different relevant dimensions, viz. institutional policies, infrastructure and ICT resources, ICT support, teachers' beliefs and competencies in ICT use, and teaching and learning activities with ICT. This paper aims to present the most relevant findings, as well as to share the main lessons learned, which resulted in a number of policy recommendations that might contribute to the overall quality assurance in the Teacher Education system in Chile.

In addition, this work might also constitute an opportunity for establishing international partnerships between European countries and Chile, aimed at exchanging knowledge that emerges from current and future research projects, using an agenda focused on quality assurance in teacher education through research in ICT integration.

Key words: teacher Education – Quality Assurance – Initial Teacher Training – ICT– Chile

Introduction

In today's global community, many educational issues born as national problems can co-exist simultaneously in different countries, thus becoming a global challenge. The information & innovation-based society demands continuous improvements from the education systems to prepare new generations that are better equipped to take full advantage of the new social, cultural and economic conditions. Within this demanding scenario, educational systems are shifting their attention to the area of initial teacher training, recognizing teachers' substantial impact on students' performance (Barber & Mourshed, 2007).

Additionally, there's a general consensus about the positive impact of Information and Communication Technologies (ICT) on economic development, and its relevance in human development has been recognized by international organizations (see UN Millennium Development Goals in www.un.org). Consequently, recognizing the potential benefits of ICT in different areas and in education in particular, many institutions claim that "there is a need for better information about what is happening [with ICT in education] at the national level as well as a better understanding of technological and pedagogical trends, reflecting the overall need for better empirical evidence as to the benefits of investment in ICTs for education (ICT4E) and their broader impact on society" (OECD, 2009b, p. 12).

In this context, Chile has a comparatively long history in the introduction and use of ICT in K-12 through the "Enlaces" project (see: Hinostroza, Hepp, & Cox, 2009), but it is only recently that the Ministry of Education (MoE) has started to pay attention to the

use of ICT in initial teacher training institutions. During recent years, through its Center for Education and Technology (CET), the MoE has been developing a series of actions aimed at promoting the integration of ICT into Initial Teacher Training, including research initiatives on ICT related standards appropriate for this education level and the use of ICT in their institutions. In this context, Chile was the only non-European country that participated in the 2009 international study "*ICT in Initial Teacher Training*" conducted by the OECD[1] for addressing this core matter with an in-depth study of the current national situation, the results of which provide more relevant information for designing policies in this domain. In addition, the emerging results could make a significant contribution to quality assurance in teacher education systems in developing countries.

1. National background

The following sub-sections present a brief description of the national background in this field.

1.1. Initial Teacher Education in Chile

The *Constitutional Comprehensive Teaching Act* (National Congress of Chile, 1990), established that Initial Teacher Training in Chile can only be conducted by higher education institutions which are officially recognized by the State: Universities and, under certain conditions, Professional Institutes. The *autonomy* of higher education institutions (including public and private universities), is recognized by the Government through the Higher Education Council (autonomous public entity).. Once given their autonomy, *Higher Education institutions* are able to create careers and to issue degrees that are officially recognized nationwide (including Teacher Education programs).

The Initial Teacher Training program is structured using the different education levels in the national system, covering all the

[1] Organization for Economic Co-operation and Development

pedagogical programs oriented to preschool, primary, special and secondary teachers. Furthermore, there are two main Teacher Training modalities:

- *Concurrent Training*: Its curricula offer simultaneously: general training in a certain discipline, pedagogical training and specific preparation regarding the educational level in which future teachers will work. Generally, these programmes last eight to ten semesters.
- *Consecutive Training*: Oriented to those having a professional degree in any discipline and for obtaining a degree to teach in secondary education. These programs offer training in pedagogy and specific didactics, and they usually last between two and four semesters.

The principle of free (non-paid) education is not present in Chilean higher education (as it is in the lower educational levels of the system), not even in public institutions. However, the government provides scholarship programmes and financial support to alleviate the situation of the poorest students, allowing them access to the higher education system.
Currently, there are more than 700 Initial Teacher Training programs in Chile, involving approximately 65 institutions, (each one being free to develop its own curricula).

1.2. Quality assurance in Higher Education in Latin America

During past years, there have been several initiatives aimed at coordinating common policies on evaluation and accreditation in Latin America and the Caribbean countries. Prominent among them was the creation of the *Ibero-american Network for the Quality Accreditation of Higher Education* (RIACES) in 2003, which developed a number of general guidelines, and launched an experimental process of regional accreditation for different careers (none of them related to teacher education). Although this issue does not seem to have a high priority in the educational agendas for most of the regional countries (Bizzozero & Hermo, 2009), this is not the case for Chile where quality control in teacher education is an important matter in the national political agenda (Hopkins, 2006; Ministry of

Education, 2010). In this sense, Initial Teacher Education is recognized as an area that has a double requirement of quality, namely as part of Higher Education and as a specific component of the education system. Additionally, the integration of ICT is vital to the education system in order to accomplish the goals emerging from a global, knowledge-based society.

1.3. Quality Assurance in Higher Education: the process of accreditation

Accreditation is a quality certification issued by the Government through the *National Accreditation Commission (NAC)* in regard to the quality of internal procedures in autonomous higher education institutions in Chile. This process is voluntary[2] for general higher education institutions, but is mandatory for the Initial Teacher Training institutions: it aims to verify, ensure and foster quality improvement in Higher Education by identifying their strengths and weaknesses, and it has limited validity, so must be periodically renewed. This process was established by Law N° 20,129 which created the *National System of Higher Education Quality Assurance* (National Congress of Chile, 2006).

There are two scopes for the accreditation:

1. *Institutional accreditation*: This consists of different evaluation procedures applied in several domains within the higher education institutions (institutional management, teacher training degrees and research, to name a few), to ensure their quality. The procedures carried out during the institutional accreditation include, as a minimum, the stages of self-evaluation, external evaluation and the NAC verdict. The external evaluation is conducted by teams of experts, peers, or external agencies recognized by the government, selected in a joint process, which involves the evaluated institution. National authorities highlight the central role of higher education institu-

[2] Nevertheless, the obtaining of accreditation by an institution additionally leads to access to some institutional and student benefits (scholarships, studies financing), which generally motivates an institution to take a noticeable interest in accreditation..

tions for developing internal processes for evaluating and assuring their quality, which is a shared concern with European quality assurance systems (Zgaga, 2010).

2. *Programs or careers accreditation:* This involves procedures for verifying the quality of careers and programs offered by the higher education institutions, according to the corresponding goals. All the associated components (curricular design, infrastructure, human and physical resources and teaching-learning processes to name a few) are certified for a period of up to 7 years.

1.4. ICT in Teacher Education in Chile: quality assurance and use of standards

During recent years, the Chilean Ministry of Education has been developing an ICT policy in teacher education. Within the context of the OECD project, this national policy is considered as belonging to two levels: (1) Presentation of optional recommendations at a national level, and (2) National implementation of competence frameworks.

At the beginning of the current decade, ICT was not included in the first national strategies aimed *at implementing* standards and recommendations in Teacher Education, namely:

- "*Teaching standards for the Initial Teacher Training*" (Ministry of Education, 2000): As part of a project for the *Strengthening of Teacher Education (1997–2001),* an evaluation system was created on the basis of these standards, oriented to assess the expected quality of teachers at the end of the Teacher Education. In these standards, ICT was not included, despite its importance as part of teachers' knowledge.
- "*Framework for quality teaching*" (Ministry of Education, 2003): The Ministry of Education developed a set of guidelines describing what a "good teacher" should be, know and do. It was to be used during the evaluation of students, teacher education programmes, and teaching practices, among other

processes, grouping the criteria in different areas. No reference to ICT was included in these guidelines either.

During recent years, the MoE developed and implemented new initiatives oriented towards establishing a set of standards for the integration of ICT in Teacher Education, such as:

- "*ICT standards for the Initial Teacher Training*" (Ministry of Education, 2006): Based on an Enlaces' proposal (Centre of Education and Technology), this initiative contains five functional dimensions representing the most important aspects to be assessed: (1) pedagogical, (2) technical, (3) ethical and legal, (4) managerial and (5) professional development. This proposal was developed to create an opportunity for reflection and debate about the way in which teaching institutions are responding to the demands of today's society, from a more complex and integral vision of the adoption of ICT, in order to endow teachers with higher levels of professional competence, and to enhance the quality of the teacher education institutions.
- *Functional Map of ICT skills for Teacher Education"* (Ministry of Education, 2007): This was implemented on the basis of the aforementioned standards, aimed at guiding the decisions required to design and implement a modern, efficient, effective and high quality teacher education curriculum, in order to provide future teachers with those skills needed to practice their profession within a paradigm based on the renewed value of education in the 21st century.

It is worth mentioning that the implementation of this framework is still voluntary However, its presence in the current scenario has a new relevance since late 2008, because of the establishment of the compulsory accreditation for Teacher Education careers. This created an opportunity to work jointly with the NAC and include the ICT standards for Initial Teacher Training as part of the national accreditation process. This focus might improve the

understanding of the institutional diversity and could foster creativity and innovation in teaching, learning and research in these institutions.

1.5. Quality Assurance in Higher Education: the 'Inicia' program

The national program called "*Inicia*"[3], was launched in 2008 by the Ministry of Education for transforming institutions, curricula and practices in the Initial Teacher Training, as well as to ensure and strengthen the professional quality of graduate teachers at a national level (Ministry of Education, 2010). This initiative proposes a set of pedagogical standards for highlighting a number of skills and knowledge that every future teacher should develop during their teacher education. This programme is composed of three main axes:

- *Component 1*: main curricular orientations and standards for teacher training programs;
- *Component 2*: assessment of teaching skills and knowledge;
- *Component 3*: programs for supporting the strengthening and modernization of Teacher Training Institutions.

In the first axis, a new general curriculum oriented to initial teacher education should be implemented. Although there are no explicit references to ICT in this component, the inclusion of the standards developed by the MoE in 2006 are taken for granted in the implementation of the program since "computational skills" are part of the general skills to be evaluated in the second axis "assessment of teaching knowledge and skills", from 2010.
Contextualized by the *National System of Higher Education Quality Assurance*, the INICIA program therefore became integrated into the Chilean public educational policies, in line with the current international trends.

In Chile, the results of the institutional evaluation processes and the applicable research projects are publicly disseminated. These results may be used in different ways, not just with regard to possible consequences for the institutions, but also as feedback for their staff, students and the general public. In addition, it is worth noting the use of findings to prepare indicators or national reports about the state of the teacher education system as a whole (which is the case of the present study), in order to obtain an overall

[3] Spanish Word for "Begins" (http://www.programainicia.cl)

picture of the state of initial teacher education. This is a valuable resource for input into policy-making and is precisely one of the main goals of the present study.

2. Conceptual framework

The theoretical framework used in the study was adapted from the general model of the SITES studies series (Kozma R., 2003; Law, Pelgrum & Plomp, 2008) and integrates different factors related to ICT integration in pedagogical practices, clustered in 3 levels (as can be seen in Figure 1): (a) *Macro*: Factors associated with national mechanisms of institutional evaluation (accreditation) and implementation of standards, at a system education level, (b) *Meso*: Includes different institutional-related factors, such as: infra-structure; availability and access to ICT resources; technical and pedagogical support; curricular integration; institutional policies and interventions as the most relevant; and c) *Micro*: Factors directly related to teaching and learning practices, such as: frequency of ICT-use; types of practices; teachers and students' characteristics; teachers' vision and self-perception of competencies, to name a few. Nevertheless, considering that Initial Teacher Training institutions very often function with a high degree of autonomy, the macro level factors are often considered less influential, and therefore, the focus should be directed to the meso and the micro levels (Drent & Meelissen; 2008; Enochsson & Rizza, 2009)

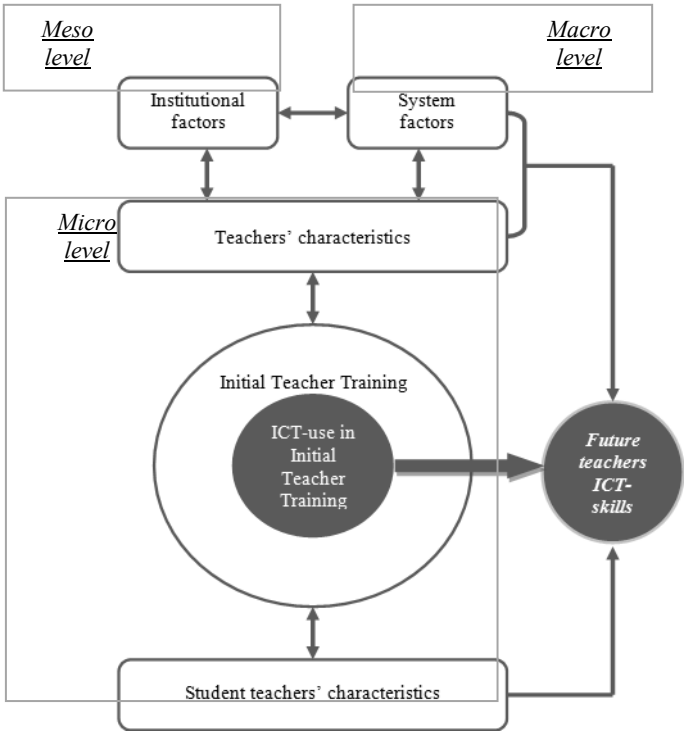

Figure 1. Scheme of the conceptual framework used in the study *(adapted from Law et al, 2008, p. 19)*

Factors involved are numerous, varied and complex (Mumtaz, 2000; UNESCO, 2003; Drent & Meelissen, 2008, Pedró, 2009), and they interact dynamically (Janssen Reinen, 1996). The general idea is that these factors shape the future teachers' profile in regard to their teaching skills and ICT competencies; therefore, they affect the quality of this education level. Since some of them are considered "manipulative", (ten Brummelhius, 1995; Drent & Meelissen, 2008), they could be handled by institutions through appropriate interventions that are oriented to ensure and enhance quality in the Teacher Education system.

In this context, the study was guided by the following research questions:

1. What are the national frameworks and requirements regarding the use of ICT in initial teacher training in teacher training institutions?
2. What are the institutional contexts and requirements regarding the use of ICT in initial teacher training in teacher training institutions?
3. To what extent and in what ways is technology used in teacher education institutions?
4. In what ways are student teachers prepared to integrate technology in teaching in initial teacher training institutions?
5. How is policy evaluated? Does practice correspond to policy?

3. Method

To address the research questions, the study developed a methodological strategy based on a quantitative approach for data collection and analysis (whose main results were also backed up by several case studies). In this sense, a survey was conducted (through self-administered printed questionnaires) in 46 teacher training institutions (about 75% of the national total) which participated voluntarily, targeting different actors whose corresponding samples were: (a) 46 deans (or equivalent authorities); (b) 495 teachers (representing different programs: primary education, and secondary teaching in mathematics, national language, social sciences and natural sciences); (c) 164 mentors (supervising students during their teaching practices); (d) 1,675 students (selected from different years); (e) 233 recent graduates and (f) 50 technical and/or pedagogical experts (in charge of pedagogical ICT-issues and/or technical aspects, such as maintenance). Fieldwork was conducted from June to September 2009.

The original questionnaires (from the OECD study) covered different issues, namely: policies, curricular integration, ICT infrastructure and support, frequency of ICT-use, teaching and learning activities, enablers and barriers to ICT integration to name a few, with the

purpose of obtaining an overview of the pedagogical use of ICT in Initial Teacher Training. These instruments were firstly translated into Spanish; then, adapted to the characteristics of the local context; and finally, some complementary questions were added.

Results have a 95% significance level, allowing the performance of inferential processes over the total population. The main quantitative statistical procedures used in this paper correspond to descriptive analysis (i.e. frequencies, and mean differences using t-test and one-way ANOVA), as well as multiple linear regression techniques; these procedures were performed by using the software SPSS-Statistics v.17.0©.

4. Results

For clarifying their presentation, the results emerging from the study will be shown organized as belonging to the meso and the micro levels, and then they will be structured in the following dimensions: (1) Institutional policies; (2) Infrastructure and ICT resources; (3) ICT support; (4) Teachers' beliefs and competencies on ICT use and (5) Teaching and learning practices.

4.1. Meso level factors:

4.1.1. Institutional policies

a) *Curricular integration and policies for supporting ICT-based innovations*

According to the deans, ICT is mostly integrated into the curriculum only in some specific areas (83%) and not in a cross-curricular way. In addition, 56% of the deans which were surveyed reported that explicit objectives about students' pedagogical ICT-related competencies are present in less than half of teacher education syllabi. Regarding the existence of an institutional policy to sustain innovations in teaching based on ICT, nearly 63% of the deans responded affirmatively. Meanwhile, almost 70% of the authorities which were surveyed reported the

existence in their institution of an area or department dedicated to support pedagogical innovations with ICT by teachers.

b) *Institutional offer for teachers' professional development*

Most of the institutions provide ICT-related courses for teacher trainers as optional activities. This aspect emerges as a relatively weak one, because whilst teachers' professional development on ICT use is not an institutional requirement, it remains strongly attached to teachers' commitment and personal initiative. In fact, only 54% of teachers reported their participation in a workshop or course involving ICT (general or pedagogical use) during the last five years. However, it's interesting to note that deans confer a relatively high priority to a teachers' acquisition of ICT-related competences in aspects such as: teaching innovation by using ICT, integration of ICT by specific actions, and the identification of good practices to integrate ICT.

c) *Assessment and use of standards*

Most of the actors agree (with percentages ranging from approx. 65% to 77%) that they do not perceive the existence of a formal assessment of activities in regard to students' ICT competencies. Furthermore, only a minor percentage of the respondents reported the application of standards as part of the evaluation processes (from 13% of the deans, up to 30% of students). In this case, differences are statistically significant between private and public institutions, since private institutions reported a more frequent application of standards. It is quite noteworthy that not all actors who perceived the application of standards in their institutions were able to classify or identify the standard's type: except for the most frequently mentioned (the *ICT standards for the Initial Teacher Training*), the others were just for internal use, or constituted general rules or guidelines taken as references during the evaluation processes. This finding shows that the use of standards is not yet a usual practice in Teacher Education institutions in Chile.

4.1.2. Infrastructure and ICT resources

Regarding the main infrastructure indicators, the ratio of students per computer has an overall mean of 17; all the institutions have a website and provide access to the Internet: 96% of them provide broadband access and 91% have a Wi-fi network. In addition, 59% of the institutions reported having a LMS/VLS system supporting on average 53% of their courses. On the other hand, almost 75% of teachers have their own personal computer in their institutions.

In relation to the access and availability of ICT resources for teaching and learning purposes, the most available and accessible are computers and projection systems (more that 80% of teachers reported that they are available, at least in some of the classrooms). Among the resources with the lowest availability, it could be mentioned: interactive whiteboards, video-conferencing systems, digital cameras and mobile devices. There were no significant differences on this topic, depending on the institutional funding system (public or private).

4.1.3. Institutional ICT support

In regard to the availability of technical and pedagogical support for teaching and learning with ICT, approximately 95% and 80% of teachers reported, respectively, the existence of technical and pedagogical support.

In respect to the quality of these types of support, results show that the quality of technical support is slightly better rated than the pedagogical support; however, both overall rates were ranked between “medium” and “good” quality.

4.2. Micro level factors:

4.2.1. Teachers' competencies and beliefs about ICT integration

Teacher trainers reported high levels of comfort on ICT use, either at home or in academic activities: 95% and 93% of them said that they felt “fairly or very comfortable” about using ICT at home and in class, respectively. Even more importantly, teachers’ self-perceived

levels of ICT competencies exceed the students' levels This fact could contribute to dismissal of the argument about a generation gap between teachers and students.

With respect to teachers' visions of the importance of students learning ICT, results show a prevalence of ICT uses related to the organization of teachers' work and a lower incidence of the uses associated with ICT integration in teaching. Thus, it may be observed that teachers' would assign greater importance to the functional dimension of ICT as a management tool, compared to its pedagogical dimension.

4.2.2. Teaching and learning activities

Results reveal that teacher trainers seem to use ICT in a basic and undiversified way, involving a relatively limited set of digital resources (mainly, computers and projection systems: almost 80% of teachers reported that they use them "half of the classes" or more): this suggests that teachers are not taking advantage of the potential of ICT. Moreover, results are consistent with former studies (see, for example, Kozma, 2003; Law et al., 2008; OECD, 2009a) regarding the preponderance of 'traditional' teaching and learning activities (i.e. students working as a group at same pace) when compared to the 'emerging' or 'innovative' ones (such as students working autonomously at their own pace or determining their own learning goals, to name a few).

On the other hand, the frequency of activities related to the explicit instruction about how to teach with ICT, is significantly lower than the frequency of activities that only include the use of ICT by teachers. Consequently, it seems that one of the main problems for students is not only learning how to use ICT, but also learning how to integrate it pedagogically into their future work.

Finally, the present research determined the influence of different factors on the frequency of teaching and learning activities with ICT. In this sense, two main regression models were initially explored; the corresponding predictors and determination coefficients will be shown as follows:

a) The frequency of teaching activities with ICT was predicted by the "*availability of ICT resources in the classrooms"* and

"*teachers' level of self-perceived competences for using ICT" (R^2 = 41.7%)*

b) The frequency of students' learning activities with ICT was explained by the "*students' confidence level for using ICT with pedagogical purposes"*, and the "*pedagogical support" (R^2 = 1.5%)*

The presented findings shed light on some concrete ways to promote more frequent use of ICT in Teacher Education, as well as to enhance the overall teaching quality through the promotion of high-level teaching activities.

5. Lessons learned

On the basis of a pragmatic perspective, the emerging scenario does not appear as good as expected, since the pedagogical use of ICT carried out in Chilean institutions of Teacher Education is, in general, restricted to a limited set of teaching and learning activities. In this sense, it seems that the Initial Teacher Training in Chile is not yet fully preparing future teachers for the knowledge society's demands.

Among the main findings and their corresponding recommendations, we can mention:

- Results seem to suggest that the availability and access to ICT resources are necessary conditions but they are not enough to promote the integration of ICT in teaching. Although there is a wide variation among the institutions regarding the levels of infrastructure, in general terms they are acceptable. Therefore, the results suggest underuse of ICT resources: many of them (such as interactive whiteboards, video-conferencing systems and mobile devices) are practically unused. Meanwhile, resources such as the "PC plus projector" are considered to be excessively used and they are the target of students' criticism.
- Given that the presence of internal evaluation processes is low, and the use of standards is even lower, it is necessary to promote the sustained use of self-evaluation processes with institutional policies, as well as with teaching and learning practices, in order to ensure the quality of teaching; At the same time, standards relating to the teachers and students' ICT

competences as well as the expected goals regarding the use of digital technologies should be adopted.

- As a positive aspect, it is necessary to highlight that on the one hand, the majority of the factors influencing the different pedagogical activities with ICT in Teacher Education belong to the micro level. On the other hand, all of them can be categorized as "manipulative". Thus, it could be inferred that it is possible for institutions to impact on these factors through specific policies and strategies (such as an adequate professional development being offered, provision of ICT infrastructure in the classrooms, and new proposals oriented at reaching higher levels of self-perceived competencies both in teachers and students, to name a few). However, results seem to show that it is not appropriate to continue developing proposals that are only based on the provision of standard ICT resources, or the offering of professional development opportunities related to basic ICT use, since these actions would only promote a higher frequency of conventional and basic teaching activities. Hence, it is reasonable to expect that the quality of teaching would not be significantly affected by these actions.
- A feasible recommendation to consider is related to the implementation of incentives' mechanisms, aimed at promoting innovative projects involving teaching and learning practices with ICT in Teacher Education.
- Another recommendation is related to the convenience of creating adequate conditions for the generation of new scientific knowledge in this field, for encouraging research projects aimed at studying, in particular, the relationship between ICT integration in Teacher Education and the Specific Didactics of the different disciplines. In this sense, an interesting line for further research has developed through this work for future projects aimed at promoting a higher quality in Teacher Education.

In regard to the relevance of this study's contribution, it is necessary to point out that this research is the first of its type carried out in the country. The results obtained might highlight several key issues in order to provide relevant information for supporting the design and implementation of policies and intervention strategies (at a national and/or institutional level) in regard

to the most significant factors that have an impact on the pedagogical activities with ICT. The promotion of this is considered necessary to foster a more complete, updated and innovative Initial Teacher Training in Chile as well as to ensuring the quality of this education level.

As the title of this paper notes, this issue arose as a demand for national policies. At the same time however, there is a shared concern at an international level that is evolving into a global challenge. In this sense, this proposal might also constitute an opportunity for establishing international initiatives between European countries and Chile in regard to the exchange of knowledge emerging from current and future projects and studies, through a joint research agenda aimed at ensuring quality in their teacher education systems.

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E-learning Quality Assurance System for E-courses in Estonia

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ABSTRACT

In the area of teacher education, e-learning has rapidly grown both in pre- and in-service mode. In 1999, Estonian universities had only 14 e-learning courses. In 2004, this number had reached to 350 units and increased further to 3576 by 2009. This rapid growth has led to the need to actively disseminate "best practices" among the novice course designers, to identify quality criteria, to create instructional materials on how to build a good e-learning course, and to guide educational technologists, whose task is to support and consult teachers and designers.

Starting from 2004 Estonian e-Learning Development Centre, who supervises developments in the e-learning field in Estonia, runs a contest for the title "E-course of the year". This contest has resulted in need to state the quality criteria for an e-course in a clear and understandable way. To run this contest and to prepare all the above-mentioned materials, e-Learning Development Centre has formed a quality assurance task force. The aim of this task force is:

- To create guiding materials for the course building process for e-learning and blended learning courses, aimed at the teaching

staff of higher education organisations and at educational technologists. As a basis for this work, task force has adapted "Quality Manual for E-learning in Higher Education"[1] which was created in the E-xcellence project coordinated by the EADTU (European Association of Distance Teaching Universities).

- To specify the election process for "E-course of the year" and to publish quality criteria for this process.

The first contest for “E-course of the year”, following *the finalisation* of the quality criteria, was announced in autumn 2008. The whole process was designed as a 3-tier system:

Firstly the courses were graded at the self-assessment level, where teachers assessed their own course according to the quality criteria. Secondly, at the organizational level, the importance for the organization and student feedback were reflected on. Third tier assessment took place at the expert level, where the expert group evaluated the course according to the quality criteria.

Identifying quality assessment criteria, ENQA rules are based on [2]. Main ENQA principles addressed by quality assurance process rules are:

- Responsibility for the quality e-course lies with the university, owner of the course.
- The process of the attribution of the quality label has to be understandable and clear.
- Independent expert groups should be used.
- There is a systematic improvement of the whole process (enhancement guiding materials, comprehension of the quality assurance procedure) which is based on the feedback of all concerned parties.

In this article we describe the whole process of quality assurance of e-courses and discuss Estonian experience in last three years.

Key words: Quality system, e-learning, assessment

Introduction

E-learning is a modern and efficient learning and teaching method, in which several information and communication technologies (e.g. Internet, electronic data carriers, databases, multimedia tools etc) are used for teaching [2]. By 1999 a few enthusiasts from different universities in Estonia had created 14 e-learning courses. Since then, the interest towards new teaching methods and tools has only grown and the number of e-courses has rapidly increased (see Figure 1). This created a desperate need to spread the "best practice" and create guidelines for a good e-course development. It also raised the question of how to train and support teachers efficiently. Initially the e-courses were developed only in bigger universities (Tartu University, Tallinn University and Tallinn University of Technology). There was no tradition of collaboration between universities but the need for that in the field of e-learning was very obvious.

To solve the problems of coordination, collaboration and efficient expenditure of resources, the Estonian e-University consortium was established in 2003. Its main task was to coordinate and develop e-learning activities at the higher educational level. Two years later, rapid development of e-learning resulted in forming the second consortium – Estonian e-VET consortium (consortium of vocational education organizations) which started to coordinate e-learning activities at the vocational education level. Based on these two consortia, the Estonian e-Learning Development Centre was established in 2006. Today, the majority of higher and vocational education organizations belong to these consortia and involves 95% of all students in higher education: 8 universities, 13 applied universities and 24 vocational schools. These two consortia provide the means for centralized development and assurance of the quality of e-learning implementation throughout higher and vocational education.

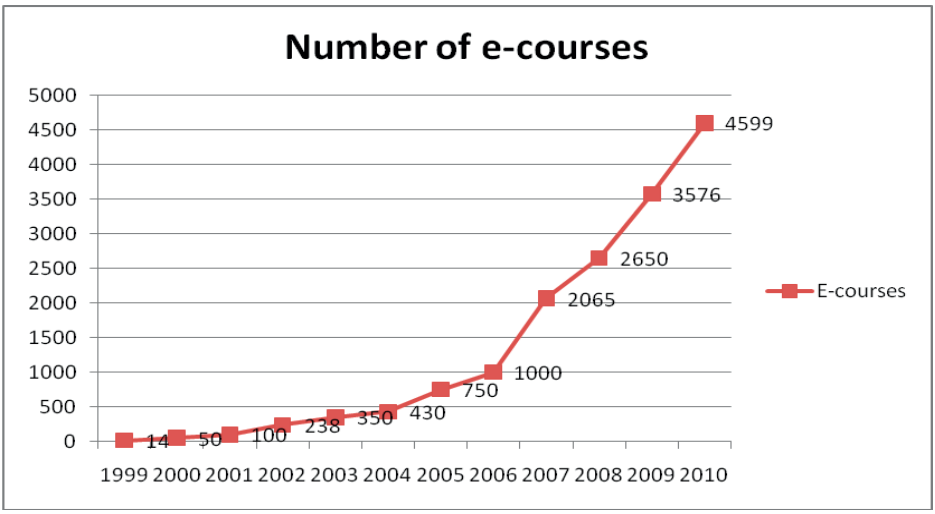

Figure 1. Increase of the number of e-courses within e-learning management systems Moodle and BlackBoard Vista, managed by The Estonian e-Learning Development Centre, during 1999–2010

Rapid growth in the number of users within e-learning environments at the same time also indicated the progressive popularity of e-learning as a teaching method (see Figure 2).

Hand in hand with development of e-learning, three distinct use patterns started to emerge [3]:

1. Fully online learning – the whole learning process (content delivery, information distribution, communication, student assessment) is web-based and there are no face to face contacts.
2. Combined/Blended learning – learning process is mainly web-based but also includes face to face seminars and workshops comprising no more than 25% of the whole course.
3. Face to face learning with online support – there are regular face to face lectures, seminars and/or workshops which, when combined, account for more than 25% of all learning process. The online environment is used for distributing leaning materials and guidelines, and for submission of homework.

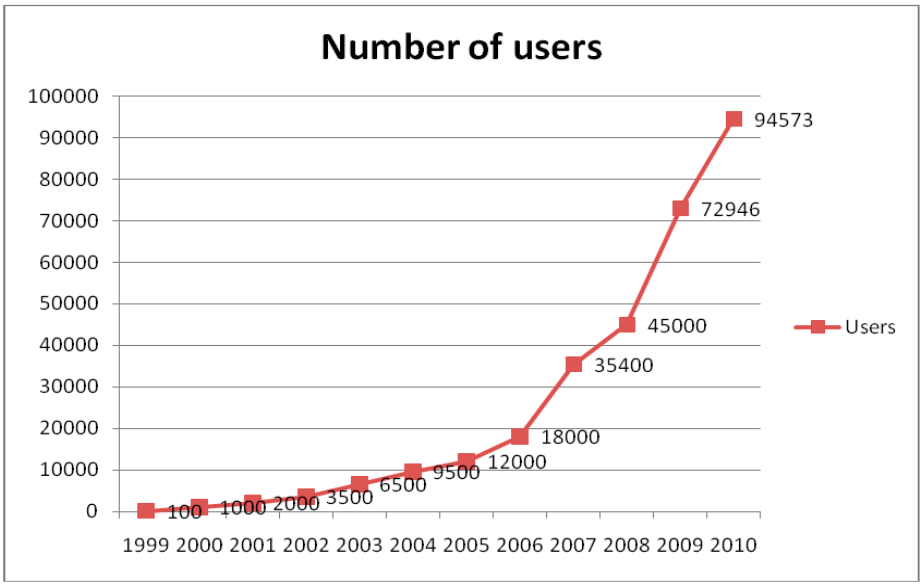

Figure 2. Increase of the number of users of e-learning management systems Moodle and BlackBoard Vista, managed by The Estonian e-Learning Development Centre, during 1999–2010

Widespread use of e-learning within different educational institutions brought out several issues for discussion:

- What defines a quality e-course? What are the core quality criteria?
- What kind of cooperation and guidelines are needed for educational technologists to support teachers on a daily basis?
- What kind of training needs to be provided to teachers to allow them to create state-of-the-art e-courses?

