Miracle of Education

The Principles and Practices of Teaching and Learning in Finnish Schools (Second Revised Edition)

Hannele Niemi, Auli Toom and Arto Kallioniemi (Eds.)

SensePublishers

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Edited by

Hannele Niemi, Auli Toom and Arto Kallioniemi
University of Helsinki, Finland

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ARMI MIKKOLA

FOREWORD

Perspectives for the Future of the Teaching Profession

The welfare of Finnish society is based on knowledge and competence. Ensuring and improving citizens' knowledge base and capacity building require equal possibilities for everyone to receive quality education. All students have the right to good education and counseling irrespective of the region they come from and its local conditions. Access to further education and continuing studies after comprehensive education and employability cannot be endangered because of a poor quality of primary and secondary education. Therefore, the teaching staff in all local educational institutions should be qualified and competent.

The requirements of teacher qualification are based on four different sub-areas: content knowledge, expertise in learning and teaching, social and moral competences, and the many-sided skills involved in practical school work. These sub-areas are not separated; they are linked to each other in many different ways. Supporting this integration is one of main challenges of teacher education. It also requires a continuum of teachers' basic and in-service education.

Teachers have to be many-sided experts in their fields. They must have a wide view of every aspect of education and schooling. Teachers need content knowledge and the pedagogical knowledge integrated with it. Furthermore, they must be ready to make long-range plans for education, and not limit their work only to the development of specific aspects of these plans. An understanding of the wholeness of education and schooling is important for developing curricula. Teachers should also have an idea about the networks of different experts who are involved in creating and developing content knowledge. Nowadays, there seems to be some debate over what the common concept of the purpose schools should involve. The concept of schools having a function is being revisited in a dialogue between different points of view. Schools should simultaneously transmit traditional knowledge and skills and direct students to use new knowledge environments in a creative way. In society there are very different and contradictory opinions about what should be the main contents and methods of teaching. Schools, as communities, should set aims for their own work, develop working methods and create tools and procedures for evaluating their effectiveness. Schools cannot be directed by some random trends or strident demands. Reforms must be implemented through dialogue and discussions with partners in society. In the future, the teaching profession and teachers need a

readiness to participate and contribute to debates concerning the role of schools in society (Niemi, 2005; Välijärvi, 2006).

As the traditional concepts of knowledge of learning have broadened, educational institutions and teachers are facing new challenges. They have to teach students how to learn and regulate their learning in addition to teaching knowledge and skills. Changes in working life require continuous learning and education. As the experts in a knowledge-related profession, teachers are required to act as a model of life-long learning. The core area of the teaching profession is the expertise of learning and teaching. In the future teachers will have to use this expertise flexibly not only over different stages of educational organizations, but also over different age groups and different districts. Teachers use their knowledge of teaching and learning in different situations as they work with different people. Networks are also a vital part of a teacher's work. One of the main tasks of a teacher is to determine how relationships with new learning environments should be molded in such a way that they support the harmonious development of students (Niemi, 2005; Välijärvi, 2006).

Teachers' work includes important societal and cultural values in society. Democracy, the value of a human being, active citizenship and human welfare are important objectives, which should be at the center of every day life in schools. If the goal of school education is an open and reflective student with skills for co-operation, it is important to explore what kinds of education and school environments facilitate these goals. Students can be expected to be remarkably more sophisticated and competent than the way they are modeled in schools' daily working practices. The ethical and social dimensions of the teaching profession are becoming even more important with the changes in economical wellbeing and social problems in society. Schools cannot solve the problems that arise from the breakdown of social networks in society by themselves; therefore teachers are expected to work more in co-operation with other specialists. As students should be provided with the most appropriate help with their problems, the meaning of the co-operation between schools and parents is becoming more and more important.

According to international comparisons, Finnish teachers are well placed to influence their work. Decentralized decision making and local responsibility for local curricula have been characteristics of our educational policy since the 1980s. This means that teachers need many kinds of practical wisdom as well as leadership knowledge. Questions about school life, teachers' and students' rights and obligations, and furthermore, questions about school economics and management are examples of matters that are part of a teacher's expertise. Student teachers are already familiarized with these kinds of questions in their teacher education, especially during their teacher practice periods (Välijärvi, 2006).

Evaluations have revealed that Finnish teacher education is able to give student teachers a good command of content knowledge together with many-faceted expertise in teaching and learning. Periods of teaching practice, which are an integral part of teacher education, give the student teachers the competences they will need in school life. One main challenge for the future is putting more emphasis on societal

issues and their dimensions in teacher education. Ethical and social matters are becoming more and more significant parts of teachers' expertise. This should also be a vital part of the contents and practice in teacher education.