To propagate the best practices within the teachers' community, a contest called "The e-course of the year" was launched in 2004, in which the best e-course was found inside both of the two consortia. To make the selection, a group of experts was formed. This group chose the courses to reward based on general criteria for evaluation, but the assessment was still quite subjective, as there were no tested and reliable forms for assessment. The award ceremony was carried out along with the demos of the best e-courses during e-learning conferences.

Year after year, both the number of new e-course authors and the number of participants in the contest grew, resulting in a much harder selection process. For the past few years, there have also been additional "special awards" given out alongside the "best course" award. During 2004–2007 there were 37 "The e-course of the year" titles and several special awards given to the authors of the courses. The original aim of this contest, selection of individual best courses and dissemination of best practice to the teachers' community was blurred; there seemed to be no need to pick out the best course to win the contest, but rather to recognize all the numerous teachers who had effectively implemented e-learning.

Fast-paced development had resulted in the need for clear, concrete guidelines and rules, which would support educational institutions and e-learning practitioners in quality assurance. There was a general agreement that activities designed for encouraging e-learning needed a consistent plan and that the contest alone would be too ad-hoc to achieve it. It became increasingly important to connect teacher training and quality criteria and to involve educational technologists in the process of identifying quality e-courses. Time was right to make a change

1. Quality System

In year 2007, The Estonian e-Learning Development Centre established the quality assurance task force, which consisted of members from different universities, all of whom had everyday contact with e-learning.

The main goal for the task force was to specify the process of recognizing the best practice within e-courses. The following smaller assignments were set up based on the main goal:

- To create guiding materials for teachers, lecturers and educational technologist to support design and development of e-courses on a well recognized bases and to create criteria to evaluate existing ones. As a platform guiding material „Quality Manual for E-learning in Higher Education"[2] from EADTU (European Association of Distance Teaching Universities) project called E-xcellence was used.

- Along with guiding materials, the process of assigning e-quality label had to be designed along with a logo for the quality label itself.
- To pilot the process of assigning e-course quality label during the autumn of 2008.

The first version of „Guidelines for creating a quality e-course"[5] was finished in April 2008. Every chapter of this document also contained a list of quality criteria to which a good e-course should aspire. Those lists formed the basis for the next step: designing a transparent process for the attribution of the quality label to an e-course.

In June 2008, in cooperation with the company OÜ Saar Graafika, the symbol of e-course quality label was designed (see Figure 3).

Figure 3. The symbol of e-course quality label

In September 2008 the process of applying for a quality label for an e-course was specified along with the necessary guidelines, forms and other documentation.

The process is a three level system:

Self-assessment level. Each applicant makes a self-assessment based on a given form. The purpose of this assessment level is to increase the awareness about the acquired quality criteria and to motivate authors to analyze their e-courses.

Organizational level. The objective for the organizational level is to gain feedback from organization administration and learners, also based on a fixed review form, which is completed by the person authorized by the organization (e.g. manager of the curricula) and

confirmed by the direct manager. Applicant has to submit the organizational review along with the proposal form.

Expert level. The expert level assessment, as the name hints, consists of evaluation by a group of e-learning experts (a third objective party). This level concludes with the decision to either recognize or not recognize the course with the quality label. Evaluation on the expert level takes place after the authors submit the self-assessments and organization reviews, and is also based on a pre-determined form. Expert groups, who assess e-courses, are formed from network of educational technologists (http://www.e-ope.ee/en/edc/educational_technologists). Educational technologists work in university or vocational level to create a suitable environment of trust and communication within the school for development of e-learning which is the precondition for innovation and cooperation.

Throughout the development of this process, there were rules of ENQA (European Association for Quality Assurance in Higher Education) [4] which were considered as a basis for the work done. The main principles considered were:

- Responsibility for offering a quality e-course lies with the educational institution;
- The process of applying for a quality label has to be understandable for all parties (lecturer, institution, expert);
- External expertise has to be used when evaluating the courses;
- Improvement of the whole process has to be regular and based on the feedback of all concerned parties.

There are three level training program to follow to ensure the expertise and professional development of task force and experts, which are supported by ICT (information and communication technology) competencies model.

2. Results, problems and drawbacks

The idea of the quality label was first realised in spring 2008. In that year, 36 e-courses applied for and 14 of them received the quality label (see Figure 4). As the materials created by the quality task force were not ready yet, the process was very easy that year:

authors presented their courses for the quality label and a group of experts decided which courses were awarded the label.

There were two problems with this process. Firstly, different experts had a different understanding of a good course. Secondly, the decision was not transparent enough for the applicants. If you as an applicant received notification that your course was not worth the quality label, you had no idea why, or what was missing from your course. The quality task force, therefore, had to set up clear criteria for evaluation and to make the process transparent enough so that applicants would receive at least some feedback about their course quality.

Similar process for applying for an e-course quality label, but already considering the feedback from piloting the process, has been followed for the next two years (see the overview of the results in Figure 4).

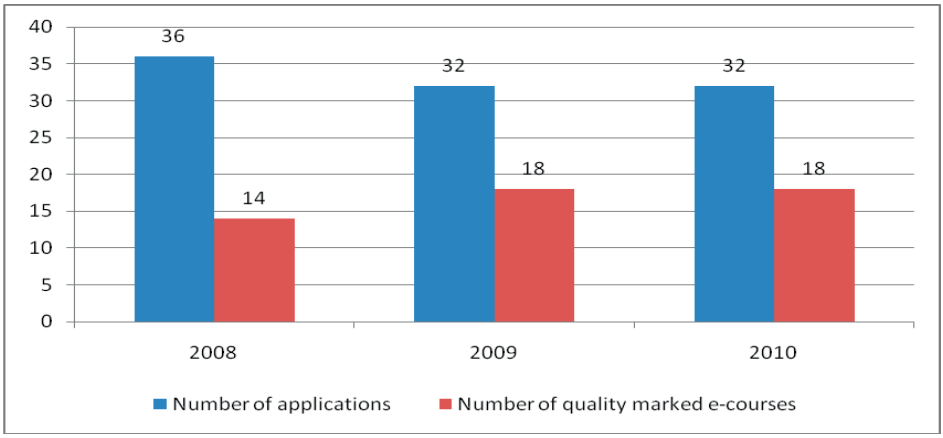

Figure 4. Recognition of quality label

The whole process follows the 3 tier system. At first, lecturers have to self-assess their e-courses before submitting the application for the quality label. The self-assessment form is similar to the one experts use; these forms give descriptions of relevant core criteria for quality e-courses. To assure e-course quality, there is an emphasis on harmonizing the level of evaluation from different experts.

To evaluate and make adjustments to the implemented process, the feedback questionnaires were distributed to:

- Applicants, whose e-course was recognized with the quality label;
- Applicants, whose e-course did not receive the recognition;
- Experts, who evaluated all the applicable e-courses.

The results gave valuable input to the quality task force to improve the guiding materials and the application process: to edit the handbook and evaluation forms. For example, some irrelevant questions were removed from the self assessment document and some questions were reformulated.

There are still marked differences between applicants' self-assessment and experts' evaluations in the year 2010 (see Figures 5 and 6).

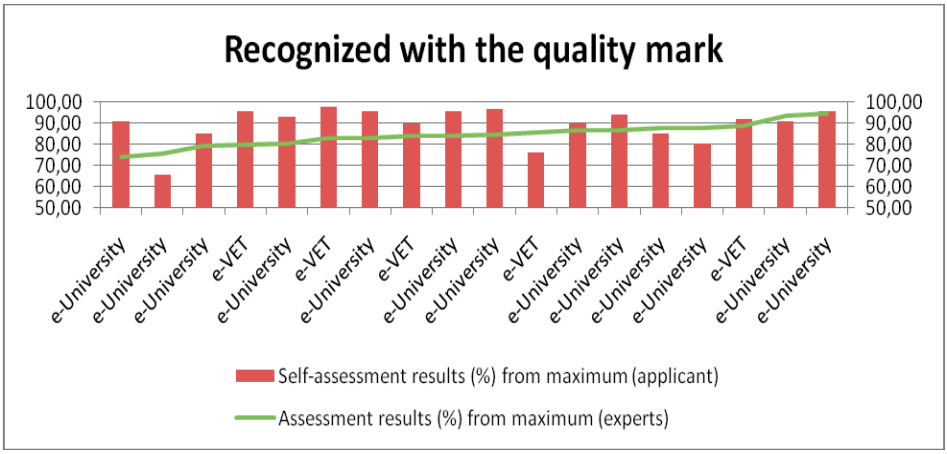

Figure 5. Self-assessment results from the applicants whose e-courses were recognized with the quality label (2010)

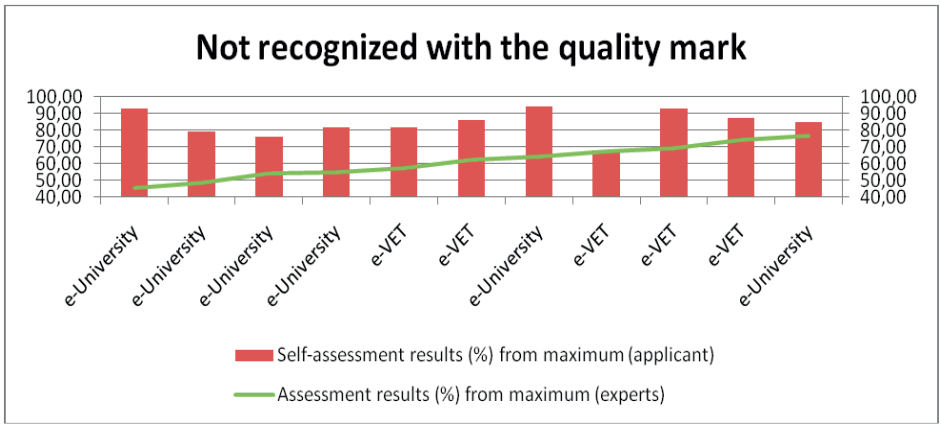

Figure 6. Self-assessment results from the applicants whose e-courses were not recognized with the quality label (2010)

This discrepancy demonstrates that authors of quality courses understand quality criteria better than those authors, whose courses have not reached the quality level. This discrepancy gives the idea to prepare an e-course for authors, which introduces the process of applying quality label for e-courses and gives more specific instructions on how to carry out self-assessment.

Even though educational institutions give good reviews at organizational level about the courses, some adjustments and concretizations need to be introduced on this side of the process.

In 2010, the handbook „Guidelines for creating a quality e-course" was also published on paper [5], having previously been available only in the web. Due to the rapid development of e-learning, the web-based material is updated each year; e.g. there is now an ongoing process of collecting practical examples to illustrate different chapters of the handbook and plans to add two new sections, one about active learning methods and another about improving students' study skills.

3. Conclusions

The quality assurance task force specified the three level election process for "E-course of the year" and published quality criteria for this process. Task force created guiding materials [5] for teachers, lecturers and educational technologist to support design and development of quality e-courses. The process of recognition is now, after suggested improvements by piloting, smooth and understandable for both the applicants and the evaluators.

The quality label functions as a guarantee for learners that these courses are well structured and those teachers will support the development of students throughout the course continuously. It also gives recognition to the lecturers and educational technologists for the good work put into creating a high-quality e-course.

The process of improving the quality assurance process according to the ENQA rules [4] is going on. New versions of the quality manual, rubric for self assessment and other materials are continuously improved.

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Part 2

TEACHER EDUCATION AND CURRICULA

Comparative Study of Teaching Content in Teacher Education Programmes in Canada, Denmark, Finland and Singapore

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ABSTRACT

This article presents the results of a comparative study of the content in teacher education programmes for primary and lower secondary teachers (years 1-9(10)) in Canada, Denmark, Finland and Singapore. First and foremost, the study is a comparison between teacher education programmes in, on the one hand, Canada, Finland and Singapore, all of which score highly in international comparisons such as PISA and TIMMS, and on the other hand Denmark, which receives average scores, but it also functions as a comparison between all four countries. The study covers the following subjects: pedagogy, mathematics, and science. The study does not offer proof of any clear difference between the Danish teacher education programmes and those found in the top-performing countries; differences can be found in certain areas, in other areas there are greater differences between the four individual countries. Three main findings are: 1) Philosophically-based professional knowledge, much of which is normative in character, forms an extensive part of the body of professional knowledge within the Danish teacher education programmes, which is not true of the programmes in the Top-3 countries. 2) The programmes in Canada and Singapore more frequently employ literature combining research-based knowledge with practical guidance and experiences, while the programmes in Denmark and Finland keep these knowledge forms separate. 3) The main distinguishing feature of

the teacher education programme at the University of Helsinki is the inclusion of literature on research methodology within the category of scientific practice knowledge.

Key words: Teacher education, content of teacher education, teachers' knowledge base, comparative study.

Introduction

In this study of content in teacher education programmes for primary and lower secondary teachers (years 1–9(10)), we have included Canada, Finland and Singapore, i.e. three of the top-performing countries, and Denmark. Korea, which is among the top three in the PISA assessments, is not part of the study. Singapore, which achieves a top placing in TIMMS is, however. The reason for this is that Singapore has attracted particular interest within the educational debate in Denmark.

In Canada, the compilation of teaching materials was carried out in the province of Ontario at the Faculty of Education, Ontario Institute for Studies in Education (OISE), University of Toronto, which is the largest and most prestigious provider of teacher education in the province. Of the four teacher education programmes offered, the one-year Bachelor of Education programme is the largest in terms of student population, and it is this programme which has been included in the study. In Denmark teacher education is decentralized but in accordance with common legislation. The study includes three programmes are located in a city, a large provincial town and a smaller provincial town respectively. In Finland we analyse the content of the teacher education programme at the Department of Teacher Education, Helsinki University. The department offers both the class teacher programme (Grade 1–6) and the subject teacher programme (Grade 7–12). These programmes are both included in the study. In Singapore all three programmes offered at the National Institute of Education (NIE): A four-year concurrent bachelor's degree programme, a two-year concurrent diploma degree programme and a three-year Postgraduate Diploma in Education aimed at students who already have a bachelor's degree but require an educational postgraduate qualification in order to teach at primary or secondary level are included in the study.

1. Theoretical framework and method

Variations and similarities

The comparison of variations and similarities in the content of the selected subjects in the four teacher education programmes is conducted on the basis of a number of concepts, referred to here as search and analysis categories. The argument for applying search and analysis categories is that, while it may be possible to compile information about the teaching content in the teacher education programmes without employing such categories, it is only with the help of conceptual categories that it becomes possible to consider the similarities between the programmes. The comparisons of the teaching content in the selected teacher education programmes are conducted using a matrix with the four teacher education programmes which are the subject of the analysis placed along the horizontal axis and the standardised categories which are applied placed along the vertical axis. As a result, the comparisons are conducted at this conceptual or categorical level (Rose, 1991), (Sartori, 1984).

Analysis of teaching content

The analyses of teaching content are conducted as text analysis on the basis of preselected and further differentiated search and analysis categories. The material is analysed along two dimensions. The first dimension, which is used to analyse the material within each of the three subject areas, builds on a distinction between four types of knowledge: scientific knowledge, scientific practice knowledge, professional knowledge, and professional practice knowledge. These distinctions are inspired by the French sociologist Emile Durkheim, who in the beginning of the twentieth distinguished between pedagogy as a category of reflection that are occupied with theories about what teaching ideally should be and science of education which aims at producing knowledge about teaching as it is. (Durkheim, 1975 (1914), s. 60f.) (Rasmussen, Kruse, & Holm, 2007) Durkheim was of the opinion that it is suitable to distinguish between educational practice, reflections on educational practice and research in educational practice *and* reflections on educational

practice. These considerations have been further elaborated by the German sociologist Niklas Luhmann into categories of different functional systems of society and the point of view that within each of society's functional systems a system of reflection has developed. (Luhmann, 2002) The second dimension, which is only applied to the analysis in the mathematics and science subject areas, builds on a distinction between three categories of content, i.e. subject knowledge, subject didactic knowledge, and knowledge about students. (Shulman, 1987)

Scientific knowledge about education and teaching is knowledge about the educational system which is produced outside the educational system, with a different frame of reference than that employed by the educational system itself. Scientific knowledge is characterised by its distinction between true and false statements, an aspiration towards generalised or generalisable research results, the coordination of concepts which form the basis for observation and the range of conclusions by theory, and the application of specific and explicit methods.

In this study, we additionally distinguish between empirical scientific knowledge and analytic/theoretical scientific knowledge within the search and analysis category scientific knowledge. Empirical scientific knowledge can be generated through the application of either quantitative or qualitative methods. Analytic/theoretical scientific knowledge can be further divided into grand theory (philosophical, psychological, sociological etc.) and middle-range theories (e.g. Piaget's adaptation theory, learning theories, theories about social inequality etc.), a conceptual distinction with its roots in sociology, but here applied more broadly (Merton, 1968).

Scientific practice knowledge is knowledge the researcher and research community generates by itself and for itself concerning the research process. It typically comprises reflections on the theory of science, not least questions of an epistemological nature, as well as reflection on research methodology and its possible applications and limitations.

Professional knowledge about education and teaching is knowledge which is produced within the educational system about the educational system and for the educational system, i.e. with the educational system's own frame of reference. Professional knowledge is characterised by its distinction between instructive and not-instructive statements regarding teachers' practice. As such, professional knowledge acts as the educational system's own way of correcting professional practice according to a self-generated set of criteria for determining success or failure. Professional knowledge is developed with the aim of solving concrete problems in local contexts and therefore mainly comprises context-specific knowledge. Its function is to explain practice in order to enable intervention aimed at improving practice.

The search and analysis category professional knowledge is further divided into evidence-based professional knowledge and philosophical professional knowledge. Evidence-based professional knowledge can refer to either research or experimental and developmental work and action research, while philosophical professional knowledge is characterised by offering normatively-based directions for practice. This distinction has its foundations in two different characteristics of professional knowledge: on one hand, professional knowledge can be based on more or less systematic descriptions of experiences from educational practice; on the other hand, professional knowledge can consist of ideas or ideals for successful practice. Evidence-based professional knowledge referencing research can additionally be distinguished dependent on the empirical or analytic/theoretical nature of this research, while philosophical professional knowledge can have either an analytic or a normative orientation.

Professional practice knowledge about education and teaching is the type of knowledge which practitioners generate by and for themselves with the goal of facilitating a more effectual practice. Professional practice knowledge is characterised by a distinction between useful and not-useful knowledge, a distinction which combines two criteria for professional practice, namely if it 'works', and whether it does so in a reasonable manner, i.e. in a way which the practitioner finds acceptable in terms of e.g. ethical considerations. Professional practice knowledge is reflection on practice and, as such, experiential

knowledge whose function is to contribute to an improvement of the concrete everyday educational practice. Professional practice knowledge is not subject to additional divisions.

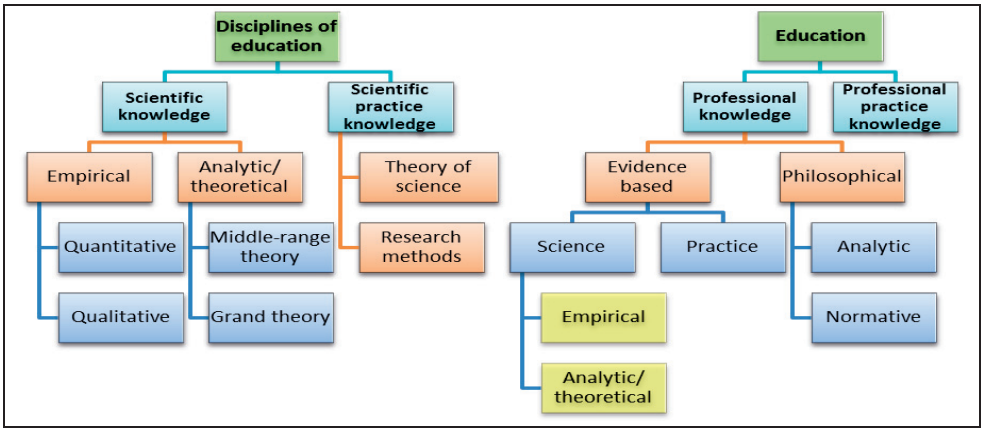

Figure 1. Overview of search and analysis categories for knowledge forms

We look to capture the content elements in mathematics and science using the second dimension concerning categories of content. A distinction is applied here between subject knowledge, subject didactic knowledge and knowledge about students, i.e. student knowledge.

- *Subject knowledge* (the subject's 'what') is the subject-specific knowledge which student teachers require in order to be able to teach a subject and to diagnose the difficulties pupils might have in learning a particular aspect of the subject.
- *Subject didactic knowledge* (the subject's 'why', 'how' and 'whereto') has to do with the knowledge about objectives and curricula (in general and more concretely), planning lessons, communication and teaching methods, and assessment (both internal and external).
- *Student knowledge* (the subject's who) includes developmental psychology (what can be expected at various age levels), learning theory (knowledge about human learning), and knowledge about social and cultural diversity (student diversity) (Tenorth, 1994), (Weinert & Helmke, 1997).

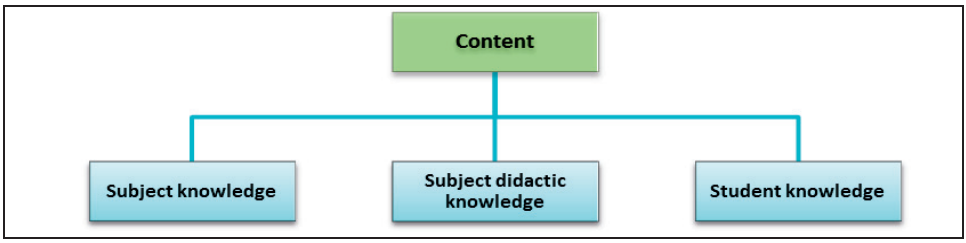

Figure 2. Overview of search and analysis categories for content

Validity and reliability

In order to ensure the validity of the study of teaching content in the four teacher education programmes, i.e. ensure congruence between the objectives of the study and comparison and the actual findings, the study only includes content which can be found in publicly available curricula and syllabi, examination reports, lists of recommended literature and the like.

In order to ensure a certain degree of reliability, we strove for a high degree of transparency in the compilation and analysis of the selected material. This was achieved by presenting the material in a bibliographical format (APA-standard) which makes it possible to find the same sources again such that descriptions and characterisations can be verified (Rasmussen, Bayer & Brodersen 2010). For each of the teacher education programs in question all titles are categorized. The titles in each category are counted in the presentation of the literature used in each of the programs. This categorization is further explained in an annex for each teacher education program, end finally the title can be found in the list of literature. To give an example: (Darling-Hammond & Bransford, 2005) is categorized as 'scientific knowledge, analytic/theoretical, middle range theory'. This categorization is explained as follows in the annex section: (Darling-Hammond & Bransford, 2005) is a state of the art anthology about so to say all aspects of the teacher profession, including curriculum design, educational policy, and professional development. All reliably anchored in actual research based knowledge. Finally the title can be found as a full bibliographical reference in the list of publications.

2. Teaching content in the teacher education programmes in the four countries

Ontario, Canada

At the Ontario Institute for Studies in Education (OISE), literature is listed in the syllabi for all the subjects that form part of the programme for the Bachelor of Education, a total of 75 items. Of these, 71 have been identified and analysed. Five titles are used in more than one subject.

At the level of the four overall categories of knowledge, seven entries are categorised as scientific knowledge, one as scientific practice knowledge, 37 as professional knowledge, and 26 as professional practice knowledge. As such, professional knowledge comprises the largest share of entries, but professional practice knowledge also represents a significant proportion of the total number of entries. These two knowledge forms combined comprise a 63 of the 71 entries.

The modest number of entries within the categories of scientific knowledge and scientific practice knowledge deal with empirical research findings (2), analytic/theoretical knowledge (1), and findings based on a combination of empirical and analytic/theoretical research (4). In the category of scientific practice knowledge, there is one item concerning research methodology and none on the theory of science.

In terms of professional knowledge, the majority are evidence-based (30 entries). Of these, 16 refer to both research and practice, while five refer only to research and nine only to practice. Six items deal with normatively oriented philosophical professional knowledge and one refers to both evidence and philosophy. Professional practice knowledge comprises the second largest share of entries (26).

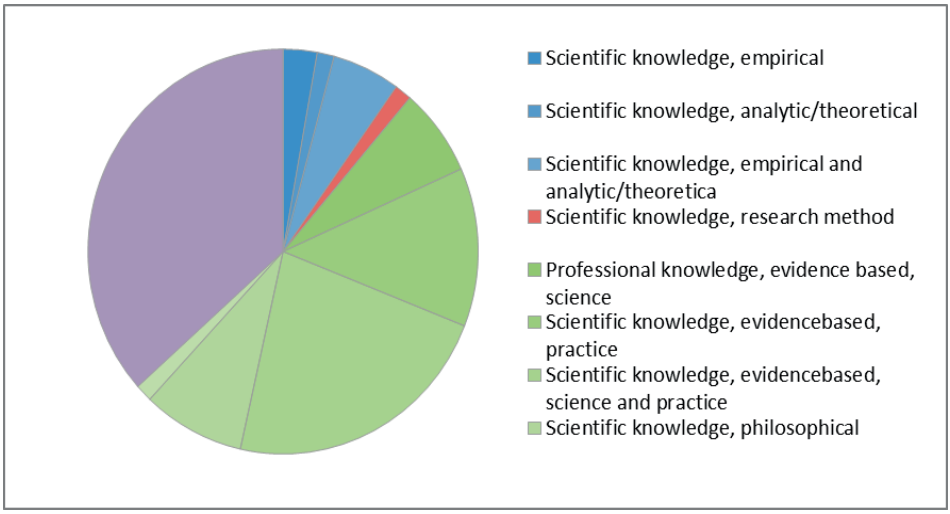

Figure 3. Ontario Institute for Studies in Education (OISE)

The teaching content of the Bachelor of Education focuses strongly on professional knowledge and professional practice knowledge. It would seem clear that an attempt to strike a balance between evidence-based professional knowledge and knowledge regarding what is possible in the classroom, i.e. professional practice knowledge, is central to the selection of the programme's teaching content. As a prerequisite for their admission to the programme, students have a four-year bachelor's degree, typically within two school subjects, and this explains why the content is dominated by subject didactics. Furthermore, the teaching content in the programme is clearly aimed at developing the performativity of the teacher-to-be and at providing guidance in successful teaching strategies. There is a particular emphasis on teaching classes with high levels of student diversity in terms of ethnicity and culture.

Denmark

At the three educational institutions included in the study, 373 items are reported from the subjects Educational Science, Psychology and General Didactics: of these, 199 have been identified

and analysed. For the subjects Science and Technology and Physics/Chemistry, 48 out of a total of 181 items have been identified and analysed. For Mathematics, 52 out of 113 items have been included. As such, a total of 299 items have been analysed in this study.

At the overall level, the content of the analysed material is divided between all four categories of knowledge: 30 entries are categorised as scientific knowledge, one as scientific practice knowledge, 249 as professional knowledge, and 11 as professional practice knowledge. Professional knowledge thereby comprised by far the largest proportion of items.

The 30 items within the category of scientific knowledge can be further distinguished between 20 entries based on analytic/theoretical research and ten entries based on empirical research. The single item belonging to the category of scientific practice knowledge concerns the theory of science.

The vast majority of items within the professional knowledge category are based on evidence-based research (141), while 25 refer only to practice. Philosophical professional knowledge is at the centre of 80 entries, 18 of which are both normatively and analytically oriented, 22 purely analytic, and 40 entirely normative. Professional practice knowledge comprises 11 items.

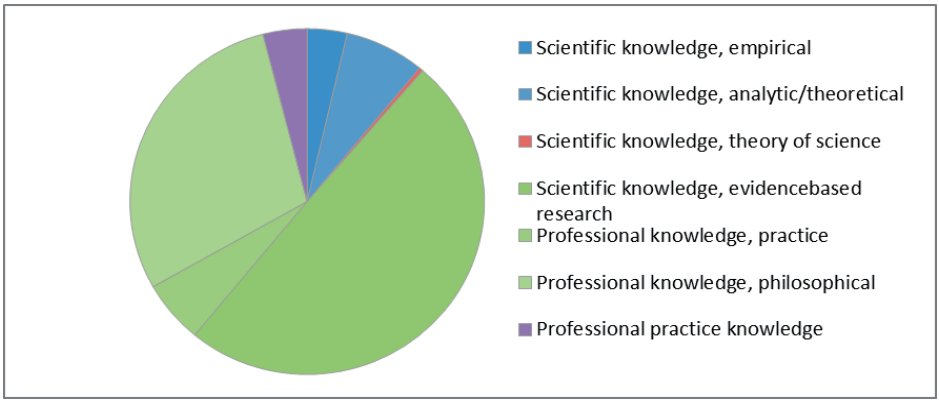

Figure 4. Denmark

The analyses of teaching material in the Danish teacher education programmes show a strong focus on professional knowledge. Scientific knowledge features to a limited extent while professional practice knowledge is minimally represented and scientific practice knowledge virtually absent. A considerable proportion of the material is based on research. The large number of items included at the three educational institutions (677) is also worth noting and can be seen as evidence of the relative pedagogical freedom given to instructors.

Finland

For the class teacher programme at the University of Helsinki (Grade 1-6), all compulsory items are included in the study (22). They are divided between just three of the four categories of knowledge: scientific knowledge, scientific practice knowledge, and professional knowledge. There are no examples of professional practice knowledge. At this overall level, three items are categorised as scientific knowledge, nine as scientific practice knowledge, and 16 as professional knowledge. Six titles are used in more than one subject.

Scientific knowledge in the form of results of empirical research comprises the smallest category with three entries. The second largest category is scientific practice knowledge of which the majority deal with research methodology (7–8), the remainder concerning theory of science (1–2). However, professional knowledge comprises the largest proportion of teaching materials included in the Finnish class teacher education programme. 12 items are evidence-based referring to empirical and/or theoretical research (primarily theoretical). Four entries are categorised as philosophically oriented professional knowledge, three of which have a normative basis.

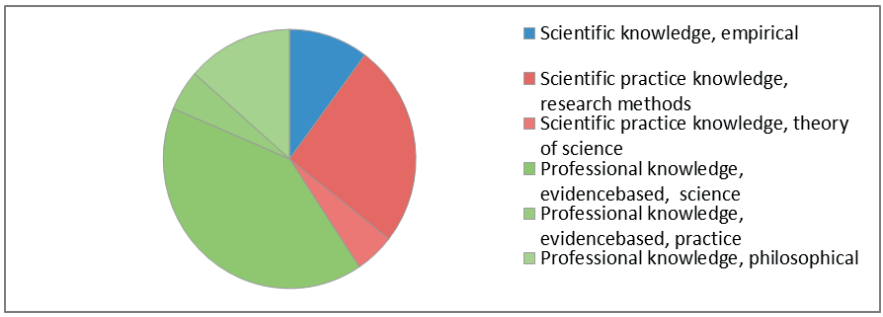

Figure 5. University of Helsinki, class teacher

For the subject teacher programme at the University of Helsinki (Grade 7–12), all compulsory items are again included in the study (25) and categorised according to the four overall categories of knowledge. Scientific knowledge includes four items, three of which can be placed within the analytic/theoretical middle-range theory sub-category. Scientific practice knowledge comprises four items, all dealing with research methodology. Professional knowledge includes seven items which are evidence-based referring to primarily theoretical and/or empirical research, in addition to two items based on evidence from studies of practice. A further four items are philosophical professional knowledge with a normative foundation. Finally, four items can be categorised as professional practice knowledge.

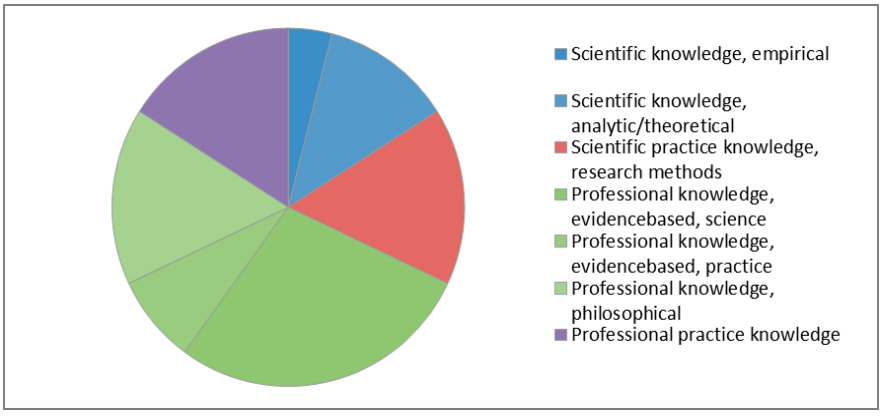

Figure 6. University of Helsinki, subject teacher

Many of the items included in the subject teacher education programme are the same as those found within the class teacher programme. However, the subject teacher education programme does differ from the class teacher education programme in that it incorporates professional practice knowledge comprising material which provides inspiration for assessing teaching and language learning.

Singapore

For the teacher education programmes at the National Institute of Education (NIE), 13 items are reported of which 11 have been identified and analysed. The majority of these items fall within the category of evidence-based professional knowledge (10). The teaching materials within these subjects are to a large extent instructive and in some cases almost prescriptive in relation to educational practice. Most of the items are founded on evidence-based knowledge from research (3) and from experimental and development work (6). The only exception is teaching material regarding students with special needs which is both analytic and normative in its philosophical orientation (1). It is noteworthy that the normative basis is drawn from political-administrative declarations of intent regarding Singapore as an inclusive society.

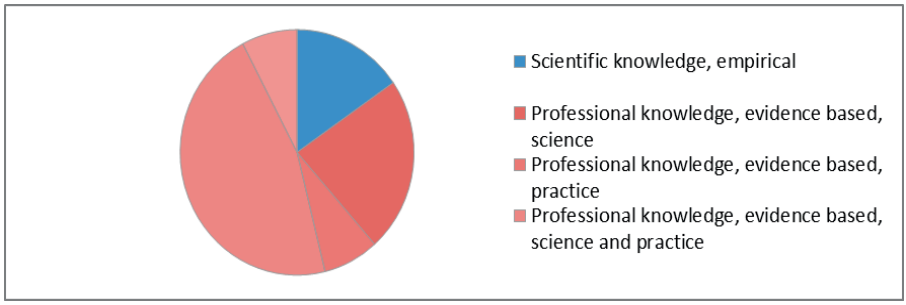

Figure 7. National Institute of Education (NIE)

The educational theory and practice subjects in Singapore are characterised by a general focus on questions with a direct relevance for the decisions teachers make when teaching: questions concerning e.g. planning lessons, classroom management and assessment. Meanwhile, relatively little attention is paid to e.g. questions concerning educational theory (Bildung) and other themes within the philosophy of education. When questions about goals and values are dealt with, it is primarily with reference to the country's current political priorities and only to a far lesser degree to the possible historical and philosophical foundations.

3. Comparison

The study of differences and similarities in the teaching content of the teacher education programmes in the four countries has been conducted first and foremost as a comparison between on the one hand, the four top-performing countries Canada, Finland and Singapore, and on the other hand, Denmark. However, differences and similarities between the individual countries are also dealt with to the extent that they offer a contribution to a more nuanced overall picture.

Differences and similarities in terms of knowledge base

The content in the selected subjects within the teacher education programmes in the four countries has been analysed on the basis of two theoretically-founded sets of categories. The first set of categorises teaching content in terms of different types of knowledge and has been applied to teaching materials in all three subject areas (educational theory and science, mathematics, and science). The second set of categories concerns the specific type of content and is applied to the mathematics and science subject areas.

Professionally-oriented knowledge

As a broad observation, a significant amount of the teaching content in the teacher education programmes in each of the four countries can be classified as professional knowledge. For the teacher

education programmes at OISE and the University of Helsinki, this is true of approximately half the entries analysed. The proportion of material falling within this category is even higher in Denmark and at NIE. Even though the teacher education programmes in the Top-3 countries are research-based and situated within a university environment, while the Danish teacher education programmes are development-based and situated at university colleges, the teaching content is in all cases clearly aimed at preparing students to enter the teaching profession and perform teaching work.

Only by further analysing the content of this professional knowledge do the differences between the four teacher education programmes become apparent. In order to do so, the category of professional knowledge has been further divided into the sub-categories of evidence-based professional knowledge and philosophical professional knowledge. *Evidence-based professional knowledge* is the type of knowledge which refers to the results of research or of action research and experimental and development work. *Philosophical professional knowledge* is characterised by providing normatively-based guidelines for practice.

Evidence-based professional knowledge

At OISE, the great majority of items within the category of professional knowledge are categorised as evidence-based professional knowledge (30), while a smaller number deal with philosophical professional knowledge (6). In Helsinki, one finds a similar distribution between evidence-based (12+9) and philosophical professional knowledge (4+4), especially in terms of the class teacher education programme. At NIE, evidence-based professional knowledge once again comprises the majority of entries (10), while only a single entry belongs within the sub-category of philosophical professional knowledge. Meanwhile, one finds a different pattern in the Danish teacher education programmes. As at NIE, professional knowledge comprises a considerable majority of the items, but the distribution between evidence-based and philosophically-oriented professional knowledge is quite different. In Denmark, evidence-based professional knowledge once again constitutes the largest proportion of the items classified as professional knowledge (106), but there are also

a considerable number of items within the sub-category of philosophical professional knowledge (63). As such, the Danish teacher education programmes differ from those in the Top-3 countries by including a weighty share of philosophical professional knowledge.

The teacher education programmes in the four countries do not differ in terms of their employment of professional knowledge, but a clear difference can be observed between OISE and NIE on the one hand and Helsinki and Denmark on the other in terms of teaching content. This difference is that the first two programmes largely employ teaching material combining research-based knowledge with practical experiences and guidelines for practice, while the programmes in Denmark and Helsinki tend to keep these two elements separate to a much greater degree, and moreover, only utilise a small amount of teaching material which refers to practice. The latter is especially true of the Danish teacher education programmes. In this regard, the difference is not so much between Denmark and the Top-3 countries, but rather between the teacher education programmes in Ontario and Singapore and those in Helsinki and Denmark.

Philosophically-oriented professional knowledge

Philosophically-oriented professional knowledge comprises a sub stantial part of the content in the Danish teacher education programmes, which is not the case in the other three countries. While philosophically-oriented professional knowledge is employed in these countries, it is only to a much lesser extent than one finds in Denmark. A considerable amount of the philosophical professional knowledge employed in Denmark is of a normative nature. Meanwhile, this is not the case in the other countries where items belonging to the analytic-philosophical professional knowledge sub-category dominate. There is therefore a clear difference between the teaching content of the teacher education programmes in Denmark and the Top-3 countries in terms of philosophically-oriented professional knowledge.

Professional practice knowledge

At OISE, a considerable number of items are included which can be classified as professional practice knowledge. No items are included within this category at NIE or in the class teacher education programme in Helsinki. The subject teacher education programme in Helsinki and the Danish teacher education programmes include only a modest number of items from the category of professional practice knowledge. On this point it is therefore OISE which stands out from the other countries' teacher education programmes.

Scientific knowledge

Scientific knowledge is incorporated within the teacher education programmes in all four countries, although only to a limited extent at NIE. Of the other three countries, scientific knowledge is most predominant at the University of Helsinki and least at OISE with Denmark falling somewhere in between. The incorporation of the scientific results of empirical research is modest in all of the teacher education programmes studied. In terms of the results of analytic/ theoretical research, a difference can be registered between the programmes at NIE, where this sub-category is not represented at all, and the programmes in the remaining three countries, where they are incorporated to a limited degree.

Scientific practice knowledge

Scientific practice knowledge, i.e. research methodology and theory of science, is well represented in the teacher education programmes in Helsinki with items concerning research methodology, while this type of knowledge is absent from the teacher education programmes in the other countries.

This overall picture of the distribution of knowledge forms among the teaching materials employed in the four teacher education programmes also more or less applies to the distribution within the three subject areas analysed: i.e. educational theory and practice, mathematics, and science.

Mathematics and science

In the subject areas mathematics and science, the teaching content has been further categorised according to whether it communicates subject knowledge, subject didactic knowledge and/or student knowledge. Here there is a clear distinction between the Top-3 countries and Denmark in that the content of the subject areas mathematics and science in the Top-3 countries only deals with subject didactic knowledge, while in Denmark, both subject knowledge and subject didactic knowledge are incorporated.

The best explanation for this difference is how the different teacher education programmes are structured. The programmes in two of the Top-3 countries are consecutive (OISE and NIE). In consecutive education programmes, subject knowledge within mathematics and science has been acquired prior to commencing the teacher education programme. In Helsinki, even though there is talk of a concurrent teacher education programme, teaching of subject knowledge takes place within the various disciplines' respective departments, meaning that the Department of Teacher Education only concerns itself with the subject didactic aspects (as well as general pedagogy and practice teaching). This is not the case in Denmark where teacher education programmes are entirely concurrent. As a result, the teaching of school subjects includes both purely disciplinary content and a subject didactic content. Danish teacher education programmes therefore also use textbooks concerning subject knowledge, which also applies to a certain extent at NIE. The textbooks employed within mathematics in the Danish teacher education programmes are aimed at maths teachers, while those employed within science (Nature and Technology, Physics/ Chemistry) are also used at upper secondary schools.

Student knowledge plays only a small part in the subject areas of mathematics and science and would therefore seem to belong within the educational theory and practice subjects, especially educational psychology and sociologically-oriented subjects such as School and Society (OISE), The Social, Historical and Philosophical Foundations of Education (Helsinki) or Learning and Teaching in a Social Perspective (NIE).

Differences and similarities in teaching content

A closer study of content of items within the four types of knowledge does not reveal a clear pattern in terms of similarities and differences between the examined teacher education programmes in the Top-3 countries and Denmark, or between each of the four countries.

Scientific knowledge

The teacher education programmes at OISE and in Denmark include the results of empirical research concerning increased student diversity within schools. This is a topic resulting from demographic changes, teaching of bilingual students, social diversity, poverty, children from socially disadvantaged backgrounds, and issues relating to educational opportunities and educational equality. The programmes also include scientific knowledge regarding individualisation and the development of children and young people within modern society.

The results of empirical research on teachers' work, the teaching profession and restructuring are likewise included, as are the results of subject didactic research in mathematics and science lessons.

Scientific practice knowledge

At the teacher education programmes at the University of Helsinki, a considerable number of items concerning research methodology are included – which is not the case in the other three countries. The goal is to provide aspiring teachers with the necessary knowledge and expertise to be able to perform methodical and systematic analysis of their own teaching and to understand and relate to research results.

Professional knowledge

Professional knowledge covers a wide array of topics relevant to the teaching profession. Student diversity is a central theme, in particular how teachers can cope with this diversity and the resulting complexity. Issues covered here typically include: differentiated teaching; teaching students with special needs; ethnic minorities and refugees; gender, racial and cultural differences; special needs education; inclusion; intelligence; and classroom management. Another theme deals with the development of children and young people and the formation of their attitudes, their socialisation, and theories of learning. Teaching comprises a third theme within the category of evidence-based professional knowledge with topics including: (effective) teaching methods and their relevance in relation to different subjects and different students; the development and structure of positive learning environments; and assessment. Finally, one also finds themes such as school development and educational systems.

Within the realm of philosophically-oriented professional knowledge, particular attention is paid to educational theory (Bildung) topics, action competence and theories concerning democracy and democratic education, as well as recognition, care and the forming of relationships. This philosophical, normatively-oriented professional knowledge, which primarily assumes the form of reflections on educational theory, is a hallmark of the Danish teacher education programmes.

Professional practice knowledge

Within the category of professional practice knowledge, one finds items passing on teachers' experiences with conducting courses of study in Danish and Mathematics; teaching of refugees; parent-teacher co-operation; and matters relating to information and confidentiality.

Summary

This comparative study does not offer proof of any clear difference between the Danish teacher education programmes and those found in the top-performing countries. While differences can be found in certain areas, in other areas there are greater differences between the four individual countries.

Professional knowledge comprises a significant proportion of the teaching content in the Top-3 countries as well as in Denmark. Teacher education programmes in each of the four countries are clearly professionally-oriented in this respect. Philosophically-based professional knowledge, much of which is normative in character, forms an extensive part of the body of professional knowledge within the Danish teacher education programmes, which is not true of the programmes in the Top-3 countries.

The teacher education programmes at OISE and NIE employ evidence-based professional knowledge referencing and combining research-based and practice-based knowledge. Meanwhile, in Denmark and at the University of Helsinki this type of knowledge for the most part solely references research. A similar difference applies in that the programmes at OISE and NIE more frequently employ literature combining research-based knowledge with practical guidance and experiences, while the programmes in Denmark and Helsinki keep these knowledge forms separate and only incorporate experiences from practice to a limited degree.

The teacher education programme at OISE is distinguished from the programmes in the three remaining countries by including a number of items from the category professional practice knowledge. The teacher education programmes at NIE are distinguished by incorporating only to a very limited degree the results of empirical research and by the complete absence of the results of analytic/theoretical research. The main distinguishing feature of the teacher education programme at the University of Helsinki is the inclusion of literature on research methodology within the category of scientific practice knowledge.

There is a difference between the institutions offering consecutive programmes (OISE and NIE) and those offering concurrent programmes (Helsinki and Denmark) in terms of the content of the subjects taught within the areas of mathematics and science. In the consecutively organised teacher education programmes, teaching content consists entirely of subject didactics, while the concurrent programmes also cover subject knowledge within these disciplines. The Danish teacher education programmes incorporate both subject didactic literature and subject knowledge literature in the same courses, while the programme at the University of Helsinki keeps the two areas of knowledge separate in subject didactic courses and courses within the subjects held at their respective departments within the university even though an integration of these two aspects intentionally are promoted.

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Does Initial Teacher Education Meet the Real Needs?

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ABSTRACT

A study was carried out among all students of teacher education at the Haapsalu College of Tallinn University in 2009 that indicated worries and concerns among third year students related to possible future discipline problems and classroom management. This anxiety regarding possible discipline problems and future difficulties in classroom management needed further study in order to improve teacher education in general.

The present article reviews a study, conducted in 2010, in which the aim was to ascertain what the main problems are for novice teachers at school; how they experience professional success; how they evaluate gained pedagogical knowledge and to what extent they have applied pedagogical knowledge and skills during their first two years at school.

Semi-structured questionnaires were given to eleven teachers who graduated in 2008 and 2009, in which open questions were related to initial teacher education and possible necessary changes needed in the training of teachers.

In their answers, novice teachers pointed out high workload as a difficulty, but in general the study showed that novice teachers cope

well with preparing and conducting lessons. Good relations between colleagues, students and parents were mentioned and valued by all respondents.

The survey also showed that novice teachers have good reflection skills and an active approach to school development issues.
According to the results of the survey, an improvement to the curriculum is recommended in order to take into consideration special needs and gender-based differences amongst learners.

Key words: initial teacher education, teacher education curriculum, first years of teaching, novice teacher

Introduction

The results of the OECD teacher study TALIS (Teaching and Learning International Survey) have indicated that, compared to other countries, Estonian schools stand out with time-efficient lesson planning and good disciplinary climate. Estonian teachers value students` participation and take into consideration the individuality of students. However, lessons tend to be too structured and students have few opportunities for creative tasks and research activities (TALIS2009)

Inappropriate behaviour in the classroom is still a concern and discipline issues pose significant problems for novice teachers (Bullough, 1997; Eisenschmidt, 2006; Fuller, 1989; Glatthorm, 1995; Hargreaves, 2003; Kagan, 1992)

According to the Estonian Teacher Education Strategy 2009–2013, teachers play the key role in education; they help to create the future of the Estonian school and its students. The success of the teacher in this role depends on the cooperation of different parties. Both the preparation and professional development of teachers are supported by the Estonian Ministry of Education and Research. They are also supported by state and local school owners, university teacher training schools and teachers' professional organizations.

The Haapsalu College of Tallinn University (a teacher training university) regards the teacher training strategy as its core activity, provides research-based training and supports the development of teacher's competencies described in the teacher's professional standard.

The aim of the study was to discover novice teachers' (ie. the graduates of Haapsalu College) main problems as well as their successful experiences; how they evaluate their acquired pedagogical knowledge and to what extent they have applied this knowledge in their first two working years. Semi-structured questionnaires were used as a research method. Based on the responses of the graduates of the year 2008 and 2009 of Haapsalu College, it was determined what kind of ´bottlenecks´ exist in initial teacher education and what kind of changes are needed in the training of teachers.

The article gives an overview of the teacher´s professional standard, teacher education in Haapsalu College of Tallinn University and previous research on the same topic. In the empirical part, novice teachers´ ideas and opinions about their ability to cope in the teaching profession are compared and analyzed.

1. Theoretical overview of the Estonian teacher's professional standard, teacher training and induction year

1.1. Teacher's professional standard in support of the teacher´s professional development

In the Estonian Teacher Education Strategy 2009–2013, the teacher´s professional development is seen as a continuous process. The strategy states that in 2013, schools in Estonia have dignified, motivated and competent teachers. They work and plan their professional development in line with the following principles: teachers enjoy a dignified social position; teachers are learners who can plan and evaluate their professional development; teachers support the development of their pupils; teachers offer guidance and

teach learning skills; teachers are experts in their subjects and integrate different fields of knowledge; teachers use the help of their colleagues and parents in supporting their pupils' development.

The teacher's competence has been described differently in many countries, because the circle of people dealing with teacher training has widened substantially and clearer agreements are needed. In Estonia, the description of the teacher's competence has been given in the teacher's professional standard Teacher V (Õpetaja V, 2005), which covers 8 important domains:

- planning and management of learning processes – a teacher ensures systematic activity both within an individual lesson and in the course of the whole school year;
- cooperation – involves learners, parents and colleagues in the planning of studies;
- creation of learning environment – creates a physical, mental and social environment that supports learning;
- raising motivation – finds out the levels, abilities and interests of learners and takes these into consideration;
- guided learning – guides learners to conduct their own learning;
- communication – creates an atmosphere of collaboration and mutual understanding;
- analysis and evaluation of learning processes and learners' development – analyses the participation, development and results of the learner;
- the professional growth and self-analysis of teachers – self-analysis is the basis of development.

The above-mentioned eight domains emphasize the role of the teacher in creating a favourable learning environment and applying a student-centred teaching approach. It is also essential to have good skills for cooperation and communication, to involve students and their parents in the evaluation and planning of the learning processes. Some of these competencies are not visible in the teachers' everyday work; teachers are not conscious of them and do not implement them. Therefore, more attention in initial training should be given to the self-evaluation skill.

1. 2. The Estonan teacher in an international comparative study

The OECD´s teacher study TALIS (Teaching and Learning International Survey) is the first international comparative study whose aim was to analyse the factors that influence effective instruction. According to the study, when compared to other countries, Estonian schools spend more time on efficient learning and teaching, as well as on creating a positive disciplinary climate in the classroom.

Estonian teachers' pedagogical convictions are among the most progressive and contemporary, although teaching methods applied in the classroom are more traditional than in other countries.

Estonian teachers value students' participation and creativity and they focus on the individuality of students; however, subject lessons tend to be too structured and students lack opportunities for self-initiated research activities and creative tasks (TALIS, 2009).

The research gives feedback for the development of the teacher education strategy in the future. Who is a good teacher in practice? This question needs wider public recognition. Teachers need support from colleagues and teachers' networks in order to be more involved in school innovation. Also new assessment criteria should be implemented (TALIS, 2009).

Although the results of TALIS showed that Estonian schools have a good disciplinary climate in classrooms, other research results show that discipline issues are among the main problems for novice teachers (Eisenschmidt, 2006).

1.3. The induction year – a support program for novice teachers

Since 2004, according to the *Framework Guidelines for Teacher Education,* novice teachers who have just graduated from teacher training must participate in the induction year activities (Õpetajate koolituse raamnõuded, 2000).

The aims of the induction year are to support novice teachers´ adaptation to the educational institution as an organisation, to

further develop the competencies acquired in initial training, and to provide support in solving problems caused by the lack of experience. During the induction year, a novice teacher is supported by a colleague – a mentor (Eisenschmidt, 2006).

Every year the monitoring of the induction year is carried out, which analyses the ability of novice teachers to cope and gives essential feedback to teacher training institutions to develop their curricula.

The theoretical basis for the implementation of the induction year is a concept developed by Eisenschmidt (2006), which takes into consideration the trends in Estonian teacher education.
The teacher`s professional development is continuous; therefore it is important to pay attention to the induction year and in-service training of teachers. The teacher´s development could be discussed from three different dimensions- personal, contextual and support to and for the teacher.

The personal dimension is related to the development of a teacher as an individual human being- the development of his/her emotions, motivation, self-confidence etc.
The contextual dimension is connected with professional growth and the social dimension takes into consideration the adaptation to the school environment, relations between colleagues, administration and parents (Villegas-Reimers, 2002; Eisenschmidt, 2006; Vonk, 1983; Glatthorn, 1995; Hargreaves, 2003).

Two important elements in the concept of self affect the development of a teacher- the ideal model of a teacher versus the personal self-understanding of being a teacher. (Kagan 1992) Both elements need analysis and reflection.
The above-mentioned dimensions and factors, which form the theoretical basis for the Estonian induction year program (Eisenschmidt, 2006), have been combined and illustrated in the following figure (Figure 1).

Figure1. Dimensions and domains of teacher's professional development (Theoretical frame of induction in Estonia, Eisenschmidt, 2006)

The importance of the dimensions has also been pointed out by Eisenschmidt (2006) According to her research most of the attention is concentrated on the formation of professional competencies, which are essential in order to cope in the classroom. At first, novice teachers adapt to their new organization and their colleagues and start acting according to the school culture. Later they begin to realize their personal development – the development of self-consciousness and self-conception, part of which is certainly connected to one´s profession.

The study of Poom-Valickis (2007) provides grounds to believe that the accumulation of experiences during the induction year also leads to the growth of teaching skills of the novice, while increased competence and coping as a teacher in turn contribute positively to the self-efficacy beliefs of the novice.

Based on the results of the monitoring and above-mentioned studies, proposals were made for changes in initial teacher education, the implementation of the induction year and continuous in-service training.

1. 4. About teacher education in Haapsalu College of Tallinn University

Teacher education is research-based and supports the formation of the teacher´s competencies described in the professional standard (The Estonian Teacher Education Strategy 2009–2013).

The main objectives of the class teacher´s curriculum in Haapsalu College of Tallinn University are the following:

- to create opportunities for the growth of ethical and active-minded teachers;
- to support readiness to develop learners with different needs and personal characteristics;
- to support the development of pedagogical-psychological, subject and subject didactics- related competences;
- to develop readiness to shape the learners' working habits and behaviour;
- to support readiness to maintain and develop the learning motivation of students;
- to develop readiness to cooperate with one's colleagues and the parents of learners;
- to develop readiness for lifelong learning.

The main focus is on the personal development of future teachers and how they give meaning to their learning experience.

In teacher training, flexible models are implemented which take into consideration the educational system and students' individualism. The initial teacher education curricula developed at universities enable acquisition of the qualifications needed to teach several subjects at school. (In Haapsalu College, class teachers also acquire a minor of "Teacher of the English language in basic school") Teachers start

pedagogical studies at the first stage of higher education. In initial teacher education, lecturers and school practice supervisors apply methods which help future teachers develop their self reflection and competencies necessary for their professional development.

The expected learning outcomes of the class teacher´s curriculum in Haapsalu College state that the student:

- has knowledge about the child's development and learning;
- can use this knowledge to support learners with different abilities and personal characteristics;
- can plan one's teaching and can analyze it according to the set goals;
- has knowledge about the attitude of pupils (I and II school stage) toward their studies and about the factors affecting their behaviour;
- can create a motivational learning environment for pupils;
- can cooperate with colleagues and parents.

Attention is paid to the content in educational studies and its implementation into practice, to guarantee the student teachers` professionalism, to reinforce the role of pre-service education in the university and to develop in-service training for academic staff. Pedagogical practice proceeds from the idea that it is a lengthy process to become a teacher, where a support system and guidance play an important role.

The implementation and development of the curriculum encompasses constant analysis and research. In 2009, a survey was conducted among the students of Haapsalu College to identify the level of readiness to start working as teachers and the associated fears. The results showed that the biggest fear among third year students was connected with discipline and classroom management issues.

According to the survey, the students from the first year did not identify a difference between the ideal and the experienced situation.

Most students expressed high intrinsic motivation to become a teacher throughout all their years of study, but worries continued to grow among second and third year students. The more they learned, the more worried they seemed to become.

The current research was made as a continuation to a 2009 survey of the students of Haapsalu College (Eisenschmidt, Kasesalu, Löfström & Anspal 2009) that dealt with the readiness of students to start working as teachers and their fears about their future profession. In initial teacher education, teacher educators should pay attention to student motivation in becoming a teacher and their first experiences in their practice.

2. Method

The survey was based on the Eisenschmidt (2006) model applied for an induction year. The coping ability of teachers in the first working year(s) is affected by a number of different factors. Using the qualitative method and open questions in the form of a semi-structured questionnaire, the survey analyzed to what extent previous studies support the development of a teacher and which issues need more attention in the future. The following aspects were dealt with in the study: practical teaching skills of the teacher, communication and cooperation with colleagues, pupils and their parents and personal development (formation of self-concept).

The aim of the study was to determine novice teachers´ main problems and their success experience; how they evaluate their acquired pedagogical knowledge and to what extent they have applied this knowledge in their first two working years. The aim was also, based on study results, to further develop initial teacher training at Haapsalu College.

The respondents were asked to answer the following questions:
How have you managed in the first working years at school?
What have you succeeded in? Why?
What has caused problems? Why?
What do you lack as a novice teacher? Why?

How has the knowledge acquired in initial teacher training supported you in your practical work?

The construction of open questions aimed at finding out and clarifying the most successful aspects of a novice teacher`s everyday work and the range of different problems related to novice teachers` work. Also, it was important to ascertain how novice teachers acknowledge and value the teacher training received and how they see the benefit in their practice.

The research was carried out among the graduates of Haapsalu College who finished university in 2008 and 2009. The questionnaires were answered in May 2010.

The respondents were sent an email with questions and were asked to reply within one month. 15 emails were sent out, 11 novice teachers replied (4 first-year and 7 second-year novice teachers). In order to ensure the anonymity of the respondents, specific examples from interviews were given by pseudonyms.

2.1. Data analysis

A qualitative approach was chosen to interpret the responses; the basis for analyzing was also Eisenschmidt`s frame model (2006).

The data was collected and initially analyzed by four authors. To begin, every author checked all responses, identified dimensions in the text (professional, personal and social dimensions) and underlined supporting words and expressions (*very well, good, etc.)*. During data processing the texts were then segmented into groups sharing a common frame of reference, which were categorized as follows: professional challenges, expectations, school environment, relations.

The authors then compared their analysis and discussed the results to ensure validity.

3. Research Results

The teacher`s answers revolved around the professional, social and personal dimensions of a teachers` professional development (see Figure 1).

3.1. Social dimension

Most answers given to the questions about problems or success were connected with the social dimension. Although there was no specific question on this, the responses highlight the importance of social relations for novice teachers. Since good relations give positive emotions and a feeling of success, it was expected that success is defined, among other features,also by good relations with pupils, colleagues and parents. All respondents valued good relations with students: *I am alive and have good relations with pupils* (Katrin), *I matter to them;* with colleagues *I have been well accepted by my colleagues* (Tiina) and with parents: *I "click with the parents* (Triinu).

It is understandable that negative relations result in the feeling of failure or discontent: *I felt ill at ease because of the colleagues who wanted to take advantage of me as a novice teacher and wanted to give me assignments they did not want to do themselves* (Ülle).

In the support of novice teachers one of the first important steps is to create collegial relations, which promote cooperation between teachers. The novice teachers who participated in the survey did not really mention the word ´cooperation´ but instead pointed out good relations with their colleagues that they regarded as supportive for their professional development.

Haapsalu College focuses on preparing future class teachers to cooperate with their colleagues and the parents of pupils.

Positive relations may be developed by the culture of the school where the novice teacher has been well accepted and supported; especially valued is the presence of a good mentor. The lack of a mentor was also pointed out as a negative feature. The respondents expressed the need to have a more experienced colleague to advise and

support them, especially in details that are sometimes not discussed in the university or are specific to a particular school environment. *I had a good mentor, which provided very important support for me* (Anneli). Mentors are not available in all schools at present.

Just as success in professional relations is important for novice teachers, coping with challenges in relationships and acquiring good conflict resolution skills are also beneficial and important for a future teacher.

3.2. Professional dimension

The respondents' evaluation of their ability to cope in the professional dimension was quite positive. Attention was paid to almost every professional competence, especially lesson planning and motivation. According to respondents, preparing and planning seems to be very important, as we would expect from novice teachers who lack experience at the beginning of their career.

Conducting lessons was mentioned several times, acknowledging the importance of a teacher's role in creating a good learning environment. *For me the most important thing is to create a pleasant learning environment for pupils (pupils want to come to school and are motivated to learn)* (Reet).

The respondents quite often use study materials, indicating that they value initial studies and see their practical benefits. *I got help from my lecture notes on the subject of didactics. I use different extra assignments and methods and make changes in these according to the need* (Veiko).
The teachers evaluate and know the importance of self-analysis. Good reflection skills became evident in most of the answers to the questions: *Self-analysis is important for me. Especially in the first year I analysed every lesson (in a different notebook). I got the skill of analysis from university. However I´ve only recently started to fully realise what´s going on in the classroom. You cannot learn that in theory; you need practice* (Reet).

The area of classroom management is mostly connected with discipline problems, being in line with earlier studies made at Haapsalu College, which highlight fear amongst students related to future discipline problems. Teachers also point out the importance of being consistent which supports classroom management. : *I had problems with keeping order.*(Anne). *There was constantly someone whom I had to discipline ...* (Krista) *In the boys´ class I feel that I have a lack of knowledge about gender-based teaching ...* (Triinu) *Consistency is important; one reason that I have failed in discipline is lack of consistency (*Ott)

Therefore, it seems that further development of classroom management skills, focusing on special needs of students and discipline issues could be included in curriculum improvement.

According to the results of the survey, one recommendation is to focus more on methodology for gifted or weaker students, in future curriculum development.

3.3. Personal dimension

The personal dimension is connected to the personal development of novice teachers. The novice teachers who participated in the study predominantly feel good and are pleased with their profession. A positive feeling creates confidence in actions.
Many teachers mentioned good feelings and self confidence: *I am extremely happy with my choice* (Triinu). *I feel good and secure; I have managed well* (Veiko). *I do not regret my choice of profession so far. I am very pleased* (Eha).

The reasons for novice teachers´ contentment might be connected to the experience they have acquired during their studies at university, observation and main school practice. *I have completely blended into the teaching staff; my ideas and proposals are taken into consideration* (Krista).

Half of the participants mentioned difficulties and heavy workload, especially with bureaucracy and drafting documents. *Extremely exciting, but at the same time it was the hardest time (had to get used to the new system and changes)* (Ülle) *Arduous, I had to assert*

myself. Looking at the workload, I can be pleased with myself (Anne). Inconsistency was pointed out as one problem. *You have to be consistent. Consistency should be there both in the learning process and in demanding discipline.* (Veiko, Mare, Krista).

Novice teachers should be aware of the fact that when they start work they will need to adjust to different new situations and changes, which can be difficult. Although some difficulties and the heavy workload were mentioned by the respondents, there was also a sense of real pleasure and satisfaction about the chosen profession.

Supporting students of teacher education in the development of their personalities is a big challenge for any curriculum.