Even with these problems, the status of Finnish teacher education is still better than in many other countries, if we look at our situation from an international perspective. The universities can choose the best candidates from the pools of applicants, because young people are interested in teacher education. Every year there are many more applicants than the universities can take to begin studies in teacher education. Keeping this interest in teacher education and teaching alive will be one of the main challenges for the teaching profession in Finland in the future.

REFERENCES

Niemi, H. (2005). Suomalainen opettajankoulutus valmiina jo pitkään eurooppalaiseen korkeakoulualueeseen. In R. Julkaisussa Jakku-Sihvonen (toim.), *Uudenlaisia maistereita. Kasvatusalan koulutuksen kehittämislinjoja*. PS-kustannus: Keuruu.

Välijärvi, J. (2006). Kansankynttilästä tietotyön ammattilaiseksi. Opettajan työn yhteiskunnallisten ehtojen muutos. In A. Julkaisussa Nummenmaa & J. Välijärvi (toim.), *Opettajan työ ja oppiminen*. Jyväskylä: Koulutuksen tutkimuslaitos.

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PREFACE TO THE SECOND EDITION

This second edition of the book *Miracle of Education: The Principles and Practices of Teaching and Learning in Finnish Schools* has been updated according to changes that have happened in the Finnish educational policy and system since the first edition of this book. The new national curriculum for basic education was approved in 2014 as guidelines for local school based curricula. It was the fifth in the history of Finnish comprehensive basic education and its goal was to renew both pedagogy and school culture. In terms of subject content, no major changes were made. The ideology of the new core curriculum is introduced in chapter six and also each subject specific chapter has been revised based on the new core curriculum.

Also new PISA results came out in 2012. The first chapter of this book introduces the trends in Finnish PISA achievements during the last ten years. This chapter offers an example of how PISA data can be analyzed to find areas that need improvement. The Finnish education evaluation policy has had a long term principle of enhancement-led evaluations. All evaluations are used for improvements. This also includes PISA measurements.

Some changes have also been implemented in the organizational structure of the national evaluation councils in Finland. Three previous councils merged into one Finnish Education Evaluation Centre in 2014. This has also been taken into account in chapters linked with evaluations. The major principles of the national education evaluation policy are the same as previously.

In spite of the changes, the major educational aims in Finland are the same as before. These aims include equity policy to make education available for all, flexibility of the educational structure to allow students to have opportunities to continue their education at any time of their lives, lifelong learning throughout the educational system, enhancement-led and encouraging evaluation practices, excellent teacher education, a highly professional role for teachers, and local responsibilities in developing curricula.

Hannele Niemi, Auli Toom and Arto Kallioniemi
Helsinki, 13 August 2016

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PART I

INTRODUCTION: CURRENT EDUCATIONAL FRAMING FACTORS AND CONDITIONS IN FINLAND

JOUNI VÄLIJÄRVI AND SARI SULKUNEN

1. FINNISH SCHOOL IN INTERNATIONAL COMPARISON

ABSTRACT

Traditionally, one of the strengths of the Finnish education system has been students' advanced reading literacy skills. In PISA assessments, the proficiency levels for mathematics and science have also been high in Finland. Albeit the average level of Finnish student performance has slightly declined in the latest PISA assessments, Finland is still among the highest-ranking countries in the world. The variation between individual students and between schools, in particular, has remained below the international average. The Finnish school system provides highly equal educational opportunities irrespective of the students' socio-economic background and place of residence. In Finland the correlations between students' engagement, self efficacy and reading habits with their cognitive outcomes are higher than in any other country. Their reading habits have changed rapidly in recent years, however, which indicates the deep impact of the new media on students' attitudes, motivation and behaviour at school. This challenges schools to reform their instructional practices to raise the level of cognitive performance. The national curriculum reform is promoting necessary changes on both the national and individual school level. Also new projects to reshape teachers' professional development and to promote the use of digital learning environments at school have been launched.

Keywords: evaluation, learning outcomes, education system, education policy

INTRODUCTION

Finnish students are doing very well when their learning outcomes in reading, mathematics and science are compared to student performance in other countries. In international rankings based on PISA studies, for instance, Finland is still among the top countries in the world. In Europe, Finland is number one in reading and science and among the best performing countries in mathematics, along with Switzerland, the Netherlands, Estonia, Poland, and Germany. However, the latest results from PISA 2012 give rise to some concern about the future of Finnish basic education. The average trend in all three domains has been declining since 2009, and also the variation among students has slightly increased. New political and developmental measures are needed to guarantee high quality education for future student generations.