4. Ideas for consideration

The knowledge acquired during studies at university supports novice teachers in their professional work, where it is important to rely on didactical materials, to analyse one´s work and to motivate pupils. Different study materials, (educational games, worksheets, field trips, observations, etc.) created in lectures of subject didactics, give novice teachers courage and self-confidence to plan and conduct their lessons.

The previous study (Eisenschmidt, Kasesalu, Löfström & Anspal, 2009) showed that students were concerned about if and how they would cope with the teaching profession. The current research actually showed that novice teachers cope well with preparing and conducting lessons. Skilful planning of lessons has usually excluded discipline problems, which are feared most by novice teachers.

Contrary to Poom-Valickis´ study (2007) which showed that self-reflection needs more attention, the current study showed that self-reflection is a habitual activity for novice teachers; they acknowledge the importance of reflection skills and demonstrate usage.

As a result of the current study, the strengths of the class teacher's curriculum (good professional preparation, especially lectures of didactics and workshops) of Haapsalu College of Tallinn University were confirmed. The studies in the college are tightly connected to

pedagogical practice in comprehensive schools, in which students are guided by practice supervisors who have obtained special training. One of the strengths of the curriculum is also the students' reflection skill, which might be due to the fact that study groups are small and the lecturers / supervisors are able to provide thorough feedback to each student.

Although novice teachers consider it important to create good relations with their colleagues, they also see their role in participating in the school development (the development of the school curriculum, the compilation of syllabi and teachers´ work plans). Therefore the main objectives and study results of the class teacher's curriculum in Haapsalu College of Tallinn University need to be amended so that they stress the teacher's ability to participate in the designing of development plans and school curricula and in the promoting of educational life both in and outside school. Good inter-personal skills, conflict management etc. should be supported.

From the point of view of the curriculum, it is also important to turn more attention to the consideration of special needs (e.g gifted pupils) and gender-based peculiarities of learners. In cooperation with practice schools more attention should also be given to the introduction and filling in of school documentation.
The importance of mentoring became evident in the study, which should also be considered in future networking of teachers.

In conclusion, the present study gives an overview of the strengths and problems experienced by the graduates of Haapsalu College in their first working year(s). In order to conduct exhaustive research, more thorough interviews should be carried out, which would give detailed information for the development of the curriculum in Haapsalu College of Tallinn University.

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What is Subject Content Knowledge in Mathematics? On Student Teachers' Competence, Confidence, Attitudes and Beliefs in Relation to Teaching Mathematics

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ABSTRACT

This paper builds on the findings of recent studies into the levels of mathematical competence and confidence of primary student teachers. The data from these studies were based on the use of an online assessment tool and surveys of the students who participated in its use. The findings highlighted that students' subject knowledge was often lacking when assessed using the online assessment. It was also found that those students possessing more advanced mathematics qualifications were less likely to display competence in primary mathematics and that their confidence levels in the subject were lower than predicted. The reasons for such findings are discussed in relation to beliefs about the nature of mathematics and associated attitudes towards it as a subject. This analysis is based on the consideration of opposing views of the nature of the subject which we identify as "mathematical fallibilism" on the one hand and "mathematical fundamentalism" on the other. Based on this analysis, a survey tool was designed and administered to 148 student teachers in the Autumn of 2010 in order to explore their attitudes and beliefs in relation to

mathematics. The results of this follow-up study of attitudes and beliefs are discussed in relation to the earlier findings on confidence and competence.

Key words: mathematics content knowledge, mathematics attitudes and beliefs, online assessment, teacher education, teaching mathematics

Introduction

The importance of the teachers' role in relation to the confidence shown by pupils was highlighted nearly thirty years ago in the Cockcroft Report which emphasised the way in which a teacher in every lesson conveys, even unconsciously, a message about mathematics which will influence the pupil's attitude. The studies carried out by Henderson and Rodrigues (2008) and Henderson (2010) highlighted issues related to the confidence and competence of a significant proportion of students teachers of mathematics and the findings from these studies are discussed in the first part of this paper. These findings led us to consider the importance of teachers' beliefs about the nature of mathematics and also drew attention to the contested nature of mathematics itself as a discipline e.g. a strict mathematical formalism, as discussed by Lakatos (1976) in contrast to a more informal and fallibilistic view. This discussion on the nature of mathematics forms the next section of the paper. In particular we saw the former as being distorted into a form of "mathematical fundamentalism" that can be characterised by absolutism, dogma, strict procedures, rule following and right and wrong answers. As a result of this analysis we became interested in exploring the extent to which student teachers bring with them attitudes based on such views and this forms the focus of the next stage of the paper. Finally we discuss the findings from these two phases of study and consider some of the implications for the teaching and learning of mathematics.

Student teachers' competence and confidence in teaching mathematics

Initial teacher education seeks to produce teachers whose pedagogical skills are such that they can create effective learning situations that will improve understanding in their pupils. In relation to mathematics, Ma (1999) argues that the type of pedagogical content knowledge (PCK) (Shulman 1986) necessary to achieve this is only possible if deep, broad and thorough subject matter knowledge (SMK) exists (Shulman 1986). It would seem obvious to state that in order to be able to teach a subject effectively knowledge of that subject is a pre-requisite. Anecdotally we may know teachers who are excellent mathematicians but whose teaching skills leave a lot to be desired. The converse of this is that some teachers whose mathematical skills are not well developed can still teach the subject effectively. There is evidence to refute this; teachers' knowledge of a topic influences the questions they ask their pupils (Bennett, Carré and Dunne 1993); Simon and Brown (1996) found that "gaps in subject knowledge undermine the common rationalisation of teachers' authority in the classroom" (cited in Brown, Askew, Baker, Denvir and Millett 2001); feelings of inadequacy over SMK have been shown to lead to an over-reliance on commercial schemes (Millett and Johnson 1996); Rowland, Martyn, Barber and Heal (2000) reported that student primary teachers without strong subject knowledge are likely to perform poorly in mathematics teaching when assessed, even towards the end of their training. As Shulman (1986) asked,

> "What prices are paid when the teacher's subject matter competence is itself compromised by deficiencies of prior education or ability?" (p.8).

Against this background an initiative was taken to address the limitations of SMK on the part of student primary teachers at a UK University through the creation of an instrument known as the Online Maths Assessment (OMA) which aimed to identify and address deficiencies in mathematics content knowledge and skills. It also aimed to raise students' awareness of the mathematics topics in which proficiency was sought, as well as the levels of competence required for the primary school. The first study to come from this (Henderson & Rodrigues 2008) reported that first year student

primary teachers' levels of competence and confidence could not be guaranteed by the mathematics entrance level qualifications for primary teaching that currently exist. What is more it was found that those students' competence levels in primary mathematics fell as they proceeded along the mathematics qualifications hierarchy, with 73% who possessed the Scottish Higher scoring below 80% in the assessment compared to 61% of those with the lower Standard Grade/Intermediate 2 qualification. This resonates with Bennett and Carré's (1993, p.61) work which reported that "there is virtually nothing to distinguish [the teaching performance of] mathematicians and other in teaching mathematics" and Askew, Brown, Rhodes, Johnson and Wiliam (1997) who found that teachers did not have to hold advanced mathematics qualifications to be effective. When confidence was considered in the Dundee study (Henderson and Rodrigues 2008) it was found that three quarters of the Standard Grade/Intermediate 2 group and half of the Higher group reported having little or no confidence in their skills.

When the OMA was rolled out across all four years of the undergraduate Bachelor of Education (BEd) programme it was apparent that there was a pattern to the levels of engagement displayed by the students which placed them in one of the following four groups[1]:

A. Those who had 1–2 attempts and stopped at or just over the threshold (80% or 83%);
B. Those who had multiple attempts (3 or more) and stopped at or just over the threshold (80% or 83%);
C. Those who had multiple attempts and scored more than 5% over the threshold (87% or over);
D. Those who had 1–2 attempts and scored more than 5% over the threshold (87% or over).

In order to investigate this further a second study was conducted with a sample of student primary teachers (n = 80) (Henderson 2010) in an attempt to answer the following research questions:

[1] It should be noted that the number of questions in the OMA is the reason that the percentages jump from 80% - 83% - 87%, rather than in single percentiles.

1. Why do some students stop at a tutor-determined, pre-set threshold and others improve on it?
2. What factors are associated with differences in how students engage with the OMA?

The findings from this study revealed particular group characteristics, highlighted issues related to subject knowledge and affirmed the importance of the affective dimension. Each aspect is discussed in the following sections.

Group characteristics

Ideally all mathematics teacher educators would want their student teachers to belong to Group C. The students in this group, despite sometimes having mixed experiences of mathematics when they attended school, were motivated enough to continue attempting the OMA until they were satisfied with their above-threshold scores. In addition, they reported good or growing levels of confidence in their mathematics ability.

The Group A students did not appreciate that achieving 80% in the OMA highlighted the fact that there was 20% of required knowledge and skills they did not possess. They made excuses about why they stopped when they did, often citing that as they had reached the threshold, they had done what they were asked to do. Complacent is perhaps a better description of this group. In her study of 432 post-graduate student primary teachers, Goulding (2003) confirmed the existence of such a group following an audit of their mathematics knowledge and skills.

The Group B students needed several attempts to get to the threshold but then stopped. The fact that they needed multiple attempts should have suggested to them that their knowledge and skills required further revision. However, they, like the students in Group A, made excuses for not continuing beyond the threshold. The Group C students, on the other hand, were committed to achieving the best results they could and invested time and effort into so doing. Unlike students in the other groups, those in Group

C did not use the excuses of shortage of time or stress for not engaging with the OMA. Instead they identified with the importance of improving their knowledge and skills.

Group D students had achieved high scores in a minimum number of attempts so it was expected that students in this group would have high levels of confidence given that their competence was not in doubt. It was therefore interesting to discover that these students were quite mixed, confirming a previous study, in which high levels of competence were also not always accompanied by confident attitudes (Henderson and Rodrigues 2008). Assuming that students who achieve a high score on a mathematics competence test are secure or confident in their knowledge or skills cannot be taken for granted. It does appear to be the case, however, that a positive attitude and engagement in improving OMA scores can lead to increased levels of confidence and motivation by students to improve further.

Subject knowledge

This study was undertaken after it had become apparent that there were concerns about students' mathematics knowledge and skills. In their study Hill, Rowan and Ball (2005) reported that knowledgeable teachers may provide better mathematical explanations, produce better representations of concepts, hear and understand their pupils' responses the better to direct them in their learning, and have more understanding of how the different branches of mathematics connect. In other words, these knowledgeable teachers have made the transformation from SMK to successful PCK.

Instead of being able to rely upon a sound knowledge base, it has become increasingly necessary in teacher education to address the content as well as the teaching of the content, yet there is little time in such courses to make up for any deficit in content knowledge. The onus is then placed on the student to address any deficiencies in SMK and, as this study has shown, the motivation for students to do so can be mixed. It appears to be the student's own realisation that spurs them from the conscious incompetence stage to address inadequacies in their knowledge so that they can reach the conscious competence stage (Luft and Ingham 1955, cited in Perkin

1999). This appears to be the effect that engagement with the OMA had on the Group C students. This study has shown that the use of a tool such the OMA can go some way towards improving SMK, with the added advantage that this improvement may lead to increased levels of confidence, resulting in increased motivation to engage further with it.

Affect

In addressing the knowledge, beliefs and attitudes of mathematics teachers, Ernest (1989) distinguished between the cognitive outcome of knowledge and the affective outcomes of attitudes and beliefs in teacher education, going on to say that teacher educators must differentiate between the two. As posited by Szydlik, Szydlik and Benson (2003) the prevailing beliefs of student teachers about mathematics are hindering positive and productive mathematics learning. This study drew attention to link between the acquisition and improvement of mathematics knowledge and the attitudes and beliefs that student teachers hold. It can be posited that the Group C students' continued engagement with the OMA led to success which in turn led to further attempts. So while this study set out to improve the SMK of student primary teachers, it became apparent that the reasons for the different patterns of engagement with the OMA were influenced by affective factors as much as cognitive ones, although improvement in the cognitive, that is, increases in OMA scores, often led to improved confidence and attitudes.

Accordingly it was decided to focus attention in the second phase of this study on student teachers' beliefs and attitudes towards the subject and on the nature of mathematics itself. In our view such affective aspects have been neglected in the process of reform over recent decades. Furthermore we argue that these findings point towards the importance of teachers' beliefs about the nature of mathematics in the formation of such attitudes. In particular we are interested in previous research which shows that differing conceptions on the nature of mathematics have an influence on the ways in which teachers and mathematicians approach the teaching and development of mathematics (Thompson 1984; Cooney 1985). This brings us to questions related to the nature of mathematics itself.

On the nature of mathematics

If we look to the history of the development of the discipline of mathematics, it can be seen that the nature of the subject itself has long been contested. This has profound implications for school mathematics - for example is it an abstract subject for an elite or should mathematics be for all? In the analysis contained in his seminal text Lakatos (1976, p 5) distinguishes between the deductivist approach and the heuristic approach which he describes as "the logic of proofs and refutations". With regard to the former it is argued that Euclidean methodology developed a certain obligatory style of presentation which is described as deductivist style:

> 'This style starts with a painstakingly stated list of axioms, lemmas and/or definitions. The axioms and definitions often look artificial and mystifyingly complicated. One is never told how these complications arose. The list of axioms and definitions is followed by carefully worded theorems. These are loaded with heavy-going conditions; it seems impossible that anyone should ever have guessed them. The theorem is followed by proof'.
> Lakatos (1976, p 142)

Mathematics is compared with a conjuring act according to this "Euclidian ritual" and the student is obliged to accept this without asking questions about the underlying assumptions. In this deductivist style, under which all propositions are true and all inferences valid, mathematics is presented as an ever-increasing set of eternal, immutable truths. We argue that it is not simply the dominating influence of this deductivist approach which is a main problem for the teaching and learning of mathematics in schools today but rather the way in which this has become distorted into a form of fundamentalism that is akin to religious fundamentalism.

We argue that such a fundamentalism promotes an authoritarian view of mathematics, which hides the struggle and adventure involved. In turn such authoritarianism is the very antithesis of the conditions needed to foster independent and critical thinking. An alternative perspective, which we describe as mathematical fallibilism (Lakatos 1976), argues for a view of mathematics as

human activity and that it is this human mathematical activity that produces mathematics. However when it is presented in textbooks this product of human activity "alienates itself" (ibid, p146) from the very human activity, which produced it. The mathematics educator Geoff Giles (Giles, 1982, p37) used the expression which captures the essence in very vivid for us of dead geometry "entombed in text books". This stands in stark contrast, for example, with the present day opportunities afforded by the use of dynamic geometry software to enable students to independently study the invariant (unchanging) relationships between points, lines and circles, forming their own conjectures and testing them out visually, which is the very essence of geometry. Such diametrically opposing viewpoints about the nature of mathematics are captured in Table 1 below:

Table 1. The contested nature of mathematics

Mathematical fundamentalism	Mathematical fallibilism
▪ Infallible and authoritarian	▪ Fallible and liberating
▪ Dogmatic and absolutist	▪ Growth and change
▪ Irrefutable and certain	▪ Refutable and uncertain
▪ Strict procedures	▪ Multiple solutions
▪ Rule following	▪ Creative reasoning
▪ Right and wrong answers	▪ Errors and mistakes
▪ High stakes testing	▪ Evaluation & self assessment
▪ Boring	▪ Engaging
▪ De-motivating	▪ Motivating
▪ Fear and anxiety	▪ Enjoyment and fulfilment
▪ Alienation from the subject itself	▪ A creative human activity

Accordingly this table was used as the basis of the questions in a survey of student primary teachers in relation to their attitudes and beliefs towards and about mathematics in the Autumn Term of 2010.

On student teachers' beliefs about and attitudes towards mathematics

Methodology

Primary education programmes at the University of Dundee are highly over subscribed, with students drawn from across Scotland and the rest of the UK, so it can safely be claimed students attracted to the teacher education courses are of the highest calibre. The purpose of the study was to investigate student primary teachers' attitudes to and beliefs about mathematics with a view to adding to the body of knowledge already growing from previous studies in the Dundee project about competence and confidence in mathematics for teaching. The online survey was conducted with students enrolled on Years 1 to 4 of a BEd Honours degree programme and a Post-Graduate Diploma in Education (Primary) (PGDEP) course during the week beginning 12th September 2010. It was completed by 148 students from a population of 388, representing a response rate of 38%.

Instrument

The questionnaire was adapted from Aiken's Revised Math Attitude Scale (1974) by using the terminology from Table 1. A series of statements was created and students asked to indicate their agreement or otherwise with these, on a scale of 1-5, where 1 was *strongly agree* and 5 *strongly disagree.* They were also given the opportunity to make further comment under a section entitled *Any other reflections.* The survey was created using Google's Survey Monkey tool.

Procedure

The students were sent an email which included a link to the survey and asked to complete it within a week. A second email was sent after a few days as a reminder. At the end of the week the data were downloaded and initially all data were examined together, then PGDEP separated from BEd and finally BEd 1 from BEd 4 to see if any changes had taken place over the four years of the undergraduate programme.

Findings

In order to analyse the data more closely it was decided to separate the statements into attitude and belief statements and the findings are reported under these headings below. Before carrying out a closer analysis, however, it is worth considering initial impressions from the data. What was most apparent was the core of students who held fairly fundamentalist attitudes and beliefs towards mathematics, somewhere in the region of 20–25% who see mathematics as an uninspiring, strictly rule-driven activity with little room for creativity. When the BEd programme alone is considered these figures drop to around 15–20% for students in the final year of the programme but as this represents one fifth of teachers about to enter the profession it has to remain a concern. What was also clear from the data was the number of students who would not commit to either agreeing or disagreeing with the statements and who appeared content to sit on the fence. This could have been a confidence issue and if so would only serve to increase the percentages given above, with obvious implications.

Attitudes

As the PGDEP students represent only 19% of the data collected as expected their opinions do not differ greatly in most statements from the group as a whole. The most they vary is when the statement *I am motivated to do maths when I can* is considered and only 43% of the group, compared to 55% of all respondents strongly agreed or agreed with this statement. Also 32% of this group, compared to 24% of all respondents strongly agreed or agreed with the statement *Thinking about maths makes me fearful and anxious*. Students were also asked the highest mathematics qualification they had and while 54% of PGDEP students reported having the Scottish Higher, only 10% had a higher qualification than this, indicating that the vast majority of the group had done little or no mathematics since leaving school. Their trepidation about mathematics after four years of study in other disciplines can therefore be understood.

It would be hoped that attitudes to mathematics improve as student teachers progress through an initial teacher education programme and this can be seen to be the case. Table 2 gives the comparisons

between BEd 1 and BEd 4 students' responses to the attitude statements. The data was collected using a 5 point Likert scale with 1 being strongly agree and 5 strongly disagree. For the purposes of reporting 1/2 are reported together as are 4/5.

Table 2. Attitude comparison between BEd 1 and BEd 4

Attitude statements	BEd 1				BEd 4		
	1/2	3	4/5		1/2	3	4/5
I like maths	37	34	30		61	26	13
I am good at maths	29	41	29		57	30	13
I am confident about doing maths	29	29	34		57	26	17
Maths is boring	22	27	51		9	9	83
Maths is interesting	54	27	20		83	17	0
I am not motivated to do maths unless I have to	39	22	39		17	17	65
I am motivated to do maths when I can	56	22	22		78	22	0
Thinking about maths makes me fearful and anxious	27	22	51		13	26	61
I find maths enjoyable and fulfilling	32	37	32		65	17	17
I hate maths	17	20	63		4	9	87

A great deal of emphasis is placed on the importance of positive attitudes to mathematics in the mathematics education lectures and workshops and it appears that this is effective. The different attitudes reported by BEd 4 when compared to those of BEd 1 are marked in all statements. That said there remains a small yet significant minority of around 10% who continue to have negative attitudes about the subject.

Beliefs

When the belief statements are considered, once again there is little disagreement between those reported by the group as a whole and the PGDEP students. What is most marked, and is to be expected, is that there is broad agreement between PGDEP students and BEd 1 students in the statements *Maths is a solitary activity* and *Maths is*

about right and wrong answers. These two beliefs about mathematics are possibly most indicative of the fundamentalism described previously. Interestingly 50% of PGDEP students believe that maths is a creative human activity, a figure that compares only with 48% of BEd 4 students. So while PGDEP students' beliefs tend to align with those of BEd 1, in this respect these students are more in agreement with BEd 4. This could have something to do with the fact that their own degrees included some elements of mathematics which led them to see it in a more creative light. This, of course, is speculation without further investigation.

Again it would be hoped that beliefs about mathematics are changed during teacher education courses and table 3 indicates that this is the case.

Table 3. Belief comparison between BEd 1 and BEd 4

Belief statements	BEd 1				BEd 4		
	1/2	3	4/5		1/2	3	4/5
Maths is about certain truth	37	46	17		57	39	4
Maths is about things that are uncertain	20	49	32		9	43	48
Maths is about following rules strictly	46	20	34		43	30	26
Maths is about my own creative reasoning	32	34	34		57	30	13
Maths is a solitary activity	15	27	59		0	4	96
Maths involves discussion with others	63	27	10		78	13	9
Maths is about strict procedures	29	24	46		26	39	35
Maths is about multiple solutions	41	39	20		39	39	22
Maths is about right and wrong answers	56	10	34		39	26	35
Maths involves learning from errors and mistakes	93	2	5		100	0	0
Maths is about testing	44	37	20		26	43	30
Maths involves me in evaluating my own achievements	54	29	17		52	35	13
I think that maths is a creative human activity	29	32	39		48	31	22

While there was a minority of around 10% who continued to hold negative attitudes to mathematics in the final year of a teacher education programme this figure is higher when the belief statements are analysed, at around 17%. What is most concerning for the teachers these students will go on to become is the 43% who believe *Maths is about following rules strictly*, a figure which remains roughly consistent in all four years of the programme and with PGDEP students also and the 26% who believe *Maths is about testing*.

Student voices

Students were also given the opportunity to add open comments about mathematics and many of these were about their own experiences of mathematics while at school.

> … my low confidence in maths was down to teachers in my Standard Grade year who weren't helpful, encouraging or positive in their teaching.
>
> I have always been scared of doing mental maths and did not enjoy maths at school …
>
> I recall the attitude of my class teacher in primary school … if you answered a mathematical question incorrectly you were belittled in front of your classmates and made to feel very inadequate.
>
> Fear of maths is a learned state which is the result of poor teaching.
>
> I have always believed that the wrong mode of teaching maths can have an extremely negative impact on the perception of maths for the learner.
>
> I have always enjoyed maths. I had a great maths teacher throughout my time in secondary and this motivated me to learn more and achieve in maths.

Discussion and implications

The results of the first phase of studies highlighted that students' subject knowledge was often lacking when assessed using the online assessment. They also highlighted the fact that those students possessing more advanced mathematics qualifications were less likely to display competence in primary mathematics and that their confidence levels in the subject were lower than predicted. The first study in the project concentrated on BEd 1 students only and found that almost 60% of students reported low levels of confidence in mathematics. The second study which included all four years of the BEd programme found that, while this figure dropped as students progressed through the programme, it was still the case that one third of students overall reported low levels of confidence. It is well documented that low levels of confidence can impact negatively on students' performance in mathematical tasks (Pajares & Miller 1994, Pajares & Miller 1995) and, perhaps more importantly, that it can play a crucial role in students' academic motivation (Pajares 1996). Hence the amount of persistence and perseverance they put into mathematics may depend on their levels of confidence and this is an area that needs to be considered in teacher education.

The findings from the second phase confirmed that there was a significant minority of students (18%) who hold negative attitudes and beliefs towards mathematics at the final stages of their studies, as defined in the contested nature of mathematics statements used in the survey. However even larger minorities can be seen to hold to quite fundamentalist views about the nature of the subject with 43% believing that mathematics is about following rules strictly and 26% who believe mathematics is about testing.

There has been a recent review of teacher education in Scotland (Donaldson 2010) which highlights that current qualifications in mathematics do not seem to provide the guaranteed levels of subject competence required for teaching. Ma (1999) stated that it was unrealistic to expect SMK to improve until mathematics education in school also improved. In reality, it would take many years for change in the school system to feed through and so the concerns about levels of mathematics competence of some student primary

teachers need to be addressed as part of teacher education. Indeed the Donaldson review (2010) recommends that prospective teachers should be able to demonstrate competence in numeracy before being accepted on teacher education programmes and that these programmes should address any weaknesses during the course. While it is disappointing that the focus in Donaldson (2010) appears to be numeracy rather than mathematics in its wider sense, it is clear that the issue of teacher competence is high on the political agenda.

What is less apparent is any move to address the affective domain of learning mathematics, despite evidence that this is as important as the cognitive domain. There appears to be attitude and belief change in the Dundee students as they progress through the four years of the BEd programme and engagement with the online assessment may be a contributing factor. It is certainly the case that this leads to increased levels of confidence. Ensuring that this change is not transitory, resulting in these students going on to teach mathematics as they were taught it (Ball 1988, Melnick & Meister 2008), often along more fundamentalist lines, may be difficult to achieve unless the nature of mathematics is thoroughly explored during teacher education. While Macnab and Payne's (2003) study found that two-thirds of Scottish BEd students' understanding of, confidence in and liking for mathematics changed for the better as a result of their course, the researchers went on to posit that these positive responses,

> 'may have been obtained at the expense of the development of their critical thinking about the nature of mathematical understanding and the ability to think mathematically' (p.65).

Despite this, attitude and belief change, and hence increasing confidence levels, can only be sustainable if the nature of mathematics is more thoroughly explored in teacher education, whether this be at the initial phase or as part of continuing professional development. This requires a focus on what it means to think mathematically so that a deeper understanding of the subject is achieved. Mason (2010) proposes that the three factors that influence mathematical thinking are competence in the use of mathematical enquiry

processes, confidence in handling the emotional and psychological states associated with the subject and understanding the content of mathematics. However, it is the last of these that provokes most attention when perhaps it is the first two that need more focus.

The studies described point towards the importance of sound subject knowledge and indeed without this the transformation to PCK cannot take place. They also show the impact of negative attitudes and beliefs on students' motivation to develop their mathematical knowledge. It is now timely, however, to look further at the questions raised by the studies into the importance both of teachers' beliefs and the affective dimension for student learning, as well as to explore the nature of mathematics itself. It is against this background that the authors are now involved in developing a module with the aim of supporting the continuing professional development (CPD) of teachers of mathematics at the primary level. This addresses the question of the nature of mathematics and the importance of developing mathematical thinking as opposed to the dry, procedure driven approach that is often typical of the mathematics classroom. It is intended that the module will provide the first step on a pathway to the 'reinvigoration of subject expertise', as described in the recent review of teacher education (Donaldson 2010, p.99), and give teachers access to the high quality CPD discussed therein.

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Mathematics Teachers' Self-regulated Learning Competencies

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ABSTRACT

The aim of this paper is to present a research made among 41 mathematics teachers regarding self-regulated learning of Mathematics. A questionnaire was designed and completed by these teachers, to find out their level of self-regulated learning competency and the methods they use for increasing pupils' self-regulation level. The research results show a correlation between the teachers' self-regulated competency level and their involvement in developing students' self-regulated learning skills. The results underline the necessity to develop pre-service and in-service teachers self-regulated learning, to change the Romanian mathematics curriculum in order to promote self-regulated learning, and at the same time to rethink the national Mathematics tests for including challenging problems, not only verify the use of concepts and algorithms.

Key words: self-regulated learning, mathematics education, teacher education.

Introduction

Self-regulated learning (SRL) is an academically effective form of learning, through which the learner sets goals and makes plans before starting to learn; monitors and regulates his/her cognition, motivation and behavior during the learning process; and reflects on his/her learning process (Pintrich, 1995; Pintrich, 2000; Zimmerman, 2001). Self-regulation is important in problem solving, thus developing SRL skills and teaching of mathematics are in strong relation. Many countries have changed their mathematics curriculum and adapted a problem-solving approach. This approach gives the possibility to develop SRL skills, but in the same time it necessitates to increase the learners self-regulated level (Pape & Smith, 2002).

Romanian pupils' self-regulated learning skills are around average. Marchis and Balogh (2010) made a research with secondary school pupils' (10-15 years old, 5th-8th grades) studying their interest for mathematics and their self-regulated learning skills as self-efficacy, self-judgement, and self-reaction. Their findings are the following: only one third of the respondents like mathematics, because the others don't see the links between mathematics and their everyday life; almost half of the pupils have low self-efficacy and more than half of the respondents feel a high level of anxiety. In the case of high-school pupils (14-19 years old, 9th-12th grades) Marchis (2010) has concluded that only one third of the respondents think that mathematics is useful in everyday life and their future career; a very low percentage of the pupils' set goals for learning mathematics; about one fourth of the respondents analyze correctly the task and have a correct task difficulty perception; pupils' self-efficacy and self-control is low, but they have a high self-judgement level. Pupils' mathematical results are in strong correlation with their interest to study mathematics, their task analysis and self-control skills, and their task difficulty perception. Thus there is a need to motivate pupils for learning mathematics and to develop their self-regulated learning skills. The mathematics teacher has an important role in this process.

The aim of this research is to study mathematics teachers' self-regulation during problem solving by evaluating competencies as self-efficacy and self-control; and investigate if teachers' SRL skills are in correlation with their expectations on pupils' problem-solving behavior. Recommendations for increasing teachers' and pupils' self-regulated level while learning mathematics is formulated in the conclusions.

1. Self-regulation in mathematics learning

Self-regulated learners are metacognitively, motivationally and behaviorally active participants in their own learning process (Zimmerman, 1986).

SRL has three phases: forethought, performance control, and self-reflection phase.

From cognitive point of view during the **forethought phase** the learner analyses the task: activates his/her prior content and metacognitive knowledge, sets the goals of the learning process, and plans the strategy to be used. When solving a mathematical problem, the analysis of the task includes the understanding of the problem; identifying the given data, the relations between these data, and the requirements of the problem; recalling prior knowledge related with the problem (definitions; theorems, algorithms, strategies which could be used, similar worked examples). Motivationally goal-orientation, self-efficacy, perception of task difficulty, and activation of the interest to perform the task are important in this phase. A study in the field of goal-orientation reported important relation between different goals and self-regulation (Tanner & Jones, 2003). Mastery goal-orientation is also positively related with the use of cognitive and self-regulated strategies (Pintrich, 1999). Self-efficacy has a key role in SRL. It refers to perceptions about one's capabilities to organize and implement actions in order to reach the desired performance level (Bandura, 1997). Self-efficacy is student's judgments about their ability to successfully complete a task, as well as students' confidence in his/her skills to perform the task (Pintrich et al., 1993). "People's beliefs in their efficacy influence the choices they make, their

aspirations, how much effort they mobilize in a given endeavor, how long they persevere in the face of difficulties and setbacks, whether their thought patterns are self-hindering or self-aiding, the amount of stress they experience in coping with taxing environmental demands, and their vulnerability to depression." (Bandura, 1991, p. 257) Students' interest in the content area of the task and their beliefs about the utility of the task are also important. In mathematics education students' interest in mathematics, their beliefs in the utility of the mathematical knowledge in their future career or in their everyday life determine in a fundamental way their problem-solving behavior. „Belief systems are one's mathematical world view, the perspective with which one approaches mathematics and mathematical task. One's beliefs about mathematics can determine how one chooses to approach a problem, which techniques will be used or avoided, how long and how hard one will work on it, and so on." (Schoenfeld, 1985, p. 45) The motivation for performing the task influences how students plan the time and effort allocation for solving the task.

The **performance control phase** includes self-control and self-monitoring of the cognitive strategies, motivation, and behavior. While solving mathematics problems "control has to do with the decisions and actions undertaken in analyzing and exploring problem conditions, planning courses of action, selecting and organizing strategies, monitoring actions and progress, checking outcomes and results, evaluating plans and strategies, revising and abandoning unproductive plans and strategies, and reflecting upon all decisions made and actions taken during the course of working on a problem." (Lester et al., 1989, p. 4)

The **self-reflection phase** includes self-judgment and self-reaction. Self-judgment is one's evaluation on his/her performance and recognition of the relationship between the achieved performance level and the quality of the learning process (Zimmerman, 2000). Thus self-regulated learners attribute their poor performance to lack of effort or time; or to the use of an inadequate strategy (Zimmerman, 1998). Students who attribute success to effort and failure to lack of effort may primary utilize strategies with which they have experienced the success (Borkowski, Weyhing & Turner). "The more

students can take responsibility for their own learning, the more likely they are to attribute success to their own efforts. If students believe that their efforts will make a difference in what and how much they learn, then they are more likely to expend higher levels of effort in their studies." (Hagen & Weinstein, 1995, p. 53) Self-reaction involves feelings about the achieved results: satisfaction or dissatisfaction (Zimmerman, 2002). When students feel satisfaction about their performance, they are more motivated to complete the task (Schunk, 2001). As mathematics is a difficult subject for many students, the feeling of satisfaction is important for motivating students for learning mathematics. As the mathematics skills of students from a classroom are different, to assure satisfaction each pupil should get tasks on their performance level.

2. Developing students' self-regulated learning skills

In traditional mathematics education the teacher selects a task; introduce a method to solve the task; and gives exercises to practice (Schoenfeld, 1992). A good student in the traditional instruction is that one, who knows all the formulas and algorithms learned, solve many problems of the same type to memorize the required methods. This method of teaching mathematics doesn't promote the development of mathematical thinking, problem solving, and self-regulation. Students develop SRL skills when they are involved in challenging activities, when they have opportunities for making choices about their learning, and collaborate with other students (Pintrich & Schunk, 2002).

Lester t al. (1989) during a 12 week intervention in a seventh grade class used a chart with problem-solving tips to be used by the teacher and the students. Some of the tips contained in this chart are related with SRL, for example "be sure to check your work along the way" instruct to self-control. In this research no substantial differences were observed between pupils' activities before and after instruction. The authors have explained this result by the short time of the intervention and the alternative use of problem-solving instruction with regular mathematics teaching.

Perry (2002) observed five second grade and third grade classrooms, and she observed that in classes, where teachers provide students opportunities to choose what to work on and to modify talks to control challenge, pupils' SRL skill level is higher.

Pape, Bell & Yetkin (2003) reported the results of a one year long intervention of developing pupils' SRL skills in a seventh grade class. During the classes students were encouraged to make their solutions public, to name and describe their strategies, to use multiple representations while solving the problems. After the intervention period students were more able than previously to communicate mathematical understanding and justify their mathematical reasoning. A small proportion of students recognized the relationship between the strategies they used and the grades they earned.

Samuelsson (2008) has studied the impact of three different teaching method, traditional (with mostly frontal activities at the blackboard), independent work, and problem-solving on seventh grade pupils' arithmetic and self-regulated learning skills. The results show that students' self-conception is affected more with traditional or problem-solving method. This is because with these methods they get feedback from the teacher and from their colleagues. The interest of the pupils towards mathematics was the best developed by the problem-solving method.

Gandhi & Varma (2009) used the strategic content learning (SCL) approach to promote self-regulated learning in mathematics of class eight. In SCL students get adequate support for flexibility and recursively undertake the cognitive activities typical to SRL; and they are engaged in interactive discussions about their learning process. For example, whenever students select a strategic approach, they are asked to describe in details the steps of the used strategy. Thus students learn how to select, monitor, and adapt, or even create strategies for solving a given task (Butler, 1995). Gandhi & Varma (2009) obtained notable results using SCL: students gain in task performance, perception of task specific self-efficacy, and meta-cognitive awareness about mathematical tasks and strategies.

3. Research

Design of the research

The aim of the research is to evaluate mathematics teachers' self-regulated skills, and how these correlate with their expectations on pupils' problem-solving behavior.

The research was conducted during June-August 2010 in Romania.
A questionnaire was developed as the main tool for collecting the data. This questionnaire has two parts. The aim of the first part is to evaluate teachers' self-regulated learning skills, as self-efficacy (e.g. they do know if they can solve a problem after reading the text of it) and self-control (e.g. they do check if the solution is correct; they do check if they have used all the important data; they do think about other methods of solving the problem, etc.). The second part evaluates teachers' guidance to pupils towards problem-solving. The questionnaire contains affirmations which have to be evaluated by the teachers on a 5-point scale: from 1- not at all typical for me to 5 – totally describes me. The affirmations were formulated based on the theory of SRL and on the previous researches about teaching methods which develop students' SRL skills. Cronbach's alpha reliability for the test is .91.

The questionnaire was anonymously filled in by the respondents. 41 mathematics teachers have completed the questionnaire, 19% of them are male, 81% female. As regarding their age, almost half of the respondents have between 31 and 40 years old, 20% between 41 and 50 years old, 15%-15% less than 20 years old respectively between 26 and 30 years old (Figure 1).

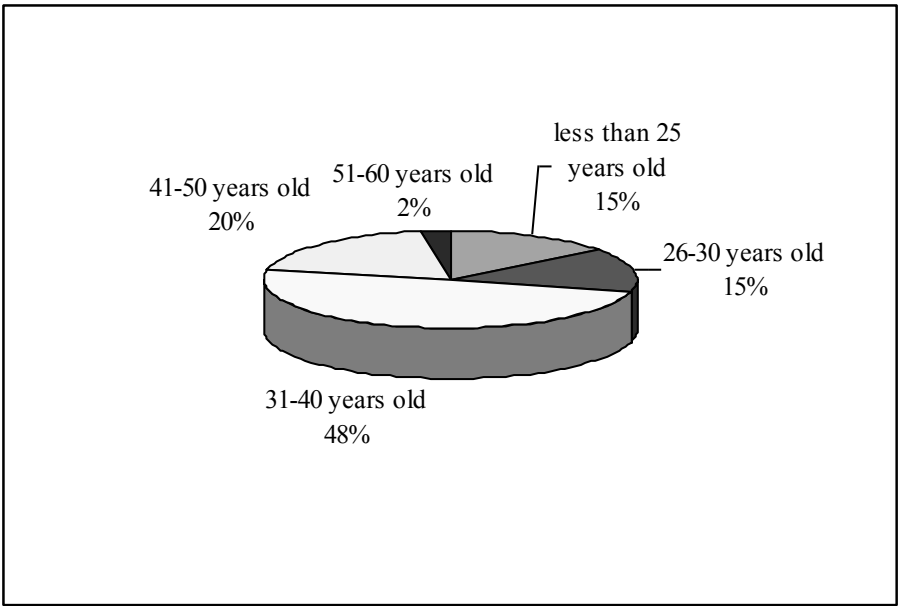

Figure 1. Age distribution of the respondents

37% of the respondents have 11-15 years of experience in teaching, 24% have between 16 and 25 years of experience, 20% have between 2 and 6 years of experience (Figure 2).

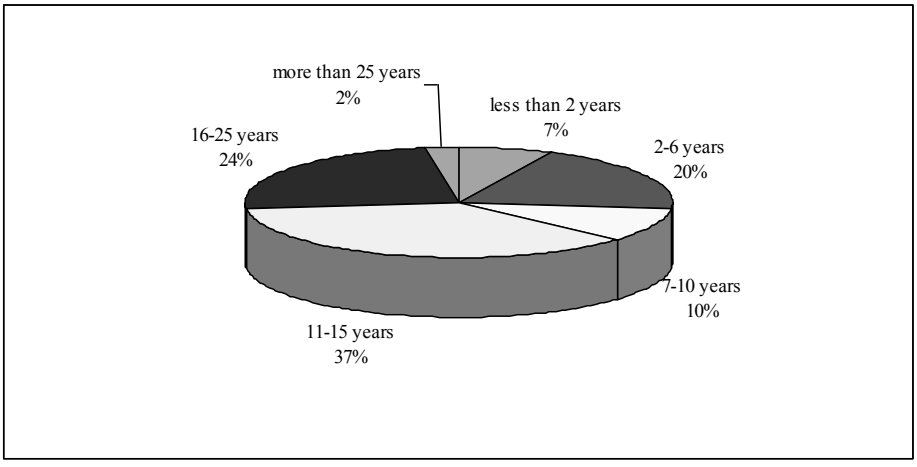

Figure 2. Teaching experience of the respondents

More than half of the respondents are teaching in primary school (pupils' age between 6/7 and 10/11), 22% in secondary school (pupils' age between 10/11 and 14/15), 7% in high school pupils' age between 14/15 and 18/19), and 17% both in secondary and high school (Figure 3).

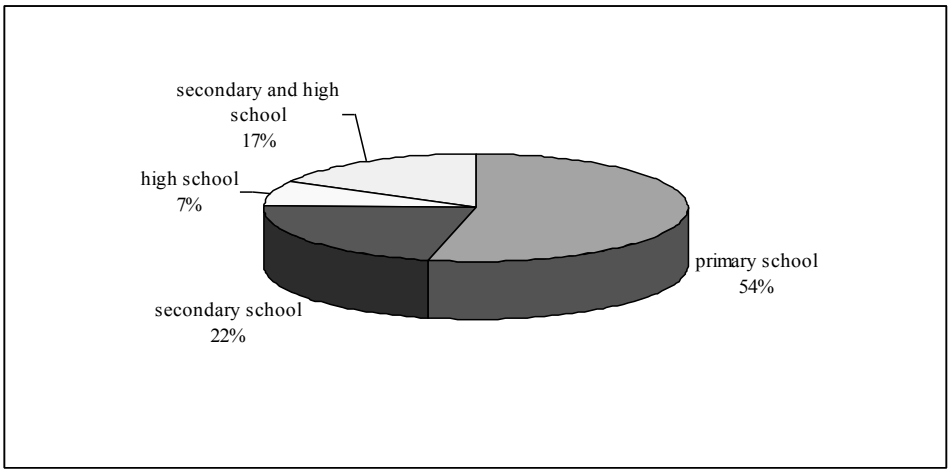

Figure 3. Teaching levels of the respondents

Results

Means and standard deviation on teachers' problem solving are shown in Table 1. We could observe that the lowest score is reached on searching for more methods for solving the same problem. The highest score is for checking, if all the important data were used during the problem-solving.

Table 1. Means and standard deviation on teachers' problem-solving

Affirmation	Mean	Standard deviation
Knowing, if he/she can solve the problem, after reading the text of it.	3.12	0.78
Reformulating the text of the problem with one's own words.	3.07	0.95
Writing down the given data and the relations between these data.	3.95	0.69
Making drawings.	4.02	0.65
Self-questioning during the problem solving.	3.54	0.80
Checking, if all the data are used during the problem solving.	4.12	0.54
After solving the problem, thinking about other solutions.	2.85	0.87
Checking, if the solution is correct.	4.10	0.77
If one can't solve a problem, searches for similar solved problems.	3.70	0.97
If one can't solve a problem, asks for the help of a colleague.	2.93	0.95

Means and standard deviation on teachers' expectations on pupils' problem-solving are shown in Table 2. The problem-solving behavior which teachers most expect from their students are reading carefully the text of the problem, writing down the given data and the relation between these data, and checking, if the solution is correct. The less expected behavior is to think about other ways of solving the problem, after they have got a solution.

Table 2. Means and standard deviation on teachers' expectation on pupils' problem-solving

Affirmation	Mean	Standard deviation
Reading carefully the text of the problem.	4.51	0.65
Reformulating the text of the problem with one's own words.	3.53	0.85
Writing down the given data and the relations between these data.	4.34	0.72

Checking, if all the data are used during the problem solving.	4.05	0.72
After solving the problem, thinking about other solutions.	3.14	0.83
Checking, if the solution is correct.	4.32	0.65
Writing down the detailed solution.	3.80	0.79
Explaining the solution to their colleagues.	3.38	0.57

Teachers try to choose interesting problems (mean 3.83, standard deviation 0.73) or problems from the everyday life (mean 3.85, standard deviation 0.98) for the classroom. The score for taking in account the problems given on different national tests is lower (mean 3.17, standard deviation 0.89). Also taking in account pupils' mathematics skills when assigning tasks is important for teachers (mean 3.41, standard deviation 0.85).

Studying the correlation between teachers' problem-solving behavior and their expectation on pupils' problem-solving behavior, we observe that there is a positive correlation, but it is not a strong one (Table 3).

Table 3. Correlation between teachers' problem-solving behavior and their expectation on pupils' problem-solving behavior

Affirmation	Correlation between teachers' problem-solving behavior and their expectations on the pupils problem-solving behavior
Reformulating the text of the problem with one's own words.	0.52***
Writing down the given data and the relations between these data.	0.58***
Checking, if all the data are used during the problem solving.	0.50**
After solving the problem, thinking about other solutions.	0.55***
Checking, if the solution is correct.	0.31*

* significance level .05, ** significance level .01, *** significance level .001

Discussion

When faced with an academic problem, self-regulated learners begin to analyze the task, identify the requirements of it (Pintrich, 2000; Schunk, 2000). Teachers obtained high score on the items related with analyzing the problem: writing down the data and the relations between these; making drawings.

Also teachers' self-monitoring competency is above average. This competency is tested with the following items: self-questioning during problem solving and checking if all the data are used during the problem solving.

The lowest score obtained by the teachers is on searching more methods for solving a problem. This means that most of the teachers don't make an evaluation of their strategy used for solving the problem. Help-seeking is also an important skill of a self-regulated learner. If a person gets stuck with a problem (i.e. recalled all the previous knowledge, tried all the known methods, tried to create a new method for solving the problem, but couldn't get a correct solution), usually has two possibilities: to find a similar solved problem or to seek for the help of a colleague. It is interesting, that teachers obtained a score around average on asking for the help of a colleague.

Asking students to explain how they solve a problem is important to develop their SRL skills. Questions as "What (exactly) are you doing? Why are you doing it? How does it help you?" (Schoenfeld, 1987, p. 206) help students to reflect on their strategies and to articulate their reasoning. "When thinking is articulated regularly, patterns of thinking develop that are iterative. Thinking cannot be articulated unless students reflect on the problem and the strategies they use to solve it; articulation, in turn, increase reflection, which leads to understanding." (Fennema et al., 1999, p. 188) Respondents score on asking the pupils to explain the solution to their colleagues is just a bit above average. A higher score was obtained for asking students to write down the detailed solution. This also helps them to verbalize their thinking. The collaborative learning helps students to develop their self-regulation competencies (Pintrich & Schunk, 2002). During collaborated learning students need to explain their reasoning and they get feedback from their colleagues. Through critically examining

others thinking and reasoning, participating in discussions, students learn to monitor their own thinking and to build adequate reasoning (Artzt & Yaloz-Femia, 1999).

Giving students interesting problems to solve increase their motivation for learning mathematics. Teachers try to choose interesting problems or problems from the everyday life for the classroom activities, and taking less in account the problems given at national tests. Usually the problems from the Romanian national tests are mathematically formulated; don't have any relation with pupils' real life (Marchis, 2009a). These problems are not challenging, they need only to apply formulas or algorithms (Marchis, 2009b). These have more consequences: pupils don't like mathematics, as they don't see why they need to learn it; in their everyday life they meet problems, where mathematics is present, and they don't know how to solve them, as they don't know how to transfer mathematics to practical problems. Thus giving only this kind of problems to pupils will loose their interest in mathematics learning.

Studying the correlation between teachers' problem-solving behavior and their expectation on pupils' problem-solving behavior, we observe, that there is a positive mild correlation. It is interesting that while teachers are not trying to solve the problem using more methods, they expect this from their pupils.

4. Conclusions, recommendations, future directions of investigations

Teachers' self-regulated learning skills are around medium level. This shows the need of developing pre-service and in-service mathematics teachers' self-regulation. Teachers' self-regulating competencies are in positive correlation with their methods of developing pupils' self-regulated learning skills. Thus developing teachers' SRL skills will lead to the improvement of pupils' self-regulation, which will imply the improvement of students' mathematics results. Also teachers have to be trained to be able to use teaching methods which facilitate the development of pupils' self-regulated learning competencies.

The Romanian mathematics curriculum is not adequate for developing students' SRL skills. It places the accent on knowing concepts and mathematical relations, constructing and applying algorithms for processing data. Mathematical communication and development of pupils' motivation for learning mathematics are present in the curriculum, but does not have an important role. The requirements of the curriculum stop at the analysis level of the cognitive domain taxonomy of Bloom, without covering the synthesis (Ciascai & Marchis, 2009). The mathematics curriculum should be rewritten in order to facilitate the development of SRL skills.

The national tests in mathematics should be rethought. Part of the problems given on these tests should be challenging ones, where pupils have to create the solution and not only to use learned algorithms. In this way teachers would put more accents on developing pupils' problem solving and self-regulated competencies instead of practicing routine problems. Also part of the problems should be taken from students' everyday life. Seeing the utility of the mathematical knowledge in their life, students would be more motivated to learn mathematics.

The research limitation is the size of the sample. To get stronger conclusions the research should be extended to a bigger size sample. As a future research, it would be interested to study the correlation between teachers SRL skills and their pupils' self-regulation level.

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The Study of Natural Sciences and Teacher Training

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ABSTRACT

The educational system in Romania, in general, and pre-service and in-service teacher training, in particular, passes nowadays through many revisions. There are discussions regarding the integrated study of Natural Sciences (Physics, Chemistry and Biology) at the secondary school level and, as a consequence, the reduction of the hours allocated to the study of these school subjects. This paper presents the results of an investigation conducted on a sample of 65 eight grade pupils in Romania. The research aims to investigate the participants' views regarding the difficulty of studying Natural Sciences, the teachers' role for students' success in Natural Sciences, the causes of failure in learning Science and the number of hours considered to be weekly necessary for teaching these school subjects. The results show that there is a need to revise the methods used for teaching Science, and to rethink some of the aspects of teacher training.

Key words: eight grade pupils, teachers, teaching Natural Sciences, interest in Natural Sciences.

Introduction

1. The Curriculum of Natural Sciences in Romania

Policy makers, teachers and employers emphasize the importance of scientific literacy among citizens, for both individual and social success in the 21st century. However, research indicates that

middle and high school students perform poorly on international tests, and few undergraduate choose science as a major (Hussar, Schwartz, Boiselle & Noam, 2008). Educational systems across many countries face challenges to globalization and to huge flow of information that is daily provided to pupils, through various means of communication.

During the last 20 years (between the Romanian revolution, in 1989, and 2010), the Romanian educational system has been constantly changing, the changes being considered both positive and negative. The changes have targeted the structure of the pre-university education, the school curriculum, pupils' assessment, and the development of school textbooks, territorial organization, and teachers' lifelong education, which means almost all the components of the educational system. The present pre-university education in Romania comprises pre-school education, primary education (compulsory), lower secondary education (gymnasium) and higher secondary education (high school education).

1.1. The school curriculum

The current school curriculum has been designed in 2000 and implemented in 2004, and subsequently has passed through some changes. Some of the features of the present curriculum are:

a) The cycle structure of the curriculum (MEN-CNC, 2000, p.5);

b) The integration of school disciplines in seven curricular areas: (1) Language and communication; (2) Mathematics and Natural Sciences; (3) Man and Society; (4) Arts; (5) Physical education and Sports; (6) Technology and (7) Counseling and guidance. The curricular areas are the same for both the compulsory schooling and the high secondary education, but their weight per key-stage and grade is variable;

c) The emphasis on competence, defined by the educational policymakers as "a structured set of knowledge and skills acquired through learning. Competence allows us to identify and solve, in a variety of contexts, typical problems for a certain field of activity" (MEN- CNC, 2000, 30);

d) The stipulation of a set of attitudes and values that pupils have to develop, for each discipline, during an educational cycle.

We present in Table 1 a detailed description of the central features of the Romanian curriculum.

Table 1. Curricular key stages

<table>
<tr><th>Key stages</th><th>The main goal</th><th>Age</th><th colspan="2">Education levels</th><th>Grade</th><th>School subjects in the area of Natural Sciences</th></tr>
<tr><td rowspan="2">Specialization</td><td rowspan="5">Accomplishing pre-specialization with a view to an efficient integration in the specialized higher education or on the labour market.</td><td>19</td><td></td><td rowspan="2">Lyceum upper cycle</td><td>XIII</td><td>-</td></tr>
<tr><td>18</td><td rowspan="2">Lyceum upper cycle</td><td>XII</td><td rowspan="8">Biology, Physics, Chemistry (Science/ integrate curriculum)</td></tr>
<tr><td rowspan="2">Reinforcement</td><td>17</td><td>Final year</td><td>XI</td></tr>
<tr><td>16</td><td rowspan="2">Lyceum lower cycle</td><td rowspan="2">Arts and Trades school</td><td>X</td></tr>
<tr><td rowspan="3">Observation and orientation</td><td rowspan="3">Orienting pupils in order to optimize their school options and subsequent professional career.</td><td>15</td><td>IX</td></tr>
<tr><td>14</td><td colspan="2" rowspan="3">First cycle of lower secondary school</td><td>VIII</td></tr>
<tr><td>13</td><td>VII</td></tr>
<tr><td rowspan="4">Development</td><td rowspan="4">Developing the basic skills necessary for pursuing one's education.</td><td>12</td><td>VI</td><td>Biology, Physics</td></tr>
<tr><td>11</td><td>V</td><td>Biology</td></tr>
<tr><td>10</td><td colspan="2" rowspan="3">Primary school</td><td>IV</td><td rowspan="2">Natural Sciences</td></tr>
<tr><td>9</td><td>III</td></tr>
<tr><td rowspan="4">Basic acquisition</td><td rowspan="4">The adjustment of pupils to the requirements of the school system and to the initial literacy.</td><td>8</td><td>II</td><td rowspan="3">Knowledge of the environment</td></tr>
<tr><td>7</td><td>I</td></tr>
<tr><td>6</td><td>Kindergarten</td><td>Preparation year</td></tr>
</table>

As can be seen in the table presented above, learning in the field of Natural Sciences is done mainly through separate disciplines such as Physics, Chemistry, and Biology. A special case is represented by Humanistic profiles, where pupils study Sciences, an integrated approach, in the 11th and 12th grades. Moreover, there are pupils in Schools of Arts and Trade who study Sciences until 11th grade.

1.2. The subject's curriculum

The subject's curriculum is the main teaching instrument that describes the ideal conditions for successful learning. In Romania, there is a curriculum for each school subject. The subject's curriculum specifies two types of competencies: general competencies defined for each subject and developed during the whole high school education, and specific competencies, defined for each subject and developed during one year of study. Taking as an example the general competence entitled "Theoretical and practical problem solving through particular methods", we can identify the specific competencies comprised in this general competence. These specific competencies are: comparing and classifying phenomena and features of physical phenomena in the specific areas of study, solving theoretical and applied problems concerning the practical activity of the specific areas of study, and analyzing the causal relationships that emerge in the development of physical phenomena in the specific areas of study (MECI, 2009). The role of specific competencies mentioned in the school curricula is to support teachers in selecting and formulating the operational objectives for the classroom lessons. The elaboration of operational objectives is carried out in relation with the content of teaching, which is established through school programs. For instance, the content in Physics, Chemistry and Biology, which teachers have to teach at eighth-grade level, is presented in Table 2.

Table 2. The topics of school subjects (Physics, Chemistry and Biology) of eighth-grade students

Physics	Chemistry	Biology
Fluid Mechanics; Heat; Electric charge; Electric circuits; Electromagnetism; Optical instruments; Radiations.	Simple substances with practical use; Compound substances with practical use;	Plants and animals in different life environments; Factors in the spread of living organisms; Trophic relationships in ecosystems; Equilibrium in ecosystems.

As can be seen in Table 2, the content of these school subjects is mainly mono-disciplinary. Teachers and students are responsible for identifying interdisciplinary themes, and if they do not find such themes, the students' knowledge remains fragmented.

1.3. Criticism of the current curriculum

The main criticism regarding the current curriculum in Romania emphasizes the gap between the curriculum content and the skills needed in the labour market. Moreover, the curriculum was criticised for the large amount of information delivered in schools (32–36 hours per week, with 14–18 school subjects), the lack of relevance of the content of school subjects for students' future and career, and the distance from the international practice, which promotes the eight key competencies established by the European Union (Presidential Commission 2007, p. 8).

Regarding the curriculum in Natural Sciences, the main criticism highlights: the high theoretical emphasis in teaching science, the lack of practical applications, the lack of flexibility, the specialized and difficult terminology used in textbooks and in teaching science, the boring topics and teaching methods, its orientation toward past and the evaluation of students through direct reproduction of the content, without active participation of students (Frangopol, 2009).

2. Pre-service Teacher Training in Romania

The training of students comprises courses that have been provided by The Department of Teacher Education and have been structured on two levels (Ministry of Education, Research and Youth, 2008), as can be seen in Figure 1.

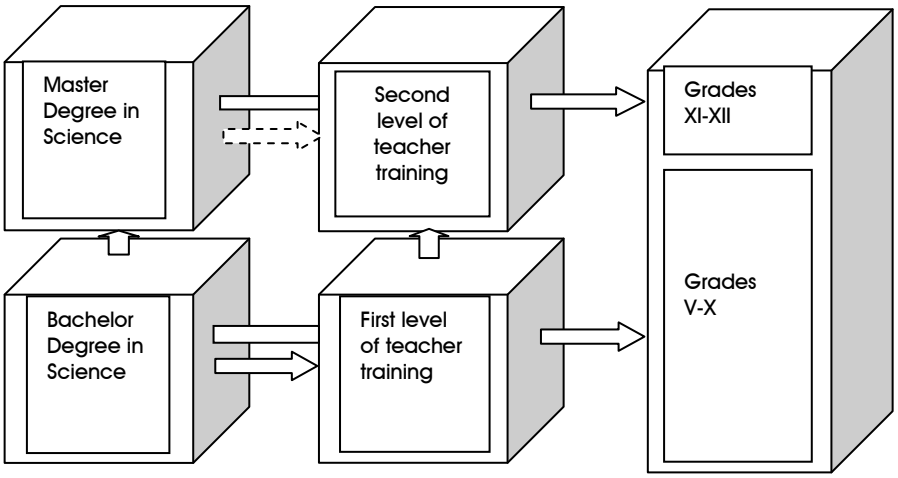

Figure 1. Future teacher training.

The attendance to the first level of professional training allows pre-service teachers to teach at gymnasium levels and at the first two levels of high school. The first level certification for pedagogical studies is given after the completion of a minimum of 30 transferable credits:

- 18 credits for the fundamental pedagogical training package courses, such as "Educational Psychology", "Foundations of Pedagogy", "Curriculum Theory and Methodology", "Theory and Methodology of Instruction", "Theory and Methodology of Evaluation", "Classroom management".
- 12 credits for teaching training and professional teaching practice: "Specialized Didactics", "Computer assisted instruction", "Teaching practice in compulsory school education" (1), "Teaching practice in compulsory school education" (2).

The attendance of the second level of training and of a specialized Masters programme (in Science, Literature, Law, Economics etc.) offers the opportunity to teach at the last two levels of college and at the university level. The second level certification for pedagogical studies involves the completion of another 30 transferable credits:

- 10 credits for the package of extended psycho-pedagogical disciplines: "Psycho-pedagogy of adolescents, young and adults", "Planning and management of educational programs";
- 10 credits for the package of extended specialized teaching education and practice: "Teaching and field development in specialized school subjects (in secondary school, after secondary-school and university education)", "Teaching practice (in secondary school, after secondary-school and university education)";
- 10 credits for optional courses comprised in two sets of packages. The first package includes school subjects such as "Educational Communication", "Counselling and Vocational orientation", "Methodology of Educational Research", "Integrated education" etc. and the second package includes school subjects such as "Sociology of Education", "Management of School Organization", "Educational politics", "Intercultural Education", "Contemporary educational doctrines" etc.

The situation presented above describes the pre-service curriculum of students with a single major (e.g. Physics). There are also departments with double majors (e.g., French-Romanian, English-French, Mathematics and Informatics etc). In the case of departments with double majors, the training for the second field of study follows the curriculum of the initial training presented above (with the same number of courses and Teaching Practice). Teachers of preschool and primary levels are following didactic module, included among the specialized courses.

Initial training slightly emphasize and offer the possibility for practicing teaching, since only 4 hours out of 56 are allocated for teaching in schools (52 hours representing observational practice). However, practice is essential for pre-service teachers since teaching is not only about knowing the content of a school subject.

Teaching equally involves knowing the students, knowing students' learning strategies and preconception and managing classroom problems. Teaching also implies–helping students to become autonomous individuals by acquiring and using essential aptitudes and skills, not by acquiring information. As Iucu has stated (2005), the initial teacher training in Romania has two directions for future development: a traditional route, in which universities prepare teachers, not necessary consistent with the schools needs, and a second route in which the teachers' needs determine the nature and content of university training.

3. Pupils' interest and attitudes toward Natural Sciences

Interest is an important predictor of academic performance, and can be defined as a differential likelihood of investing energy in one set of stimuli rather than another (Csikszentmihalyi & Hermanson, 1995 as cited in Baram-Tsabari & Kaadni, 2009). Interest contributes to the students' connection with the content (affective response) and to the maintenance of that connection for sufficient time to be able to learn (persistence) (Ainley, Hidi & Berndorff, 2002). Individual interest can be defined in terms of specific domains such as school subjects, for example literature, history, mathematics (Ainley, Hidi & Berndorff, 2002). These domains can influence future educational training and career choices (Kahle, Parker, Rennie, & Riley, 1993; Krapp, 1999; Levy, 2003; Lindahl, 2007 as cited in Baram-Tsabari & Kaadni, 2009). Besides interest, pupils' attitudes toward science are essential predictors of academic performance. Pupils' attitudes toward science have been investigated by several researchers (Matthews, 2004; Osborne & Collins, 2001; Jones *et al.,* 2000; Gardner & Tamir, 1989; Hofstein *et al.,* 1986; Yager & Yager, 1985; Yager & Bonnstetter, 1984 as cited in Prokop, Prokop & Tunnicliffe, 2007), whom reveal that pupils consider science being boring, difficult, not relevant to their lives, more attractive to boys, and less interesting to older students (Ebenezer and Zoller, 1993; Delpech, 2002, Ramsden, 1998, Schibeci and Riley, 1986; Francis and Greer, 1999 as cited in Prokop, Prokop & Tunnicliffe, 2007). In Romania, there is a lack of research regarding pupils' interest and attitudes toward science.

Yet, we consider that is essential to understand pupils' attitudes toward science, since there is research indicating that attitudes toward a school subject influence their interest and performance in that domain, and there might be a need for increasing pupils' attitudes toward science. Thus, the present research is indeed relevant in the Romanian educational context, since there is a lack of studies that focus on pupils' attitudes and interest toward science school subjects, such as Physics, Chemistry and Biology.

Generally, we can notice that, even if there were made some changes in the Romanian educational system, these changes were rather superficial, and thus the educational system needs essential changes and improvements, in order to create scientific literate citizens. We consider that if we want our students to be scientific literate citizens, and to make some essential changes concerning this aspect, we need to take into consideration pupils' opinions regarding the study of science in schools. Thus, the present study aims to investigate pupils' opinions regarding the importance of studying Natural Sciences in eight grade. Specifically, we have investigated the pupils' views regarding the difficulty of Physics, Chemistry and Biology, the teachers' role for pupils' success in the acquisition of specific knowledge, the causes of failure in learning and the number of hours considered to be weekly necessary for teaching these disciplines. Thus, the questions that the present study aimed to answer are:

- What are the pupils' attitudes and interest toward studying Natural Sciences?
- What is the role of teachers in succeeding in Natural Sciences, according to pupils' opinions?
- What are the main difficulties that pupils encounter when studying Natural Sciences?
- How many hours per week pupils consider being necessary for studying Natural Sciences?

The present study might be relevant for improving teaching practices in Romania (through the adaptation of teachers' practices to the curriculum and vice versa, through providing teacher training programs to overcome teachers' difficulties in teaching, through providing the necessary resources for efficient teaching), but it also might be relevant for improving the learning opportunities of pupils. One research made in 2000 has showed that teachers have considered that continuous educational system in Romania needs radical changes, both at the level of objectives and content, and at the level of methods and procedures (Iucu & Panisoara, 2000 as cited in Iucu, 2005). Teachers have considered that the methods and instruments used to assess competence in continual education needs essential changes and improvements, and also that there should be less emphasis on theory of curriculum and evaluation, and more emphasis on practice. Thus, there is a need for major changes in the Romanian educational system, in order to provide a high quality teaching process.