H. Niemi et al. (Eds.), Miracle of Education, 3–21.

In this chapter we will discuss the strengths and challenges of the Finnish education system. This chapter demonstrates how international comparative studies can be utilised for identifying needs for national development. Although the PISA assessments still demonstrate the high quality of Finnish education, the results also show that some other countries, like Poland, Germany and Korea, have been more successful in finding new solutions to raise the proficiency levels of their students. PISA has been a powerful tool for them to proceed effectively in their developmental measures. As an international, independent, and collaborative programme, PISA has also managed to convince national policymakers about the need for reforms more effectively than assessments conducted only on the national level. Deeper analyses of the PISA datasets allow countries to learn from each other, even though it is not reasonable to try to copy structures and practices from one country to another as such. In Finland, as in many other countries, national education evaluation policy is now more clearly focused on enhancement and improvement than it had been in previous years. In this chapter our aim is to present how international comparative studies can help recognise and understand the strengths and weaknesses of the Finnish education system, and how these factors are changing as a function of time and societal change. At the end of the chapter we will discuss the political and developmental measures carried out in Finland to address these changes, e.g. by investing in reforms of the national curriculum, teachers' professional development, and the digitalisation of schools.

AMONG THE TOP-RANKING COUNTRIES IN THE 2000s

PISA assessments on the outcomes of school systems and related factors have been carried out in three-year intervals since the year 2000. In turn, each of the three domains – reading literacy, mathematics, and science – is the main assessment domain for one particular round: In 2000 and 2009, the main domain was reading literacy, in 2003 and 2012, it was mathematics, and in 2006 and most recently in 2015, the main focus was on science. Comparisons for result trends can be made most extensively between the test rounds having the same main assessment domain. Also the background data gathered follows this domain rotation. In each round, the two minor domains provide mainly trend information about the development of results in these areas.

Since the inception of PISA assessments, Finnish students have performed very well. In the first four rounds, Finland was the best country in the overall ranking. In 2009, however, Shanghai scored better than Finland, but those results do not represent the entire national Chinese educational system. In these rankings the order of countries has varied in different assessment domains. Finland has been particularly strong in science and reading literacy, but has also been among the top countries in mathematics. In PISA 2012, Finland's position relative to other countries weakened, while the national average level declined in all three domains. Although Finland was still among the high-performing countries, in many other, mainly Asian,

countries the students clearly did better than their peers in Finland. The strongest decline was found in mathematics (OECD, 2001, 2004, 2013a,b; Välijärvi, 2014). Figure 1 shows how Finnish students' performance improved between PISA 2000 and 2006. Especially their science literacy scores rose remarkably. Finland's lead in the ranking was clearest in 2006, when science was the main assessment domain.[1]

The excellent performance of Finnish students in PISA tests, especially for science and mathematics, came as quite a surprise to the Finnish people. In TIMSS assessments prior to PISA, Finland had reached a performance level only a little above the international average. One suggested explanation for this difference in results is the fact that these two research programmes differ from each other in terms of their objectives. The functional approach represented by PISA, which emphasises students' capability to apply their skills and knowledge in various problem-solving situations, is well in line with the Finnish curricular reforms for mathematics and science carried out in the 1990s. At that time attempts were also made to reform mathematics and science instruction through national experiments and teachers' in-service training, which involved a large number of schools and teachers (Arffman & Nissinen, 2015).

The year 2009 was a clear turning point in Finnish students' PISA performance. In 2012 the negative trend continued and took an even steeper downward curve. Figure 1 indicates that Finnish students' average reading literacy level in 2012 was lower than in 2000, and the difference was equivalent to more than half a year of schooling. The decline in mathematics performance from 2003 to 2012 was equal to the reading literacy decline. Also in science the decline can be estimated to be within a similar range.

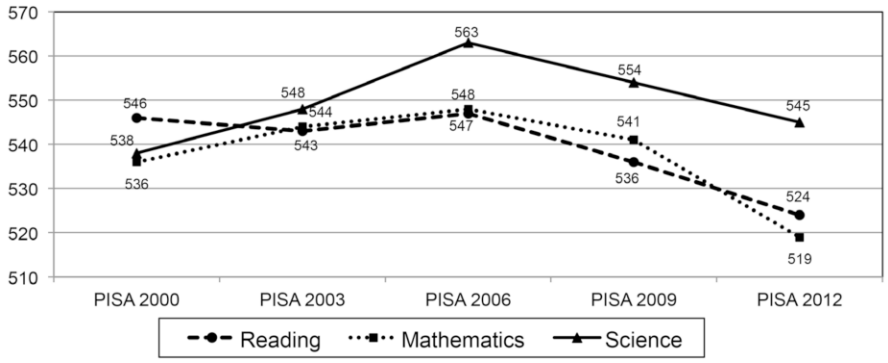

Figure 1. Averages of the PISA-domains in Finland 2000–2012

At the same time many other high-performing countries have managed to maintain their performance level or even improve it. Nonetheless, in international comparison Finland is still fairly highly ranked. In the PISA 2012 reading literacy results, Finland