4. Methodology

4.1. Participants

This study was conducted on 65 eight grade from two schools in Cluj-Napoca County, Romania. The age of the participants in the present sample ranged between 14 and 16 years old, with the mean of 14.37 years. 52,3 % of pupils in the sample were females and 47,7% of pupils in the sample were males. The majority of the pupils in the present sample have 14 years old, the difference between males and females being insignificant. Pupils' distribution by age and sex in the sample reflect almost accurately the situation that can be encounter in almost every eight grade classroom in Romania. The expected age in the eight grade is 14 years old and the distribution of pupils by sex in Romanian classrooms is almost equally, for both boys and girls. 61% of the pupils in the present sample are from "Simion Barnutiu" School and 38.5% are from "Alexandru Vaida Voievod" School.

4.2. Measures

In order to assess pupils' opinions regarding the study of Natural Sciences in school, we have developed an instrument with 21 items measured on a five point Likert scale and 9 open questions. Pupils were also ask to provide information regarding their age, sex, school, city and grade. The 21 Likert scale was developed to assess pupils' attitudes and interest toward Natural Sciences and the open questions were developed in order to identify the main difficulties that pupils encounter when studying Natural Sciences.

In Table 3 we present the items of the instrument used in the present investigation. Pupils were asked in a pencil and paper session to answer at all 21 items, the answers ranging from 5, "strongly agree" to 1, "strongly disagree". The open questions that we've further addressed aimed to identify the main difficulties that pupils encounter when studying Natural Sciences, how many hours per week they consider to be necessary for studying Natural Sciences in school and how many hours per week pupils study Natural Sciences in school?

Table 3. Items from the instrument used in the present study

Dimension	Items
Difficulty level of Natural Sciences	"I consider that Physics is difficult"
Pupils' interest in Natural Sciences	"I consider that Chemistry is interesting"
Pupils' pleasure in studying Natural Sciences	"I like to study Biology""
The importance of Natural Sciences for future career and life	"Natural Sciences are useful for solving everyday problems" "Knowledge in Natural Sciences improve the quality of my life" "I would like to become a scientist"
The role of teacher in studying Natural Sciences	"The role of Biology teacher is important for succeeding in Biology" "The Chemistry teacher makes me understand the lesson" "The Physics teacher is efficient"

4.3. Procedure

The schools that have been included in the present study constituted the pilot sample that the researchers have chosen by contacting one teacher from each school. Each teacher has administered the questionnaire, choosing at least one eight grade classroom from his/her school. The teacher from "Simion Bărnuțiu" school has administered the questionnaire at two eight grade classrooms, while the teacher form "Alexandru Vaida Voievod" school has administered it at one eight grade classroom. Pupils' participation in the study was voluntary and anonymous.

5. Results

5.1 Pupils' interest and attitudes toward Natural Sciences

As can be seen in Figure 2, a high percent of pupils from the sample consider that Natural Sciences are not very difficult. Regarding Physics, 60% of pupils consider that this discipline is difficult while 40% considered that Physics is not a difficult discipline. Regarding Chemistry, the percent of pupils that considered this discipline to be difficult (52,3%) is almost equal to the percent that stated that Chemistry is not a difficult discipline (47,7%). Biology is considered by the pupils in the sample to be the least difficult science discipline. Thus, only 21,5% of them claimed that Biology is difficult, while 73,9% considered that Biology is not at all difficult. The possible explanation for these results might be that Physics and Chemistry are teached more on a theoretical level, despite their experimental character. While Biology also involves problem solving too, this can be easily done by observing the events in the real world.

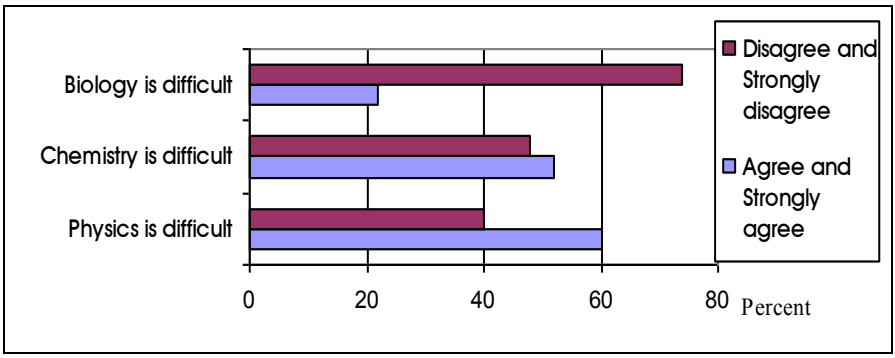

Figure 2. The difficulty of studying Natural Sciences

In Figure 3 we represented the results for pupils' interest in studying Natural Sciences. As can be easily seen from the graphic, the majority of pupils claimed that they consider Physics, Chemistry and Biology to be interesting school subjects. Thus, eight grade pupils from the present sample are interested in studying Natural Sciences, with the highest percent (93,8%) being interested in Biology.

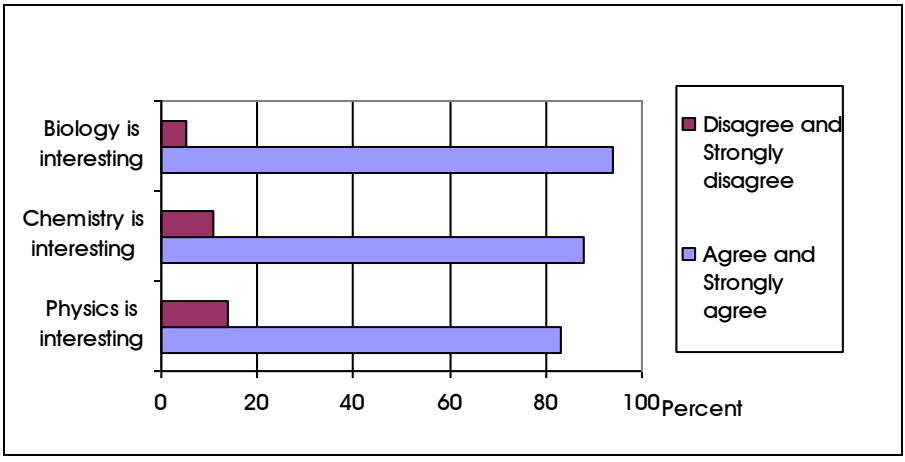

Figure 3. Pupils' interest in studying Natural Sciences

The majority of eight grade Romanian pupils experience pleasure when studying Natural Sciences. 66,2%, 67,7% and 80% of pupils

stated that they enjoy studying Physics, Chemistry and respectively Biology. The highest percent of pupils that enjoy to study Natural Sciences is in the Biology. While a high percent of pupils stated that they enjoy studying natural Sciences, in the case of Physics and Chemistry there is also a high percent of pupils that stated they actually don't like to study these school subjects, the percent being 32,3% both in Physics and Chemistry.

As can be seen from the graphics presented above, eight grade pupils from the present sample are interested in studying Natural Sciences and consider that these school subjects are not too difficult. Further, pupils are aware of the importance of these domains for their future careers and life or for their health, as presented in Figure 4. Thus, 83,1% of pupils considered that everybody should learn science, 87,7% considered that science is useful for solving everyday problems, 86,2% agreed and strongly agreed that science is necessary for their future careers, 80% agreed or strongly agreed that science helps them to improve the quality of their lives, and 93,8% agreed or strongly agreed that science helps them improve their health.

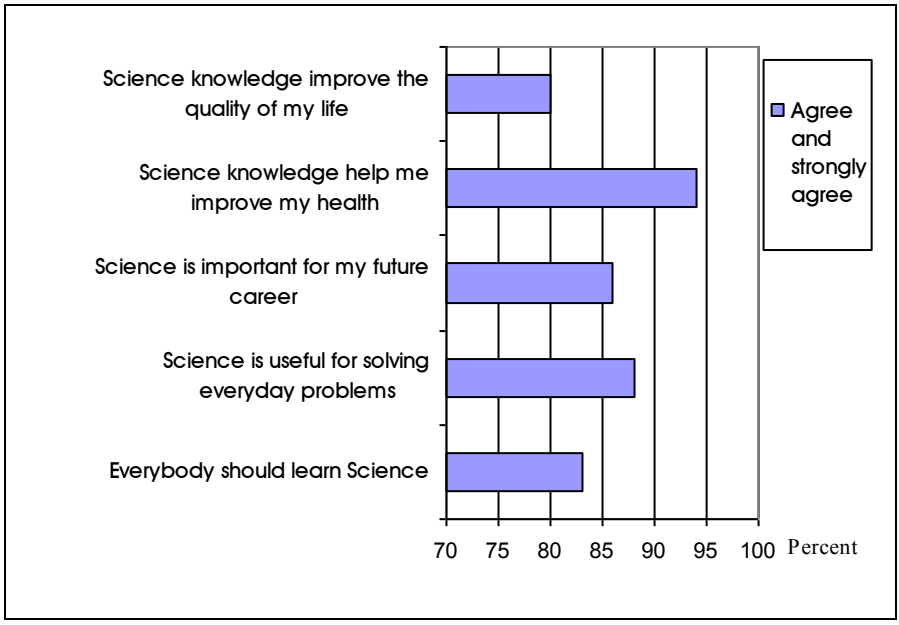

Figure 4. Pupils' opinions regarding the importance of Science

Despite of the high percent of pupils that have a positive attitude toward science, only a slight percent of them would like to become scientists. In Figure 5 we present the percent of pupils that stated they would like or wouldn't like to become a scientist.

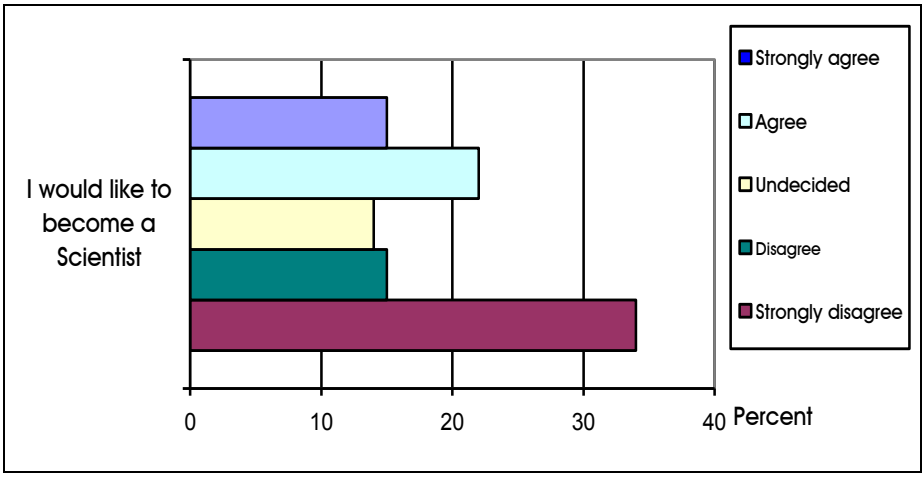

Figure 5. I would like to become a Scientist

As can be seen in Figure 5, only 36,9 % of pupils in the present study stated that they would like to become scientist while 49,2% stated they wouldn't like to become scientist, with 13,8% being undecided regarding this aspect.

5.2. Pupils' opinions regarding the role of teacher in succeeding in Natural Sciences

Pupils consider that Physics, Chemistry and Biology teachers are very important for their success in learning science. 91% of pupils agreed and strongly agreed that the role of the teacher is important in succeeding in Physics, 88% of pupils agreed and strongly agreed that the teacher is important in succeeding in Chemistry and 91% agreed and strongly agreed that the teacher is very important for their success in Biology. Pupils consider that teachers' support is important for their success in learning Natural Sciences. But it is

also important to understand pupils' opinions regarding the efficacy of science teachers. Thus, in Figure 6 we illustrate the distribution of pupils' answers to the statement "I consider that science (Physics / Chemistry / Biology) teacher is efficient.

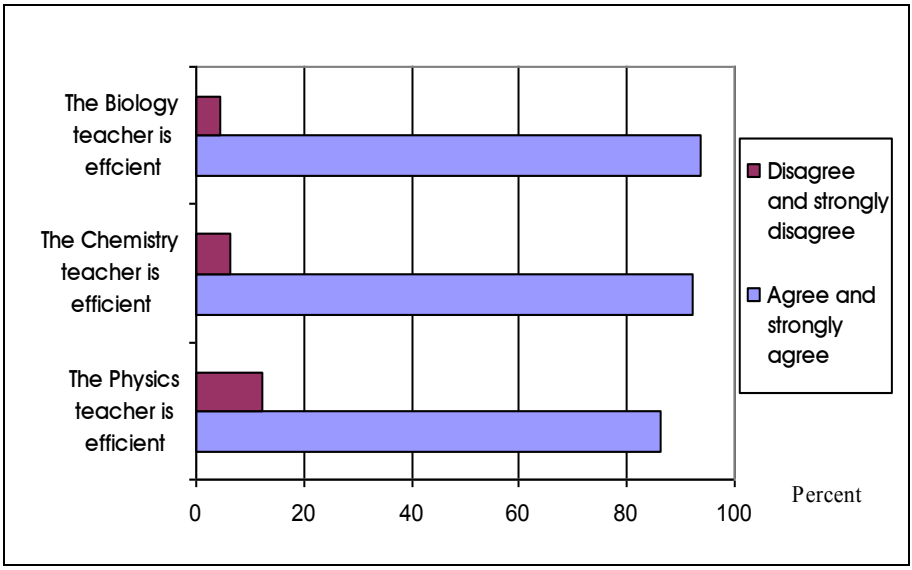

Figure 6. The teacher is efficient

Pupils' answers show that they believe that Physics/Chemistry/ Biology teachers are efficient persons. These answers are consistent with the answers that pupils provided at the statement regarding the role of teachers for their success in learning science.

5.3. The main difficulties pupils encounter when studying Natural Sciences

Even if pupils are interested in studying Natural Sciences, they also encounter some problems which prevent them for successfully learning in these school subjects. Pupils' answers to three open questions were analysed in order to identify the main themes concerning the difficulties in learning Natural Sciences. Few pupils in the sample didn't provide an answer to these questions, and

most of them (5 pupils) were in Biology. In some pupils answers we have identified two or three themes. The most frequent problem pupils encounter when studying Natural Sciences is the lack of understanding science concepts from earlier grades, and thus the difficulty to understand the fundamental concepts and formulas in the eight grade. 59% of pupils mentioned that the lack of understanding science from earlier grades is a problem in studying Physics, 52% of pupils considered it as a major concern in Chemistry and 48% mentioned it as a problem in learning Biology. Another problem that pupils mentioned is that Natural Sciences are difficult, with the highest percent of pupils that stated this being in Chemistry (26%). The teaching methods that teachers use were mentioned as a problem mainly in Biology (13%) and Chemistry (14%). The last problem that pupils mentioned is that Natural Sciences are not useful in someone's life, but there is a slight percent of pupils that have mentioned this as a problem: 8% in Physics, 7% in Chemistry and 14% in Biology.

5.4. The number of hours per week pupils study and would like to study Natural Sciences

Regarding the number of hours per week that pupils would like to study Natural Sciences, there is a slight difference between the number of hours pupils study in the present and the number of hours they would like to study, as can be seen in Table 4. Thus, the mean of hours in Physics is 2,04 for both the number of hours pupils study in the present and the number of hours they would like to study. Concerning Chemistry, the mean for the hours pupils study in present is 2,13 while the mean for the number of hours they would like to study is 2,09. In Biology, the mean for the number of hours pupils study in the present is 1,89 and the mean for the number of hours they would like to study is 2,33.

In Romania, pupils in the eight grade follow a single educational plan in which school subjects such as Biology, Chemistry and Physics are each taught 2 hours per week. According to the results presented in Table 4, the discipline in which pupils would like to study more hours per week is Biology.

Table 4. The number of hours pupils study and would like to study Natural Sciences

	N	Mean	Std. Deviation
How many hours in a week would you like to study Biology in school?	57	2.33	1.13
How many hours in a week would you like to study Chemistry in school?	56	2.13	1.11
How many hours in a week would you like to study Physics in school?	57	2.04	1.11
How many hours in a week do you study Biology in school?	57	1.89	1.38
How many hours in a week do you study Chemistry in school?	57	2.09	1.13
How many hours in a week do you study Physics in school?	57	2.04	1.01
Valid N (listwise)	53		

6. Discussion and conclusions

Pupils' attitudes toward science influence their achievement in this school subject (Prokop, Tuncer & Chuda, 2007). Thus, the exploration and development of positive attitudes toward science should be a major concern for teachers and educational policy makers. In the present study we have investigated pupils' attitudes toward Physics, Chemistry and Biology, the teachers' role for pupils' success in the acquisition of specific knowledge, the main difficulties that eight grade pupils encounter when studying Natural Sciences and the number of hours considered to be weekly necessary for teaching these disciplines.

The high percentages of pupils that agreed and strongly agreed that science is interesting and can help in solving daily problems or in improving health, quality of life and future career, indicate that eight grade pupils in the present sample have positive attitudes toward science (particularly toward Biology) and that they are interested in studying science. This is an important aspect in the Romanian educational system that policy makers and teachers should take into consideration when designing or

presenting the content of science curriculum, especially because there is research showing that students' attitudes toward school science decline from the point they entry to secondary school (George, 2000; Ramsden, 1998 as cited in Cheung, 2007).

As has been shown in the present study, half of the eight grade pupils have stated that they do not want to become scientist, with 13,8 percent being undecided if they would like or not to become scientists. We believe that Romanian policy makers should include in the science curriculum some practice hours during which students could go in different companies and associations to make various scientific investigations, and to interact with people who are engaged in scientific research.

The role of teachers is important for pupils' success in Natural Sciences, as was revealed in the present study. It is important to know that pupils consider science teachers as having important role for their success in science, because if they consider the information they receive from teachers the correct and authoritative information, they might rarely question and criticize it, and thus teachers shoud help pupils develop and use their critical thinking skills. Further, there is a need for teachers to engage in lifelong learning, in order to better help their students to understand and use relevant concepts and skills in Natural Sciences.

Even if eight grade pupils in the present study have positive attitudes toward Natural Sciences, they also encounter problems when studying Physics, Chemistry and Biology, problems that reduce their performance in these school subjects. The most frequent problems pupils have mentioned is the lack of understanding relevant concepts in science from earlier grades, which makes difficult for them to understand fundamental concepts and formulas in the eight grade. This is a significant issue that teachers and educational policy makers should address in the primary school level, in order to enhance pupils' knowledge and skills in science in middle and high school level. We consider that a critical aspect that teachers should take into account is the prior knowledge of pupils because, as research has suggested,

pupils' knowledge and experience play an important role in learning science, and prior knowledge can represent both a resource and a barrier to emerging understanding (Duschl, Schweingruber & Shouse, 2006).

We consider that although the sample of the present study was significant (65 eight grade pupils), the results must be replicated on a higher sample, in order to generalize our findings. Further, there is a need for more studies regarding pupils' attitudes and interest in science and the difficulties they encounter when studying science, on samples of primary school pupils because, as we have seen, pupils' difficulties in understanding science concepts and formulas start earlier than the eight grade.

Based on the results of the present study, we have formulated some key recommendations that should guide the Romanian teacher training in general, and in Natural Sciences in particular:

1. Increase the respect and attention to the pupils' personal needs and characteristics, by taking into consideration the pupils' prior knowledge in teaching Natural Sciences, and thus constructing the teaching process starting with the pupils' prior knowledge.
2. Increase the social status of the teaching profession. We consider that is essential to improve the working conditions of teachers, the teacher training programmes (both initial and continuous training), and the remuneration for this profession. This could positively influence students' interest in following careers related to Natural Sciences, in general, and the career of teaching, in particular.
3. Increase the emphasis put on the professional practice in the teacher training programmes.

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Part 3

INNOVATIVE INITIATIVES

Facilitation and Hindrance of Change: Characteristics of Collaboration in Teacher Education in a Multi-disciplinary University

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ABSTRACT

Leadership in teacher education is a complicated task because of the diversity of competencies and the number of departments in a university that should collaborate for attaining set targets. It seems to be a common practice that various teacher training curricula and related educational research are situated in different faculties of a university. They all have different traditions and also different outcomes or expectations in this field. In this paper, we discuss three different cases applied by Pedagogicum of the University of Tartu in developing teacher education. Pedagogicum is a new institution that should, in line with the national strategy of teacher education, facilitate improvement of the quality of teacher education and educational research in related fields. A key strategy for achieving these aims is promoting collaboration at the university and with outside partners. Therefore, transformational leadership has been applied in the context of a matrix management system.

In this paper, we describe our three cases in initiating changes in teacher education. These cases are about accreditation of prior and experiential learning, development of pedagogical practice, and composing an application for a doctoral school. Exploration of these cases gives a possibility to rise three recommendations: the work for a task that could cause a conflict with existing regulations or traditions

should be planned more carefully than in generating something new; timelines and deadlines of particular tasks could be followed better if the initiators and core group members belong to a group of higher academic and management level, or at least have a close cooperation with them; the core group of a task should have an effective size so that every member sees importance of his or her role and can actively contribute to the work.

Key words: educational leadership, change management, teacher education, case study

Introduction

In the current paper, we discuss the importance of selecting appropriate leadership strategy in the context of a matrix management system applied at the University of Tartu for achieving the changes expected by the Ministry of Education and Research. The matrix management system could work in a complex system of departments in a university as is also a common case in teacher education.

In the Estonian strategy for teacher education a number of targets should be achieved through extensive work of universities where teacher education programs are situated. Therefore, universities should take it into account when developing their financial agendas, strategic plans, and taking actions on motivating teacher educators towards the targets. It is also important to find a way for showing that a document developed by the ministry, even if in collaboration with universities, has a value to the related institutions and the personal professional career of their employees. These questions are especially interesting in the field of teacher education as it is an area where the variety of competences, experiences, traditions, attitudes, and beliefs of specialists with different background should work in collaboration for achieving expected outcomes. It means that the variety of people with their background in social sciences, humanities, science, and arts should find coherence in teacher education.

Among six courses of action, the Estonian Strategy for Teacher Education (Eesti õpetajahariduse strateegia..., 2009) points out leadership in teacher education as one important issue. It is stated that it should be research based, continuous, and coherent with the developments of the general educational system. We see this as a key issue that could lead either to success or failure in attaining all other targets of the strategy. We hypothesize here that among eight main types of leadership theories (see Burns, 1978; Cherry, 2010) the transformational leadership theories would work best in an institution of higher education where a number of highly qualified specialists from different departments with overlapping competencies work together on the same topics. Different transformational leadership theories focus on the connections between the actors in the processes. The role of the leaders is to motivate and inspire people by helping group members in seeing the importance and benefits of the task. According to this cluster of theories, a leader should focus on the performance of group members, but also on encouraging each person to fulfil his or her potential. The other types of theories could be too straightforward in a community of professors and other colleagues who are in many cases also leaders in their department or in various professional communities.

In line with this general approach to leadership the matrix management (Galbraith, 1971) can be seen as an appropriate type of organizational management of multi-disciplinary teacher education institutions. It gives a possibility to invite people from different faculties to work on a general task. This means that the leader can invite experts based on a particular issue. In an ideal case, a dynamic group of teacher educators and/or scientists will be formed for applying their competences in solving a problem – making it possible to use the overall available human resource at a university. However, there are also some disadvantages that could lead to unsuccessfulness. Firstly, in many cases loyalty could be a problem. Employees should follow tasks of their main employer and the leader of a new task should motivate them to work on a supplementary task. Secondly, it is difficult to monitor the work of a group because of employees' independency which could result in delays of outcomes. Thirdly, general projects also need management resulting in an increase of costs. However, if these problems can be avoided

then the matrix management with transformational leadership could be a successful combination for managing changes in teacher education at the level of universities.

Context of the study

This study focuses on teacher education co-ordination at the University of Tartu. The University of Tartu is the largest university in Estonia. It has 9 faculties and 5 colleges with around 3,000 employees and 17,000 students. The Faculty of Education filled the role of initiator and leader in the field of teacher education at the university from 2000 to 2009. This faculty was established on the basis of a number of smaller departments or research groups from different faculties; however, many other teacher education departments and research groups were continuing their work in other faculties. Eventually, it was found that it was difficult to develop and impose general guidelines and rules or represent all other departments by one faculty among the others. The faculties are institutionally at the same level and if teacher educators and researchers in these share the same competence then it could result in competition, not collaboration. Thus, the University of Tartu decided to establish Pedagogicum of the University of Tartu as a unit that is legally independent from the faculties and colleges but should work for them according to the decisions made by the council formed from the representatives of the faculties and colleges. In 2010, the former Faculty of Education and Faculty of Social Sciences joined to form the Faculty of Social Sciences and Education.

Currently at the University of Tartu, teacher education and related research is one of the activities in six faculties and two colleges, which are co-operating in the work of Pedagogicum. All these institutions have different backgrounds and traditions in educating teachers. Given the large variety of practices, it is a challenge to apply a general strategy of teacher education at the university level. The general aim of Pedagogicum is to facilitate improvement of the quality of teacher education and educational research in related fields. A key strategy for achieving these aims is promoting

collaboration at the university and with outside partners. Consequently, Pedagogicum has a complicated position as both a messenger and facilitator in introducing changes.

As will become evident, the current case of the University of Tartu represents a case of teacher education in a multi-disciplinary university. In Estonia the situation could be compared with Tallinn University. Other universities in Estonia are smaller and concentrate on educating only a specific group of teachers. At the University of Tartu, nearly all the different types of teachers needed in Estonian schools are educated. Thus, our cases and following discussions apply only for multi-disciplinary universities where there is no single department where all teacher education curricula are situated.

Methods

In the current study we analysed three cases of the work of Pedagogicum. In all the cases Pedagogicum was the initiator of the activities and one of the employees of Pedagogicum applied a transformational leadership strategy in the context of a matrix management system. It means that one employee had to motivate and inspire other group members in solving a task and the group members were invited from different faculties where they had contracts and other duties. The cases for the study were selected due to the variety in outcomes and efficacy, as well as in the characteristics that could have an effect on the case. Each case was analysed according to the following plan:

1. Goals and objectives of an activity – why this activity was started and what outcomes were expected.
2. Case group – people and institutions involved in performing this activity: sub-groups of the groups (initiators, core group, applicant group, target group); their availability, motivation, commitment, skills, and attitudes; institutional interests.
3. Process – timeline (if the deadlines were ambiguous or clear; realistic or non-realistic timeline), work methods, important internal and external factors (including co-operation with other universities).

4. Resources – finances (additional budget or re-allocation of an existent budget), workload needed from different group members, availability of materials for work.
5. Results – general description of outcomes, evaluation of the efficacy of the procedure and quality of the outcomes.
6. Reflection – what we have learned from the case.

The data analysis consisted of the following steps. Firstly, initiators involved in the cases composed thick descriptions of the cases (Geertz, 1973). Secondly, the descriptions were analysed by the first author of the paper to find similarities and differences between the cases. Finally, a group discussion with all the initiators was held to deliberate the findings.

Description of the cases

Case 1: Accreditation of prior and experiential learning

Goals and objectives

The main goal of this case was to analyse current practice in accreditation of prior and experiential learning (APEL) in teacher education and to develop general principles and criteria for applying APEL in teacher training at the University of Tartu. APEL is an important topic in the Estonian strategy for teacher education as the models for teacher education should be flexible. The general guidelines for APEL could replace the variety of traditions and pre-defined assessment criteria applied in different faculties and colleges and, therefore, assure equal treatment of students in all institutions.

Several smaller objectives had to be completed to reach this general goal. These included document analysis, analysis and sharing of best practices, e-mail correspondence, and series of meetings with a core group formed for completing the task.

Group

All activities at the University of Tartu were co-ordinated by one initiator from Pedagogicum – a senior specialist in teacher education. Activities were carried out by the core group consisting of

the initiator, and 12 representatives from all faculties and colleges providing teacher study programmes. Members of the core group were also responsible for the dissemination of the discussions and agreements inside faculties and colleges.

Compiling the core group was a complicated task – an attempt was made to involve at least one person among the best practitioners from the APEL committees of all faculties and colleges. The inclusion of members had to be agreed with every member, the deans of the faculties or directors of the colleges, and with the director of Pedagogicum. The group was formed on the basis of the most competent lecturers, program leaders and other staff. Most members of this core group were very busy and had other duties in teaching and research. In addition, problems appeared in following the initial set timeline. It was challenging to find available times for group meetings, for completing tasks, and for compiling or analysing documents.

Motivation, commitment, skills, and attitudes of the members of the group were different. Most members participated in discussions and analyses very actively, completed all tasks on time, and answered posed questions quickly. However, some members of the group had problems finding time for analyses and for participating in group meetings. None of the members ignored the process; however, if somebody missed one or two meetings then there was a need to keep some discussions going in next meetings and this slowed down the whole process.

Some problems with task completion originated from institutional interests – even if a member of the core group agreed, after discussions, to a common understanding; afterwards, it was hard to disseminate the agreement at his or her institution. An additional demotivating factor visible in the group was resistance – some members were not interested in changes at all or reflected their home institutions' resistance.

The applicant group consisted of other members of the APEL committees of the faculties and colleges and other teaching staff. The applicant group received information about the major developments and discussions throughout the process from members

of the core group and there was one special seminar for dissemination and discussions. The target group of this case contains all students but also student candidates of teacher education programmes if they have prior learning or work experience concerning their studies – mostly working teachers who attend to teacher education programmes.

Process

This case has progressed five months and will continue. Preparation started in September 2009 with planning the process, negotiations about the need of the work, and finding resources. The main process started in January 2010 with the compilation of the core group and the agreement of the timeline. The initial deadline for the task was May 15, 2010. In January this deadline seemed realistic while we had information that assessment criteria for all study programmes should be finished by 1st of April. This deadline originated from state regulations set by the Ministry of Education and Research, which prescribed a deadline for Estonian universities to apply pre-defined assessment criteria of learning outcomes in higher education curricula from September 2010.

During the process of working out assessment criteria for learning outcomes for all study programmes at the University of Tartu problems appeared as a result of an unrealistic timeline; tasks were tightly bounded with this process. As this process was not completed at the end of May, we were not able to meet targets in the agreed timeline. As a result, it was decided to continue the work in autumn 2010 after finalising the assessment criteria of the study programs.

Resources

There was a small budget for meetings and seminars of the core group and allowances for additional work. It was an additional budget for the regular budget of the university. The workload of the core group was generally reasonable; there were smaller problems with some members, who could not attend all meetings – restarting already finished discussions sometimes de-motivated other members.

Results

Currently there are developed draft outcomes of the work: (1) the analysis of the current situation of APEL, (2) proposal for some changes in university level regulations; and (3) a draft of common principles for APEL in teacher education. Efficacy of the process was normal, members of the core group were satisfied with the process and outcomes, their awareness raised, and sharing of best practice was important for them.

Reflection

Pedagogicum managed to coordinate the core group and discussions on common principles but only after finalising this work is it possible to determine its success.

The most problematic issue was the commitment of some members of the core group and their willingness and responsibility to actively participate in the process. The challenge is how to promote core group members to have an active attitude and willingness to take responsibility for disseminating discussions and outcomes in their faculty.

Another lesson learned is related to the timeline. This time the process was started too early while it is hard to work parallel with new developments, even if they are closely connected.

Case 2: Development of pedagogical practice

Goals and objectives

The goal of the core group was to analyse different practices of all faculties and colleges of the University of Tartu in organizing pedagogical practice in schools and kindergartens and, on the basis of this, to develop a coherent set of documents guiding pedagogical practice all over the university.

Case group

The initiator of the core group was an employee of Pedagogicum – a senior specialist in teacher education. The core group was formed from 21 members who belonged to the teaching staff of different faculties and colleges. They were also experienced supervisors of pedagogical practice. The core group also included one representative from a partner school, one from kindergartens, and one from teacher training students. The role of the initiator as the leader of the group was to motivate core group members who had to implement the results.

The applicant group consisted of medium level academic and management staff of 6 faculties and 2 colleges and teachers of partner schools; mainly without a PhD degree. Responsibility for organizing the pedagogical practice is at the faculty which co-ordinate these curricula. In the case of every curriculum there is also a program board which defines goals of the practice and how to arrange them. Implementers of the guidelines and regulations of pedagogical practice are mainly supervisors of practice. The target group consists of all baccalaureate and master students in teacher education and supervising teachers of partner schools. An important characteristic of the core group is that it also involves employees outside the university.

Process

The guidelines of pedagogical practice were developed within the University of Tartu. The core group had regular meetings and communication by e-mail. One input for the group was the yearly feedback collected by group members in different faculties and colleges. Every year feedback was asked from trainees and supervisors from the university, as well as from schools and kindergartens.

The work for improving pedagogical practice started in 2009. In June and August of that year the leader of the core group met individually with the principals or vice principals of the schools and kindergartens in which the practice is held. The aim of this activity was to clarify their expectations for the university. In September and

October, individual discussions with supervising teaching staff at the university were held in order to have an overview of issues in different faculties, and to hear their proposals for organizing and conducting the practice. Meetings were also held with trainee supervisors in schools and kindergartens.

In January 2010, a pedagogical practice core group was established. Different interest groups were involved and; therefore, the discussions of the group took a lot of time and the timeline was shifted several times.

The core group of this task had several meetings without progress given that members of the group represented their personal interests, experiences, traditions in conducting pedagogical practice, and attitude of their structural unit. There was a willingness to homogenize the principles of pedagogical practice at the university but the majority of the group was not consent to waive their old traditions and principles. Consensus in some principles of how to organize pedagogical practice was reached from January to April 2010. From that point on the cooperation between the members of the core group was fluent and fruitful.

At the beginning of the work of the core group, the initiator's opinion was that general principles of conducting the teaching practice and regulations related to this can be completed by the beginning of academic year 2009/2010. In effect, they were ratified only at the beginning of teaching practice in 2010. The members of the core group were convinced at the starting point that the topic was very important and attending to it would take a lot of time.

During the development of the practice the group collaborated with other universities in Estonia and considered the experiences of universities outside of Estonia.

Resources

There was a small budget for meetings and seminars of the core group and allowances for additional work. It was an additional budget for the regular budget of the university. Most of the work hours and salary was planned for leading the core group. Other

group members keep day-jobs. Therefore, they had difficulties in finding time for the work in the core group. The process is largely influenced by financial means meant for conducting the pedagogical practice.

Results

The work of the core group resulted in draft regulations for organizing teaching practice in all faculties and colleges. The group was working towards a general regulation, the procedural guidelines for conducting practice, frame-agreements, and templates for contracts with practice supervisors in schools and kindergartens. The principles for co-ordinating and conducting pedagogical practice have almost been homogenized. As a result of the process different faculties and colleges communicate to each other more often. They share experiences and good ideas to conduct the practice.

Reflection

The work on improving the pedagogical practice at the University of Tartu has demonstrated that it is always reasonable to gather the knowledge of outstanding experts and plan further development and actions regarding it. Every distinguished expert has a very strong personality adherent to one's principles and will not come along with changes quickly. The leader of such group must manage the core group's work with wisdom and stoutness in order to reach the goals. He or she must be able to piece together a realistic timeline. It is very important to share information, support, and help in every way the parties involved in organizing practice, especially during the time of introducing changes.

Case 3: Application for the doctoral school

Goals and objectives

The main goal of this course of action was to prepare a joint application with the Tallinn University for a large-scale project of doctoral school of education in Estonia. This project would meet the needs of PhD students, their supervisors, and other parties involved

in doctoral studies and would be judged as a successful application by the financing authority of the doctoral schools. To reach this goal, several smaller objectives had to be researched. These included, document analysis, e-mail correspondence and series of meetings with prominent educators and specialists to chart out the current situation of doctoral studies in education, to negotiate the vision of desired situation, and to plan concrete activities necessary for improving doctoral studies in education in Estonia.

Group

his doctoral school was prepared by two universities – the University of Tartu and Tallinn University. Below, we describe the groups of people who were involved in Tartu. All activities at the University of Tartu were coordinated by two initiators from Pedagogicum – a senior researcher and the director. Activities were carried out by the core group consisting of the two initiators, four professors (two professors from the Faculty of Education and two professors from the Faculty of Natural Sciences and Technology) and the dean of the Faculty of Education. The fact that activities were initiated by Pedagogicum provided a neutral ground for two faculties which educate doctoral students in education and possibly eliminated some tensions that could have risen in case the initiator would have been either one of the faculties. All members of the core group were committed and motivated to work on the application owing that a successful application would result in direct benefits for their institute, staff and PhD students. Respectively, the core group members took part in regular meetings and replied in short notice to e-mails. The applicant group and the target group consisted respectively of supervisors and PhD students whose research was closely related to the field of education from six faculties at the university. The applicant group received information about the major developments throughout the process.

Process

The process of application preparation lasted 11 months. The initial application for a doctoral school was prepared in three months. Clear and realistic deadlines regulated the application process. Initially, the core group worked as a team that was lead by the director of Pedagogicum. The major role of the professors and the dean was to provide input and critical feedback on the materials that were prepared by the initiators. However, besides the staff of the University of Tartu, an important external party was involved in the process. The application of the doctoral school was prepared in collaboration with colleagues from Tallinn University. This factor influenced the pace and methods of work. Although it was agreed from the start that all resources would be equally divided between the two parties, both universities wanted to be the major applicants. Negotiation between the vice rectors and rectors of the universities resulted in the decision that the major applicant would be Tallinn University. Working in a bigger team also resulted in a decline of effectiveness of actions. Overall, communication became slower within a bigger team and some important information was lost or delayed. For example, although team members gave feedback on prepared documents, changes were not made or were made with a delay to the document. Nevertheless, the application was conditionally accepted and the autumn months were spent on making adjustments to the application. Similarly as before, although both teams showed interest in preparing a doctoral school, the communication within a big team was at times considerably delayed. E-mail forum and individual discussions were the major working method applied at this period. Finally, it can be said that although working in the extended group brought along some elements of de-motivation, overall, the core groups from both universities remained motivated and committed to the project because the prospective benefits were clearly visible to everyone.

Resources

Successful application meant additional finances for developing doctoral education in the field and compensation for the work carried out during the preparatory phase of composing the application. Workload of the core team was generally reasonable;

however some ineffective activities caused additional workload for the two initiators and a professor who was to become the head of doctoral school in Tartu. All core team members received allowance for their work in the preparatory phase of the doctoral school.

Results

The fact that the application was approved and the doctoral school of education was established would suggest a positive evaluation of the processes. However, it must be said that the process also included several ineffective elements. First, the decision about the major applicant should have been made earlier in the process. Currently, both universities worked on their own application in the first place and it was a political decision, made by vice rectors and rectors, that gave the role of major applicant to the Tallinn team. To some extend for the Tartu team the new situation meant going backwards in the process owing that they had already finalized a draft application. Second, the communication within the extended group was at times a serious issue. Although it was meant to broaden the perspectives and deepen the discussions, it also resulted in loss of focus and resources.

Reflection

Pedagogicum managed to coordinate the preparation of the doctoral school within University of Tartu by being a neutral partner for two faculties that carry out doctoral studies in education. Important contributing factors were external finances for the activities and prospective benefits for all parties involved that resulted in interest and commitment in the activities. What this case also shows is the importance and impact of political decisions on the primary process of an institute. Moreover, the picture gets even more complicated when including the important external partner of this case. An external factor or partner can result in an increase of motivation within a team; for example, cause higher commitment due to extended board of expertise involved, but it can also de-motivate a team. Slow and ineffective communication contributes surly to de-motivation. In the current case evidence of both sides was visible.

Discussion

The comparison of the three cases used in this study demonstrates that the results were achieved by initial deadlines only in the third case. However, the efficacy could be evaluated differently in all cases. We found that it was the highest in case 3 and the lowest in case 2 (see Table 1). As follows, we are analysing what could be the factors having important influence on achieving attainment targets in applying a matrix management system through transformational leadership. These 3 cases give readers some ideas that can be applied for achieving better results in operationalizing general strategies in different departments of a university. However, regardless the ideas of the following discussion we have to admit that this study had several limitations. Firstly, we applied a qualitative approach and, therefore, the results are not generalizable. Secondly, the cases are not well comparable because of the variety of many factors. Thirdly, in analysing the differences of the units separately we can just formulate hypotheses that could show some effect on the outcomes but these have to be controlled in the following studies.

The comparison of the cases demonstrates that the goal of cases 1 and 2 was to develop general guidelines that should replace or have an effect on the existing ones in different departments. It means that there was a possible conflict between existing and new guidelines. Case 2 was, however, more complicated while the outcome of it had to be applied not only within the university but also in partner schools. It could raise the level of importance and commitment of the core group of the task. Case 3 was in its matter much more motivating and inspiring for the partners while in this case the core group had to develop a new plan for using an additional budget for developing PhD studies. Thus, the nature of the task could be one factor that determines the success of the case.

Table 1. Comparison of cases of the study in a meta-level.

Analysis units		Case 1: Accreditation of prior and experiential learning	Case 2: Development of pedagogical practice	Case 3: Application for the doctoral school
Goals and objectives		general guidelines for faculties and colleges	general guidelines for faculties, colleges, and partner schools	activity plan and related budget
Case group	Initiator	MSc level, non-academic	MSc level, non-academic	PhD level, academic
	Core and applicant group	medium level academic and management staff of 6 faculties and 2 colleges; mainly without a PhD degree; core group consisted of 13 persons	medium level academic and management staff of 6 faculties and 2 colleges, and teachers of partner schools; mainly without a PhD degree; core group consisted of 21 persons	high level academic and management staff with a PhD degree (mainly two faculties); core group consisted of 7 persons
	Target group	student candidates and all students	baccalaureate and master students, teachers of partner schools	PhD students and their supervisors
Process		Deadlines postponed due to external factors	Deadlines postponed due to internal factors	Changes in timelines due to external factors but deadlines not postponed
Resources		Budget for salary (mainly for the initiator) and other costs; additional workload for all members of the core group	Budget for salary (mainly for the initiator) and other costs; additional workload for all members of the core group	Budget for salary (for the core group depending on workload); additional workload for all members of the core group

Results	Not yet completed; efficacy medium among the analysis cases	Not yet completed; efficacy lowest among the analysis cases	Successfully completed; efficacy highest among the analysis cases
Reflection	Commitment and representation of institutions should be more in focus	Aims and activities of the work should be more specified and coherent	External factors could affect the timeline but motivate the group for completing the task

In comparing the case groups, we could see two general differences. In cases 1 and 2 the initiator was a non-academic person without a PhD degree while case 3 was initiated by academic persons holding PhDs. Secondly, the core group consisted of persons at the highest academic or administrative position while in cases 1 and 2 the members of the core groups did not have so much independence in their decisions. One important difference between cases 1 and 2 was that the core group was much bigger in case 2. It could lead to a more shared responsibility that can cause a lower success in the process. Some effect to the importance of the task could also be caused by the target group. In case 3, the target group is much more personally related to the core and applicant group while many members of the target group are their colleagues or could be in a near future. In the other cases personal contacts after graduation are seldom.

One more important factor in determining the success of a case seems to be the course of the process. In the first two cases the core group did not consist of persons who have to take the final decisions at different departments. This was probably one reason why in these cases the deadlines had postponed. Additional reasons can be seen among other factors. In the first case the shift of deadlines was possibly also caused by external factors while in the second case by internal factors. We can hypothesise that this is one of the most important differences between cases 1 and 2 and a possible reason why the first case was a little more successful. It could be easier to

accept changes caused by external factors than in the case of reasons derived from the core group.

From the viewpoint of resources these cases were quite similar. However, an important distinction could arise in concurrence of the different characteristics. In cases 1 and 2, the core group did not consist of people who have large-scale possibilities to manage resources in their department while in case 3 many members of the core group had these possibilities and duties. As a result, they could have a different view on the resources available for a particular work and resources that should be re-allocated or could be added in applying the outcomes of the work.

As a result of the comparison of the cases we can make the following three main recommendations for planning analogous work in similar context:

- a task that could cause a conflict with existing regulations or traditions is more complicated than a task for generating something new and, therefore, the work for the first one should be planned with a special care;
- a timeline and deadlines for completing a task could be kept better if the initiators and core group members belong to a group of higher academic and management level or at least have a close co-operation with them;
- the core group should have an effective size so that every member of it sees the importance of his or her role and can actively contribute to the work.

Conclusion

Our study showed that the leadership of teacher educators and educational research fellows of various faculties and colleges is not a simple task. However, it can be completed through building bridges between persons owning different experiences and views about teacher education policy, and supporting collaboration of competing experts. Our cases demonstrated that even in the case of a variety of initiators and tasks the work can be successful in applying transformational leadership in the context of matrix management system.

However, the level of success could be different and several ideas have been raised for increasing the efficacy of the work. We hope that we and the readers of the paper can test the recommendations made by us and on the basis of more carefully designed studies it could be possible to verify our hypotheses set in this explorative study.

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Beyond Compliance: University – School Network Learning Partnerships

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ABSTRACT

This paper argues that the interaction between good teachers and learners in classrooms has the biggest effect on learner outcomes. Teachers learn in authentic contexts and their formative reflection on practice can be enhanced through collaborative networks between teachers and university education departments.

Key words: professionalism, university – school partnerships, teacher knowledge,

Managerialism and 'new professionalism'

In England a technical rationalist philosophy has dominated education policy for nearly twenty years. This 'new professionalism' is driven by powerful mechanisms such as centralised curriculum and an ubiquitous inspection regime. The leverage used to make the policy work is linked to funding to ensure that teachers and teacher educators conform to centrally prescribed policy agenda (Furlong, 2009).

This style of carefully managed 'new professionalism' is also prevalent in many states of the USA. There is now a growing acknowledgment that such a centrally controlled approach to teacher reform has radically changed the culture of both UK schools and university education department over the last 20 years.

In a five year longitudinal study Gu & Day (2007) documented the lives of 300 teachers across 100 schools in England and analysed the challenges that teachers faced in the UK in the early 2000s. Day's (2007) 'Vitae' study found that teachers' professional autonomy was severely reduced but that most teachers, despite disagreeing with the broad thrust of the education policy, had adapted to this new environment because of their strong personal commitment to their students.,

Teacher education in university departments

Teacher educators in university departments also complied with the policy. University departments of education faced extreme challenges as 'New professionalism' became a very powerful form of control. Centralised curricula introduced a new discourse of competences, standards, effective and best' practice. Meeting inspection requirements was linked directly to the numbers of students allocated to a university department and hence determined the level of essential funding made available. Central funding to university based courses was stretched further by the establishment of non-university based alternate employment based routes into teaching. Furthermore the publication of inspection reports resulted in a competitive climate between individual university departments and school centred courses. The overall effect wasto undermine effective regional planning and inhibit mutual learning and innovation (Furlong, 2009).

In May 2010 a new government was elected in the UK. However hopes of a radical change in direction were dashed when, it became clear that the new minister supported a centralized curriculum of 'what works' as when he quoted quoting directly from the Barber and Moushad 2009 McKinsey report.

> *'Many still cling to the demonstrably false view that creativity consists of each teacher making it up in their own classroom. This is not creativity, it is betrayal'* and *'that once the educational experts have worked out what 'excellent instruction'* is *then it is a simple task of government to 'roll out' that policy for all teachers'* (Barber, 2009, p19).

Such an approach effectively removes teachers and teacher educators from the debate about the nature or value of proposed forms of 'excellent instruction' (Furlong, 2000).

Furthermore in Universities ambivalence towards professional teacher educators has had other consequences too. In England and Wales, in the early 90's there was a move towards recruiting expert teachers with considerable school-based practice into teaching on university led courses. These teachers were careers changers having spent time in schools before moving to academia. In recent years there has been a university sector led move to marginalize these professionally oriented teacher educators because their research output is often less than more academic oriented colleagues. This has arisen because of increased pressures linking essential funding to academic research output. Yet it is precisely these staff who are central to professional teacher education; it is they who have recent classroom based professional classroom experience and who are also able to provide the bridge between practice and other forms of codified academic knowledge.

The centralisation of academic knowledge creation and 'one size fits all' approach to teacher education programmes along with the marginalisation of teacher education within university departments has whittled away at the professional identity of teachers and teacher educators. This identity which was centred on an 'inner dedication' has been diminished by the rising tide of marketisation, external regulation, the prevailing audit culture resulting in a devaluing of professional practice (Furlong, 2000).

Why teacher education matters

Successive UK governments have stressed the importance of educational achievement, and their measure of success has been through using students' examination performance in high stake tests and comparison of such performance in international tables. Schools have responded to this and have shifted the emphasis onto preparing students for and recording results and data from high stakes examinations. Not surprisingly the focus for professional development has also been on whole school policy initiatives designed to increase students performance in tests. Indeed one essential requirement of gaining a teaching qualification at the time of writing is, to be able to demonstrate the ability to read and interpret school performance data.

Recent research by Wiliam (2010) has called into question the prescribed centralized approach to education policy. His meta-analysis challenges the UK policy thrust of trying to define and then emulate the features of the most successful schools. He argues that as richer, more reliable data is collected, the evidence available suggests that one of the biggest differences between so called "good" schools and "bad" schools is the local demographics and consequently the difference in the students attending the schools. Wiliam has also identified that 7% of the variation between schools on the standard benchmark of performance is due to the effect of the school. The other 93% is due to factors over which the school has no control (Wiliam, 2010). Indeed in the average school, 15 out of a class of 30 will achieve five good grades at GCSE (including English and mathematics). Furthermore if the same students were in a so-called "good" school, then 17 out of 30 would reach the same standard, and in a so-called "bad" school, then only 13 out of 30 would do so.

Wiliam goes further and asserts that it does not matter which school a student attends, but it matters very much in which classrooms in that school the student is placed. Moreover, in the classrooms of the most effective teachers, students from disadvantaged backgrounds learn just as much as those from advantaged backgrounds and those with behavioural difficulties learn as much as those without.

Wiliam concludes baldly that the only thing that really matters is the 'quality of the teacher' (Wiliam, 2009). Indeed Barber & Mousha (2007) also come to same conclusion in their report. Whilst this is not a new idea, it is has been lost in the plethora of whole school, top down initiatives which have dominated recent UK policy. Nevertheless the conclusion does highlight the importance of good education at all stages of a teacher's career.

Teacher knowledge and learning

An implicit assumption made by the proponents of 'one size fits all effective practice' is that knowledge can be transmitted effortlessly from one to practitioner to another by following instructions or by simply mimicking the behavior of other teachers in any classroom situation. A further flaw in this argument is that this can somehow be mandated and guaranteed through attendance at professional development programmes (Webster Wright, 2009). Such assumptions are not only flawed but they also limit a professional teachers' ability to engage in context specific critical inquiry and have the net effect of maintaining the status quo.

Professional learning and teacher knowledge is embodied, contextual and embedded in practice. Changes in learning occur through practice experience and reflective action within contexts that may pose dilemmas, that continued professional learning is situated, social and constructed. Teacher knowledge is both explicit and tacit in form. Explicit, codified academic knowledge is the accumulated propositional knowledge stored in texts, databases, studentship, scholarship, research and cultural practices of teaching (Eraut, 2002). This type of knowledge is related to intellectual development and progresses through a hierarchy leading to greater levels of abstraction and a deeper understanding. Tacit teacher knowledge on the other hand is context specific and difficult to make explicit or to represent in a textual form because it is largely acquired informally through participation in complex classrooms. Such tacit knowledge is often so 'taken for granted' that teachers are unaware of its influence on their behaviour (Eraut, 2004).

Teachers learn through both reflection and action, by working with others (SchÖn, 1983) through asking questions, sharing information, seeking help, experimenting with innovative actions and seeking feedback (Eraut, 2002). At the beginning of their education courses when novices observe an expert teacher at work, teaching can look deceptively simple. However when the new teacher starts to teach, it very soon becomes apparent that there are many things going on in the classroom that are 'hidden'. This is because expert teachers are required to make nuanced judgements in the face of considerable complexity in what are essentially unique classrooms; in other words judgements are made based on developing context specific, tacit knowledge in action. Tacit and explicit knowledge are acquired, renewed and modified in different ways. It stands to reason then that context specific tacit knowledge can only be acquired through collaborating with more expert teachers and interacting with students in authentic classrooms (Lave & Wenger, 1991; Kelly, 2006). However to simply mimic the behaviour of an expert teacher will be an impoverished education which will not be easily transferable to another context.

Consequently, a fully embedded school based apprenticeship model of teacher learning is insufficient to prepare new teachers, for two reasons. First, it is often the case that expert teachers' actions tend to become automated, drawing on intuitive tacit knowledge to the point that it is almost procedural in character (Knight, 2002). Expert teachers' knowledge may have become so embedded that it is difficult for the expert to rationalize and articulate what is actually going on in a classroom and why. Furthermore, new teachers' judgements are influenced by their own experience as a student in similar classrooms, although this previous experience will have been gleaned from the perspective of being one student in a classroom full of individual students, in probably a very different school context. Making sense of classrooms from a teacher's perspective is more sophisticated, involving deliberative decision making. This deliberative approach is based on a deeper understanding of the contextual features of the specific classroom together with detailed knowledge of the student and what motivates them to learn. Such an approach is not only driven by rational thinking but to a large degree by human experiences and emotions (Hoekstra et al., 2007). In other

words, becoming a teacher is about 'growing capacity to make appropriate judgements in changing, and often unique circumstances' (Beckett & Hager, 2000, p. 302). Table One summarises different terms used in the literature to describe approaches taken by novice and expert teachers.

Implicit / Tacit Judgements	Reactive / Reflective Judgements	Deliberative Judgements
'Hot' action Judgements based on intuition	Judgements linked to actions and the classroom environment	'Cooler' action Judgements based on deep understanding of the dynamics of the teacher/students relationships and the contextual features
Mainly emotional responses	Respond to affective and social contexts	Cognitive domains also involved (Beckett& Hagar)
Knowledge *in* action	Knowledge *of* action	Knowledge *for* action (Schon)
'Act' like a teacher		'Think' 'like a teacher (Furlong & Maynard)
Recognises patterns Instant response Routine action Some awareness of the situation	Rapid Interpretation Intuitive response Routines punctuated by rapid decisions Implicit monitoring Short reactive reflection	Review involving discussion/ analysis Deliberative decision making Planned action with progress reviews Conscious monitoring of thought and activity. Self management. Evaluation. (Eraut)

Novice teacher ——————————— *Expert teacher*

Table 1. Teacher Judgements

A study of novice teachers taking part in a university based course of initial teacher education analysed student teachers' accounts of their learning and showed that becoming a teacher is a complex, multidimensional, idiosyncratic and context-specific process. Indeed, not only is the school based experience a different experience for each novice teacher (dependent on the specific schools in which they are placed), but each new teacher also brings to that particular context various deep-rooted preconceptions about the nature of effective teaching and learning, and their own set of expectations about how to develop the professional knowledge that they will need (Burn et al, 2003). Hobson et al.'s (2006) longitudinal study of novice teachers moving into their early careers came to the same conclusion that 'one size of initial teacher preparation does not fit all'.

Novice teachers start by learning how to perform in the classroom, to 'act' like a teacher and, with expert guidance and reflection, subsequently learn to 'think' like a teacher (Furlong, & Maynard, 1995). 'Thinking' like a teacher requires taking account of where the learner is at, having regard for the nature of that which has to be learnt and subsequently planning appropriate sequences of lessons which bring about student learning. All three steps require explicit knowledge of how students learn, what motivates them, how students interact in groups in social situations and how this can be applied to specific classrooms at a particular time and place (Eraut, 2004). Therefore, learning for a novice is about deepening inward knowledge and enriching existing meaning structures. This might be recursive, circling back to concepts and internalizing them into behaviours and beliefs (Fenwick, 2001).

For the expert teacher to make personal, tacit knowledge explicit will require standing back from the 'hot action' of everyday classroom pressure and adopting a 'deliberative rational' approach in appraising what they do. This is an important step in articulating and illustrating how, as an expert teacher, they actually engage in 'calculative rationality' to make decisions in new situations (Dreyfus & Dreyfus, 1986). This is not a straightforward process and is also above and beyond what they do in their day to day teaching. Therefore an expert teacher may need support in deconstructing their practice so that it is helpful for novices. This is one key role for the university based teacher educator.
Expert teachers also need to continue to learn throughout their career so that their teacher knowledge can be updated in response to changes in curriculum and the world of work. It is no longer acceptable to assume that teacher learning ends when students graduate from Initial Teacher Education programmes or completes in -school induction.

In a rapidly changing world teachers at all stages have to keep abreast of curriculum changes and developments in subject areas. Teaching is such a complex process that one lifetime is not enough to master it, but by rigorously focusing on practice, teachers can continue to improve throughout their career.

Teacher learning is based on sustained intellectual challenge and stimulation and opportunities to talk about work. Teachers do not just want quick fixes, they are all graduates, highly qualified people who are not only capable of, but want to engage in, intellectual discussion and debate about serious issues. School leaders then have a duty to create a culture for the continuous improvement of practice, and to keep the focus on a small number of things that are likely to improve outcomes for students. In addition, they need to create the time within the existing teachers' contracts to do this, and to encourage the taking of sensible risks.

Teachers collaborating in networks

The expertise needed to raise student achievement already exists in many, if not most, schools. In the highest performing schools there is a culture that encourages teachers and administrators to work together on a regular basis, to consult each other more often on matters of teaching and learning, to share responsibilities for instructional improvement, and to implement professional-learning opportunities that address both their needs and their students'.

It is not enough to bring new talent into the classroom or reward high performers. Innovation that leads to continuing cycles of improvement will begin on a large scale only when teachers learn together and work collaboratively, using readily available data and pooling their collective expertise to address problems.

In a recent UK wide study of the state of CPD nationwide, Pedder et al (2009) recorded six features which increased teachers' professional learning and as a result also enhanced students' learning. Three characteristics are related to the *structure* of the professional learning activity and three are related to the *nature* of the professional learning activity. The structural characteristics include how the activity is organised. For an activity to transform practice it must focus on school specific classroom based practice. Moreover learning is assisted when teachers work collaboratively in study groups, teacher networks through mentoring, and teacher research.

Finally professional learning is more likely to take place through sustained activity over a long period of time.

The core features of successful professional learning activities include opportunities for active learning which promote coherence in teachers' professional learning particularly when this is situated within a practice based context (Pedder et al, 2009).

Evidence from a further study focussing on UK secondary school science departments carried out by a team from several university education departments working with the network of science learning centres, showed that science teachers professional learning was often dominated by whole school policy initiatives and that increasingly schools were running their own in-house professional learning activities (National Network for Science Learning Centres, 2010).

Beyond Compliance

The central argument of the paper is that teacher educators in university departments have a unique contribution to make to all forms of professional education and development of teachers. I want to argue that transformative leaning can come about through collaboration between university departments and school partners in a learning community. The next sections explain the rationale for the university–school network, how learning can take place within such a network and why this has the potential to alter ways of being professional (Billet & Somerville, 2004), and that small scale interventions led by teacher communities and supported by university departments can also be highly successful (Hickey & Mohan, 2004).

A partnership model of teacher education

Learning to become a teacher, in the fullest professional sense, is not just about having practical knowledge gained through learning the 'craft' in a classroom or through studying about how to teach

from texts but is also about gaining and accessing both explicit and tacit knowledge in an authentic classroom. School–university partnership courses enable the guided acquisition and integration of both explicit and tacit knowledge though professional conversations. The complementary roles of expert teacher and teacher educators facilitate knowledge conversion through social, cultural and collective processes within a school university partnership ITE course. This can be conceptualised using a four stage model devised by Nonaka & Takeuchi (1995) and developed by Nonaka & Konno (1998), see Figure one.

Socialisation process: establishing a trusting relationship

The socialisation process is about building a trusting relationship between members of the network. Teacher educators and school based experts work together closely, value the contribution each member brings to professional learning through working in a long established collegial culture of reflection and open honest feedback. New teachers are introduced to the network through careful induction into the cultures of both school and university social contexts through being and learning in each context. By being immersed in the context novices pick up ideas about the rules and rituals of the functioning classroom and university course. However the outward actions observed and lived experiences are also rooted in ideas, values and emotions which are not immediately apparent. Furthermore new teachers bring their own deep seated beliefs about school and how learning takes place. It is through dialogue between experts, new teachers and educators that these 'hidden' ideas and values are externalized and made explicit.

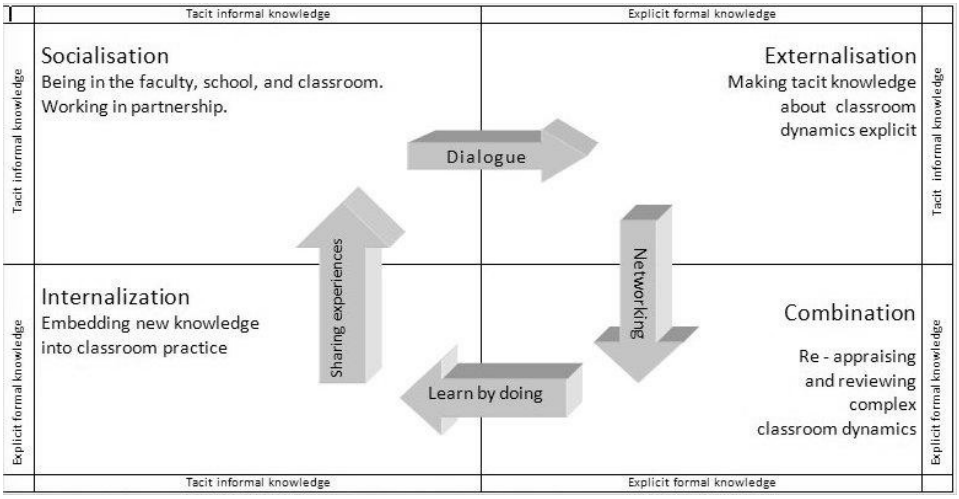

Figure 1. Knowledge creation and sharing within a school – university ITE course

Externalization: transformative power of the network

The externalization process of becoming a new teacher or in the case of more experienced teachers of transforming existing practice is facilitated through reflecting more deeply on what is going on in a classroom. Developing understanding occurs by going further, by being reflexive. Being reflexive involves examining underlying assumptions and priorities that shape interaction within a given time, place and situation. In other words, a reflexive teacher can 'stand back' and examine the underlying beliefs and values which are informing decision-making and actions in their own classroom situations. 'Standing back' provides the space to think, and when professional conversations take place between novice and expert about practice this can be transformative. In our network the university based educator contributes through also asking challenging questions of both expert and novice and by bringing recent research and conceptual tools to the conversations. School based partners may challenge or incorporate new ideas into their practice when they value and can see how to incorporate the ideas the university partners bring. This is more likely to happen when

there is a trusting relationship established between school and university partners. Within our network many of the experts have been educated at the university and completed their initial teacher education there. Many expert teachers have worked within the network for many years and share similar values and approaches Consequently, externalization within the network is a case of both school and university based experts articulating their understanding. Together the expert teacher and teacher educators help novices to make better judgements in their classroom interactions. In other words engaging in professional dialogue helps to make complex classroom dynamics more accessible to a novice. For more experienced teachers engaging in classroom based research can also be transformative (Zeichner,2003). The experience of engaging in self study research helps teachers to become more confident about their ability to be more proactive in dealing with difficult situations that arise in their own teaching and to acquire habits and skills of inquiry that are used beyond the research experience to analyse the complexities of teaching.

Furthermore in the case of more experienced teachers, engaging in classroom based research seems to develop or rekindle an excitement and enthusiasm about teaching and provides a validation of the importance of the work that teachers do. Unfortunately for some long serving teachers this can be missing from their working day (Ziechner, 2003).

Combination and Internalization: sustaining the network

During the process of combination of new understanding from research findings the novice and experienced teachers come to re-appraise their understanding of complex classroom dynamics in-situ. In initial teacher education this is done by a novice working with an expert to capture and integrate new knowledge, through collecting evidence based on focussed classroom based tasks, and engaging in an individual small scale action research project. For more experienced teachers this takes place through working with an expert in the university who takes on the role of research knowledge provider and critical friend by providing conceptual tools with which

to re-examine school based issues. Through this process new teachers internalize newly developed ideas and knowledge with the overall effect being that they are better equipped to make more appropriate judgements in classrooms and decisions.

Figure two represents the now established school- university network. There are a number of activities which bring people within the network together; these can be thought of as knots in the net, and are represented by the oval and rectangle shapes in figure two. The threads between the knots link people through good communication channels and trusting relationships within the network. The links are made through reciprocal face to face meetings in both the school and university and through using new technology tools (Wohlstetter, 2003).

The network is sustained through building on the trusting relationship established between new teachers; teacher educators in the university and school based expert teachers who have also been involved in planning the initial teacher education programme. This initial teacher education programme is a Masters (M) Level course which involves a period of extended classroom focussed research.

On completion of the course many of the new teachers take up posts in partner schools and also carry on to complete the second year of a university accredited masters courses in the early stages of their career. There is also the opportunity for more experienced teachers to accredit their school focussed research by completing university provided professional and masters courses.

Over the last three years we have generated new knowledge about the classrooms within our partner schools and this has been shared within the network through online repositories and face to face meetings. There is considerable evidence linking this school–university initiated classroom based research to changes in students' attitudes and behaviour although this is embedded within the findings of the individual teachers' dissertations and theses. The meta-analysis of this work is still in progress although the individual findings are disseminated within the network through a peer reviewed journal and wiki page.

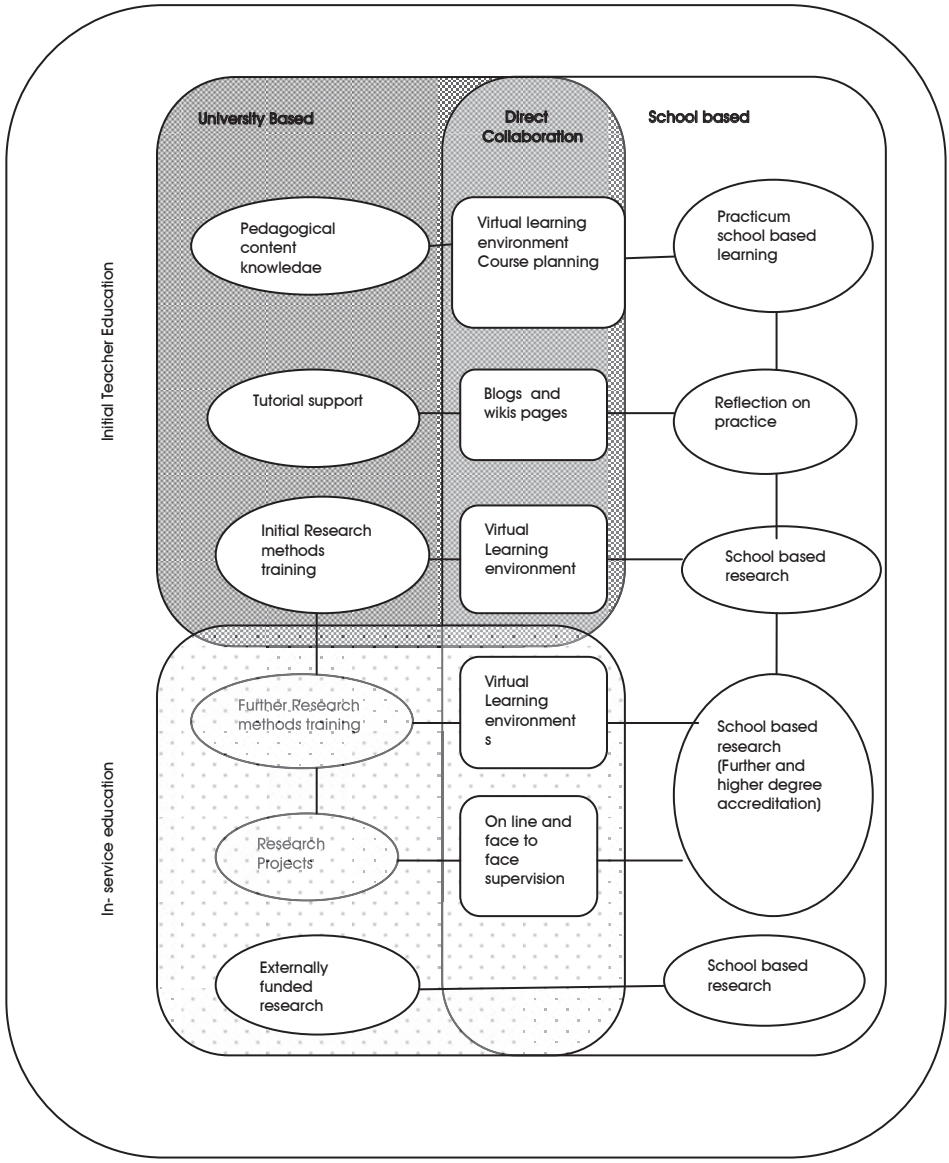

Figure 2. University – school network knots and threads

Conclusion

Learning to become a teacher is not a straightforward linear process of being trained and then 'sliding passively into an existing context'; instead, it is a dynamic process involving 'interpretive interactions' with the new context (Kelchtermans, 2005, p. 107). In other words, this socially constructed process draws on new teachers' prior experience and may require them having to re-evaluate realities and responsibilities, challenge existing beliefs and values about teaching, as well as becoming integrated into the school culture. Additionally, teacher identity is strongly embedded at the beginning of a teaching career and it may be the case that in assuming that learning will automatically take place or by denying access to opportunities for the development of a deeper understanding new teacher progress may be impeded (Wilson & Deaney, 2010; Flores & Day, 2006).

University partnership courses can help to make this transition smoother and within a collaborative network professional teacher educators make a distinctive contribution. Not only do they bring a history of being highly successful classroom practitioners they also add specialist pedagogical content knowledge as well as recent research knowledge. Importantly, teacher educators have also built up a long term trusted relationship with expert teachers and their schools through on-going contact with new teachers on initial teacher education programmes, then subsequently introducing them to more sustained classroom based research as part of accredited higher degree courses and finally though collaborative university initiated research projects. The trusting relationship is founded on mutual respect for the differing roles each have within the network. However, if university departments are to play a full part in a collaborative approach to teacher learning, then it will mean those in universities and schools working in new and creative ways with a variety of different partners and across a broad range of activities form initial teacher education through supporting induction, continued professional learning and teacher led research.

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Evaluation of the Impact of a Joint Doctorate Programme [usc-ip] Didactics Perspectives in Curriculum AREAS [DPCA]

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ABSTRACT

This paper analyses the design, development and evaluation of a doctoral programme on Didactics Perspective in Curriculum Areas [DPAC] carried out by two European institutions of higher education: the 'Institute Piaget of Vilanova de Gaia (Portugal)' and the University of Santiago de Compostela (Galicia, Spain).

While the absence of policies that promote the quality of teacher education at institutions and individual levels seem to be a permanent milestone in most contexts, we remark and highlight the fact that the teams of both institutions were able to provide, along ten years of cooperation, the opportunity to strengthen personal and institutional ties and open innovative outreaches in teaching collaboration and research in teacher education. In fact, teacher education quality remained all this time an enduring aim for all of us.

Recognizing the important role played by trainers in the quality of teacher education, we have developed a project that aims the professional development of teacher educators. The strategy we have used was to involve them in the process of research into their own practice. They could expect a diversity of responses from the different

types of teachers with whom they work. In short, the doctoral programme we come to terms with in this paper brings forward the importance of Teachers' Educational policy in Europe, the need of mobility and interchange and also the renewal of evaluation cultures in teachers' education.

Key words: *performance; quality cultures; research; teacher education; teacher educators*

Introduction

The fact that the quality of teacher education is a subject that must be present in teachers' daily life, urged us to go forward with a project. It associates advanced research and teacher training, promoting the development of quality cultures. It started 10 years ago and evidence has shown the great benefits it brings to a teachers' professional development at several levels – Infant Education to Higher education (HE).

We intend thus to share a small demonstration of a regional project, which is running in North of Spain and North of Portugal. The doctorate programme brings forward the importance of Teachers' Educational policy in Europe, the need of mobility and interchange and also the renewal of evaluation cultures in teachers' education.

During the nineties and early twenty-first century, interest in the quality of teaching has put more emphasis on the bureaucratic control of teachers and training institutions than on encouraging policies to improve teacher education:

> "Whereas, much attention has been paid to mastering instruments of quality control or accreditation in the past decades, the focus is increasingly on mastering change, allowing ownership for individual development, promoting champions in organisations and enabling professionals in higher education contexts" (Hudson, Zgaga and Astrand, 2010:9)."

Improving teachers' quality and teachers' education are priorities of the European Union Member States. The knowledge, skills and attitudes of each of the 6 million European teachers have a great importance. After all, the quality of their teaching has a direct effect upon learners' level of self-fulfilment and learning experiences.

Day by day, teachers are expected to do more and more. Things are evolving and increasing and their roles are changing significantly. Therefore, it is important that systems for teacher training enable all teachers to develop the knowledge and skills they require, and that they have access to the support they need throughout their careers. (http://ec.europa.eu/education/school-education/doc832_en.htm).

Similar statements can be found in the Communication from the Commission to the Council and the European Parliament:

> "Improving the quality of Teacher Education is, therefore, an important goal for Europe's education systems if quicker progress is to be made towards meeting the common objectives that have been established under the Education and Training 2010 programme. Ensuring a high quality of Teacher Education is also important, of course, to secure sound management of national resources and good value for money: approximately two thirds of expenditure on schools is allocated to teacher remuneration".
>
> (…)
>
> As with any other modern profession, teachers also have a responsibility to extend the boundaries of professional knowledge through a commitment to reflective practice, through research, and through a systematic engagement in continuous professional development from the beginning to the end of their careers. Systems of education and training for teachers need to provide the necessary opportunities for this." (*Improving Quality in Teacher Education*, 2007: 5)."

The issue is "what do we understand as quality in teacher education? Is it possible to find a consensus when we are defining 'teacher' and 'teacher education quality'"? In the third edition of the Handbook of Research on Teacher Education, Goodwin (2008: 399)

poses the difficulty of reaching a consensus because of the mix of values, norms and socio-cultural specific goals:

> "The question –who does or should teach– is a enduring ones in large part because *everyone* is interested in and concerned about capabilities and qualifications of teachers. However, the heart of the concern is not simply *that* teachers should be capable or qualified, but *what constitutes* capableness or qualification. Thus, each constituency comes at the question with different definitions of teacher quality and different ideas about what teachers should know and be able to do, ideas and definitions that are framed by different values, sociocultural norms, and aims".

On the other hand, we must remember that teacher education has not exactly been an outstanding issue for universities. Its late inclusion in the University framework in many European countries may explain the disaffection (disdain) felt for the area of teacher training, a field traditionally considered a minor issue. Perhaps it is worth exploring the role that universities play – or should play in the future – in teacher education policy. For Hudson, Zgaga and Astrand (2010: 8):

> "In the past, contributing to the development of Teacher Education policy was not a major item on agendas of the universities and institutions of initial teacher education. On the contrary, it was left almost exclusively in the hands of national authorities. Also today, national authorities have their important roles in this domain; however, times have changed and policy development is increasingly understood as an issue of the partners' involvement and European cooperation".

In their work about quality in teacher education, Imig and Imig (2007: 96) suggest that the political interest in finding new directions, for preparing and keeping good teachers, lies in the consideration of student learning as the "key" economic success in the twenty-first century. This frame of reference, states:

> "We will highlight the exclusion of professionals or academics from the process and suggest the need for the community of academics and professionals to reclaim a role and to pose a set of solutions. We suggest that this has to be done at the local level, rather than national level, and that the single measure of success will be student-learning gains of students in local classrooms and schools. Absent such effort, politicians and policy makers… continue to marginalize teacher educators and to assert their own solutions to the problem of attaching, preparing, placing, supporting and sustaining the highest quality teachers in schools everywhere".

Agreeing with the above quote, in 2007 the European Commission indicated the need to pay attention to the difficulties arising from the poor relationship between the training system, the induction period and professional development of teachers, and the limited role of universities in in-service teacher training. We share the idea from the TEPE network that mentions "the need to develop a new quality culture in relation to teacher education in its broadest sense at both national and institutional levels".

1. Critical analysis of the project

In this frame of thinking, it can obviously be argued that teacher educators must become a model for their students, meaning that in the context of teacher education, trainers must develop the attributes and skills their "students" will imitate at different levels of their education. One of the most relevant factors of education is that it is a privileged source for the learning of content, ways of doing, knowledge and attitudes towards teaching, etc. Teachers' educators provide an implicit model of performance that teachers can later reproduce with their students (Montero & Vez, 1990). Moreover, they have been a neglected factor in the contemporary debate on teacher education (see Snoek, Swennen and Van der Klink, 2010).

Recognizing the important role played by trainers in the quality of teacher education, we have developed a project that aims at the professional development of teacher educators. The strategy we have

used was to involve them in the process of research into their own practice. They could expect a diversity of response from the different types of teachers with whom they work.

Doctorate programme students show their commitment to student learning (university teachers, prospective teachers and adult learners). The common concern is to research their practice (the use of new tools for teaching, learning and assessment, including the use of portfolios) and train professionals to commit a systematic engagement in continuous professional development.

1.1. Challenges

Going back to 2000, when we decide to answer the relevant challenges that were arising, aiming at the development of a culture of quality in the Institute Piaget, in Portugal, we considered the teachers' training, especially for the graduate (alumni of the faculty of education) and the teaching staff of the Primary Schools, where the alumni develop their training. The action plan took place in the Department of High Studies and Continuous Training [DAEFA], in the North of Portugal, at the High Education Teachers Training School, named ESE Jean Piaget Arcozelo/Canelas, in the academic *campus* of Vila Nova de Gaia. The programme offered would be extended to other candidates outside the Institute. Several hypotheses arose, envisaged for the short, medium and long term. They were:

- A makeshift action – momentary and intermittent;
- 'Therapy' action – wider and planned according to the diagnose;
- A solid structur – long and lasting, renewable and strengthened over time.

At the same time, we had to think about the trainers who would be involved, according to the different types of situations imagined, i.e., university teachers with different profiles, with differentiated scientific bases as well as pedagogical and didactic knowledge. Reflecting on the situation and on the possible actions, we advanced

with the diagnose that led us to set up the third hypothesis (long and lasting) that would respond more properly to the needs detected. In fact, a solidly structured programme could respond

- to what was expected: teachers empowerment and the quality of their teaching; and
- to the real situation: the wide range of public we wanted to reach.

We considered that this was the most serious approach, in terms of knowledge and lines for proposed research, as well as the feasibility of the action in context, the opportunities for developing skills, creating partnership projects and the possibility of team-work and even networking. To reinforce this idea, the choice we made (the third option) would lead to research projects in parallel and in constant interaction – investigation by itself, and at the same time promotion and development of a renovated *praxis* to be continued by the alumni, i.e. teachers or future teachers involved (Lamas, 2007).

Following up this idea, we were carrying out the recommendations expressed in the conclusion of the study *Research on teacher education in Portugal* (1999–2004), just published by Estrela, Eliseu, Amaral, Carvalho & Pereira (2005). According to this study there was an urgent need to think over the continuous teacher training process, considering it as a set of possible interactions and cooperation between researchers, trainers and teachers. Only this new understanding of the issue would promote research, reflective practice and professional interaction and stimulate the necessary synergy to develop competencies of all the stakeholders.

Despite of the choice made –the third principle–, we were aware that we would also need to implement actions that fit into the other two routes, but not exclusively into those two. No action however great in range, could provide the long term, content and size fit to the other two, thereby giving them an advantage (Lamas, 2007). Such integration would certainly be taken into account during and after the period when the doctoral programme in question would last.

We then questioned ourselves about

- Who would be involved in the preparation of such a program?
- What areas of science would be covered?
- What materials should we include?
- What institutions must be involved as partners?

1.2. Struggles

We were, then, confronted with a task of great responsibility. It required commitment and dedication from us, and time for meetings and the making of decisions. One person alone could not undertake such a task. So we started to collect opinions and listened for potential contributors. An institution, that came up to our minds immediately was the University of Santiago de Compostela, with which the Instituto Piaget already had signed, at that time, a protocol. In our past experience, the relationship with the Department of Romance Philology had been very positive, and the idea seemed very interesting and worth exploring.

We established contact with the director of the Department of Didactics and School Organization [DDOE] of the Faculty of Education at USC and began a collaboration which proved to be rewarding, both at personal and professional levels. We site the ongoing work as being of high quality, a solid and very profitable project supported by all involved. The opportunity of a long lasting partnership was born –DAEFA/DDOE– at the Institute Piaget, namely in the academic Campus of Vila Nova de Gaia. We are now referring to the doctoral programme in Didactics Perspective in Curriculum Areas [DPAC], being coordinated at both a scientific and pedagogical-didactic level by both of us; Lourdes Montero Mesa and Estela Ribeiro Lamas.

In the context of actions triggered in those days, we are compelled to invoke the one related to the Joint Interim Report of the Council and the European Union Commission on the implementation of the Lisbon Strategy (2004 /C 104/10) Education and Training 2010,

where the urgency of necessary reforms for the success of the Lisbon Strategy were presented, identifying the orientation as one of the four key actions to create learning environments open, attractive and accessible so as to

> "(...) support learning at all ages and a variety of educational establishments, as well as empower citizens to manage their own learning and their work, in particular by facilitating them not only access and progress in a variety of possibilities learning and career pathways."

Since the first meeting, the DPAC team initiated a dialogue in which the issues we were concerned about, and the ideas we had for a doctoral programme to suit the realities identified were discussed. Needs were brought up and we reflected upon those. A solid frame was designed according to the rules set down by the Council and Commission of the European Union.

1.3. Organization

A curriculum was then being built in such a way that comprehensiveness and coordination would be achieved between the different selected areas in order to provide effective training and promote the qualities we were looking for.

The programme structure, articulated in two biennia, as the references below show, reveals the concern in providing conditions for a journey 'in intellectual companionship'.

1st biennium	- one academic year with workshops; - one year dedicated to research directed by a professor having in view the presentation of a written essay [TIT] to be presented and defended in public session before a jury, thereby obtaining the Diploma of Advanced Studies [DEA];
2nd biennium	- two years at least, research driven, leading to the submission of the doctoral thesis, in a curriculum area identified at the end of the first stage (after the conclusion of the TIT).

We underline the importance of monitoring, implemented in the form of mentoring, understood as a mode of teaching and learning, as Pérez Boullosa (2006:161) defends: "(...) the student must seek to learn the full maximum and become autonomous in the learning process; he must adopt responsible decisions for his development".

Indeed, during the first year of the program –the curriculum component– this monitoring was done through the presentation of multiple lines of action/research, and has already raised some individual responses, in terms of area choices that show how each student is intellectually updating his/her knowledge, and responding (or not) in a creative, personal way. The academic year was structured/organized along the time gap of one academic year into two major groups; a core curriculum that all students meet, and a specific curriculum area, emphasizing the importance of qualifying for the performance of professional activities, specifically teaching and research and not simply with the purpose of over-providing information.

The first block, common to all students, comprises a series of six workshops, five of which are required, each representing a three-credit seminar. So students will count in this area, a total of fifteen credits, that is, one hundred and fifty hours lessons.

The importance of this multidisciplinary training, on Teacher Education, is highlighted in the following statement –Order No. 13 766/2004 of the Minister of Science and Higher Education, under the direction of Pedro da Ponte (December 2004)– under the Bologna Process Implementation at national level

> "Teaching, whatever the level at which it is exercised, is marked by a common professional knowledge, resulting from mobilization, production and use of several knowledge (scientific, pedagogical, educational, organizational, technical and practical), organized and properly integrated into function of concrete action in each situation to develop professional practice. Thus, whatever their level of education and teaching their specialty, every teacher must have completed a multi-faceted and therefore multidisciplinary."

A project such as the one we have outlined, considers all its components seriously. We realised it was an ambitious project, requiring highly qualified faculty professors. This was therefore another task that the elements of the coordination had to undertake. Considerable efforts were made, as we knew that professional expertise was needed. Professors from the DOE-USC Department contributed and activated information in the various seminars that made up the common core of the curriculum. Members from DAEFA were invited in addition to the IP teachers' team, professors of the Faculty of Psychology and Educational Sciences of the University of Porto, of the School of Education of Porto, Faculty of Arts of the University of Coimbra and Faculty of Human Kinetics, Technical University of Lisbon.

This doctorate programme integrates a total of thirty teachers. Component in the curriculum, it is up to each one teaching one to three credits in seminars regularly throughout the first year. Still in the first biennium, considering the implementation of research, some elements of the faculty are called upon to assume the responsibility, guiding the students in carrying out research, in order to obtain the DEA.

In the second biennium –the draft of the thesis–, the student may request the guidance of two professors of the programme team or a professor of the programme and another outside the team. At this stage, according to the initiative of the coordinating council of the program, another seminar –sharing progress and difficulties– was introduced, to regularly share the ongoing events, creating thus opportunities for dialogue among students, who are doing research in related areas. It also gives the opportunities to reiterate ideas, enhancing training of teams of people with different skills and abilities. Its ability to create structures for cooperative learning and encourage the active solidarity between group members in practice is socially relevant and conducive to the development of other qualities such as the ability to listen. (Tedesco, 1995).

The seminar-sharing takes place usually over a day lasting eight hours. In the first part, with the presence of one of the research leaders, doctoral students are encouraged to summarize the work that they have developed, citing their accomplishments and

successes as well as their worries and concerns. On the one hand, they may discover pertinent bibliography on the subjects they are investigating. On the other hand, common concerns may emerge and they should feel encouraged to continue and maintain the teamwork and networking.

Those who have finished their PhD studies in this programme have already taken the opportunity to share their work with fellow doctoral students, reflecting on the entire journey they made. This initiative aims to encourage colleagues still in the phase of preparation of the DEA essay or the PhD thesis to contribute to the presentation of lines of research work, overcoming some constraints felt during this period. It has been an exchange of rich experiences.

The second part of the seminar-sharing will have the presence of two or three professors of the programme. According to their curriculum and the areas of research of their students, a discussion particularly on curriculum topics that strengthens aspects of the lines of ongoing research should be promoted. Naturally groups will form according to the areas in which the doctoral research is ongoing thus discussing the strengths and weaknesses of their work.

2. Summing up – failures and successes

This Conference offers us the opportunity to review the development process retrospectively. We reflect on the results already obtained and submitted and the processes that are ongoing. The retrospective has allowed us to

- Rebuild the architecture of a project that assumed from the outset seek to meet identified needs in terms of teacher training: a doctorate programme;
- Verify the existence of scientific essays resulting from individual research projects, including 14 doctoral theses and 38 undergoing;
- Verify the existence of ongoing projects that came out of the research conducted for the doctoral theses;
- Verify the existence of scientific papers in Conference proceedings; these papers amount up to 82.

In retrospect we must question ourselves about how the doctorate programme DPAC answers the big questions of the situations that are currently being experienced in the world of education.

The Program of Work and Vocational Education 2010 (02/14/2002) constitutes the strategic reference framework for the development of policies for education and training at EU level. In its context we find that we have been contributing to the target then lifted up to be attained by 2010 – education and training in Europe as a world quality reference. In the framework of the Lisbon Strategy, as well of the European Commission strategic objectives, we now sum up the work done.

Whilst carefully reading the doctorate programme DPAC, we found that it outlined the strategic objectives mentioned, rooted in theoretical frameworks defined not in the plane of abstraction, but materialized in the study of actual cases in prognostic analysis. Moreover, if we look at the levels of education in which the studies have been performed, we conclude that the whole educational system is represented – within the Childhood Education, Special Education, Vocational Education, Basic Education (1st, 2nd and 3rd cycles), Secondary Education, Higher Education, covering diverse subject areas, issues and school management. We now move on to the concerns of the 3rd strategic objective, i.e., strengthening links with the world of work and at the same time through the Erasmus program which promotes mobility and exchanges, not only between Spain and Portugal, but with other countries as well, thus contributing to the strengthening of European cooperation.

Analysing the work done, we no doubt have brought up strong contribution in the area of education and training. Teachers and trainers involved in the project have realized interesting works in their schools and institutions. Study cases presented in some of the PhD theses bring forward experiences of value. As stated before, theses experiences were realized at different levels, from Infant Education to HE, and skills have been developed, making the best use of the resources available.

No doubt, the programme promoted an open learning environment. However, as in any programme, some of the individual projects did not proceed. Several reasons may be pointed out, mainly lack of resources. However, we are sorry to recognise that in two specific cases, the failure was due to lack of interest of the institutions in which the teachers were working. We may also refer to the long distance separating the institution as a shortcoming. Some of the teachers interested in the programme, due to difficulties in obtaining permission to be absent from work, gave up their project. Another handicap can be brought forward contributing for the failure of some of the individual projects. In fact, living in the 21st century, brings up the expectation that every school and training institution should offer their staff access to Information Technologies and Communication. This expectation failed in some cases, making it difficult to maintain contact and enthusiasm.

In turn, each project rooted in the doctorate programme PDAC eventually leads to projects at educational institutions. Each student, as an educational agent, assumes the responsibility for a project – contacting, questioning, interviewing other human resources thereby alerting them to the issues identified and ideally involving them in the changes and promotion of learning and professional development. We underline the fact that the successful projects which have been carried out presented interested experiences making learning more attractive. Some of them are running. Didactic resources were constructed and promoted among other teachers and trainers.

We often remark the absence of policies that promote the quality of teacher education at institutions and individual levels. We have invested ten years of work in the development of knowledge and the improvement of training and teaching practices in pre-school, primary, secondary and higher education. The University of Santiago de Compostela, Spain, and Instituto Piaget de Vila Nova de Gaia, Portugal, two higher education institutions in two European countries have ten years experience on developing partnership policies. Ten years ago, both university institutions undertook a collaborative adventure of creating and developing a doctorate program entitled "Didactic Perspectives in Curriculum Areas",

affectionately known by its acronym: DPCA (I, II, III and IV), since we have had four biannual editions of this programme.

One of the intents related to the strengthening links with the world of work brought up recently a project of entrepreneurship. Two of the trainers involved in the doctorate programme have started up training programmes that link schools to the work field, thus increasing exchanges. The results are not yet studied.

The profound changes that are taking place in Higher Education are having a great impact on the teaching processes and training of university teachers. Consequently, new curricular structures, new student-centred teaching methods and new definitions of teachers' work are generating new pedagogical demands, which are unprecedented in the recent history of European universities. Specifically, European Higher Education Area (EHEA) guidelines require a profile that must promote significant learning, higher thought competences, learning how to learn, and the ability to develop reflective thought. These challenges represent an excellent opportunity to learn from our endeavours, critically analyze a wealth of experience and wonder about their future paths.

None of this would have been possible without the configuration and consolidation of a team who can share ideas and practices, to submit themselves to critical ideas and practices and strengthen what unites us, learning from what could be separated.

Like any other human endeavour, there are highs and lows. Both groups have provided during these ten years of cooperation the opportunity to strengthen personal and institutional ties and open innovative outreaches in teaching collaboration and research in teacher education. Teacher education quality remains an enduring aim for us.

3. Conclusions

In this context and from an internal assessment approach of this doctorate programme, we would highlight the following most representative features, unique and innovative in its focus on quality in teacher education:

1) First, the complexity implicit in the challenge made by the Piaget Institute at the University of Santiago de Compostela to create a doctoral program to be developed in partnership by both academic institutions. Complexity represented, on one hand, by the need for a curriculum tailored to individual needs for research training of trainers of the Instituto Piaget and, on other hand, the challenge of setting up a teaching team composed of doctors belonging to both academic institutions.
2) Secondly, to highlight the uniqueness of a curriculum based on interdisciplinary between the Knowledge Area of Didactics and School Organization and Specific Didactics (mathematics, experimental sciences, lingua, art education, and physical education). Themes and problems to work at different levels of the education system, in terms of training needs in the investigation of candidate (early childhood education, primary, secondary, higher or special education). A singularity was highlighted in flexible curriculum, consisted in common and different pathways of specialization. Thus, we have had the opportunity to experience a rich process of interaction between different scientific cultures, disciplinary, university, in a meaningful curriculum designed for participants in its development.
3) Third, to highlight the ongoing dialogue and negotiation of meanings, as the tools par excellence to address and solve problems, discuss differences, suggest improvements, etc. Consequently, one of the most important characteristics from this experience, in our opinion, is the tenacity and persistence in achieving the goals set, in spite of the difficulties found in the process and the frustration often generated by bureaucratic obstacles, the cultural differences and the different expectations of ones and others.

At this moment, on reflection, we recall that the OEDC (1998:56), referring to these challenges and recommendations for the world of education, stresses the idea that if these actions are implemented for the long term and are well thought out, they can answer the identified problems:

> "Improved planning, more involvement of teachers, better evaluation and dissemination will all strengthen the concept of professional development which must be seen to begin with pre-service and continue through a teacher's career. Professional development is not simply an "add-on" or a "quick fix" to be applied when a particular problem arises."

In conclusive terms, we would reiterate the words of Fullan (1993: 104, 131):

> "(...) A high quality teaching force – always learning – is the *sine qua non* of coping with dynamic complexity, i.e., of helping to produce citizens who can manage their lives and relate to those around them in a continually changing world. There are no substitutes to having better teachers (...). We cannot have a learning society without a learning profession of teachers."

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Teacher Education Policy in Europe (TEPE) Conference 2010

Tallinn University, Estonia

Thursday 30th September – Saturday 2nd October 2010

Introduction

The fourth TEPE Conference was hosted by Tallinn University and took place from 30th September to 2nd October 2010. The conference addressed the theme of *Developing Quality Cultures in Teacher Education: Expanding horizons in relation to quality assurance*. It involved 90 participants from 20 countries in Europe and beyond in discussions on various aspects of teacher education policy in Europe through 30 plenary and workshop presentations. These conclusions aim to synthesise key messages of the Conference.

Aims of the conference

The Joint Declaration of European Ministers of Education – the Bologna Declaration of June 1999

– called for the promotion of European co-operation in Quality Assurance (QA) with a view to developing comparable criteria and methodologies. At the Bergen Ministerial Conference in 2005**,** common European standards and guidelines for QA were approved and have been implemented in almost all national systems. Today, QA is mainly carried out at the university level encompassing all disciplines and study areas. On the other hand, in some disciplines and study areas**,** we witness approaches to developing quality cultures at the European level with respect to the specific nature of a discipline. Teacher education faces particular challenges in the promotion of co-operation in QA due to the very diverse approaches towards its organisation at the national level and the resulting fragmentation at the European level.

Conclusions

The conference affirmed the importance of advancing quality cultures in Teacher Education further at both national and institutional levels in order to promote teachers' competencies, as a crucial precondition for high quality learning in the future. Moreover it recognised that we are entering a new era in quality management for higher education which is moving away from a mechanistic to a holistic and cultural view of quality in education. This involves an emerging understanding that quality improvement in this field calls for the development of organisational cultures based on shared values, necessary competencies and new professionalism.

With regard to competence, the conference firmly rejected narrow conceptions arising from behaviourist and positivist thinking associated with checklist and tick box approaches to quality assurance and strongly affirmed an alternative and more liberal concept. This sees the achievement of competence as being accompanied in its appropriation and in its exercise by the attitudes, beliefs, and personal culture of the person who acquires and exercises the competency in question.

Whereas, much attention has been paid to mastering instruments of quality control or accreditation in the past decades, the focus is increasingly on developing the capacity to respond to change, allowing ownership for individual development, promoting distributed leadership in organisations and enabling professionals in their own professional learning and development.

Against this background the conference agreed on the importance of co-operation with other key players at the international level such as the Association for Teacher Education in Europe (ATEE) and on the proposal to seek to establish the basis for a European network on quality in teacher education in collaboration with other key stakeholders.

http://tepe.wordpress.com/about/

Teacher Education Policy in Europe Network (TEPE)

At its inauguration, the Network stressed that ‘Europeanisation in higher education has reached a point in time which requires a range of responses at the institutional and disciplinary level. The current situations demand that such responses are based on academic (self-)reflection and that research methods are applied in the process of preparing and discussing reforms in European universities. The academic world is able to provide policy analysis in order to strengthen a process of decision making at institutional level as well as a process of European concerting. Education Policy is a genuine task for higher education institutions today’.

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