was sixth among the 65 participating countries (real position 6–12, accounting for random error due to sampling), and, together with Ireland, was the best among European countries. Correspondingly, in mathematics Finland's position was 12th (10–17). In science the Finnish students reached as high as fifth place (4–7), and were the best compared to other European countries. Comparison of placements in rankings across different PISA rounds is not straightforward, however, as the number of participating countries and regions has been increasing significantly from PISA 2000 to PISA 2012. New countries and regions have come along, some of which have excellent test results. For instance, of the top-ranking countries/regions of PISA 2012, Shanghai, Singapore, Chinese Taipei, and Estonia had not yet participated in 2000 and 2003 (OECD, 2013a; Kupari et al., 2013; Välijärvi et al., 2015).

In addition to the three above-mentioned domains, PISA also assessed students' general problem-solving skills in 2003 and 2012. In 2003 Finland came in third (1–4) with a national average score of 548 points. In 2012, when the problem-solving test was administered completely as a computer-based assessment, the Finnish national average was 523 points, which gave Finland tenth place (8–11). Both times, the OECD average was set to equate to 500 points.

INDIVIDUAL VARIATION IN STUDENT PERFORMANCE

Finnish student performance has been characterised by a narrow range of variation between high- and low-achieving students when compared to other countries. This means greater educational equality between individual students. Greater equality has been the prime objective in Finnish school reforms since the 1960s. In light of the PISA results Finland has been quite successful in striving for this objective. However, the situation seems to be changing.

Indicating the variation among student performances, the standard deviation for Finland stayed clearly below the average levels of OECD countries until PISA 2009 (Figure 2). In many cases Finland has been the country with the smallest standard deviation, typically only about 80–85 per cent of the OECD average.

In 2012, the variation in Finnish student performance was larger than in any of the previous PISA assessments, whereas in the OECD countries on average, this variation has clearly decreased. In mathematics and reading literacy, the OECD averages for standard deviation decreased prior to PISA 2012, and they decreased in science in PISA 2012. Hence, now that the Finnish school system no longer shows distinctively smaller variations in student performance, but shows SD figures close to the OECD average, there is no evidence for greater educational equality in this respect, either. This trend raises concern (Arffman & Nissinen, 2015; Välijärvi et al., 2015).

Above we have dealt with student performance on average and also in terms of between-student variation. Next, we will take a closer look at how this student performance is distributed across different proficiency levels (OECD, 2013a).

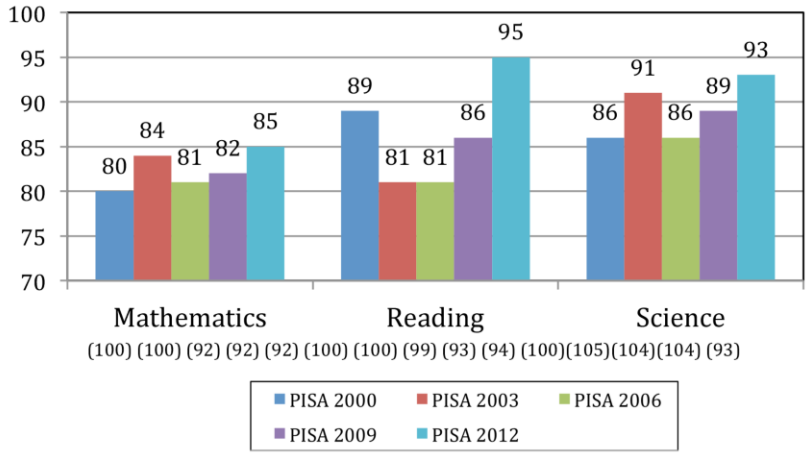

Figure 2. Standard deviations for different domains in Finland (OECD average SDs in brackets)

In PISA 2000, student performance in reading literacy was divided into five proficiency levels. Some students remained below the lowest defined proficiency level. Since 2009, reading literacy levels have been subdivided into more refined grading categories. Level 1 (lowest) and Level 5 (highest) were both divided into two separate parts. In the next comparisons these have been reintegrated, however, also for PISA 2009, in order to enable straight comparison of the distributions from different test rounds.

According to the PISA definition, students placed at Level 1 or below can be regarded as poor readers. These students are quite likely to face serious problems with various types of reading required in modern working life or in further studies, for example. Their reading literacy skills are also less than adequate for ordinary civic life in terms of utilising text-based media, for instance. Research has shown that in such cases there is also a big risk of social marginalisation (OECD, 2010c, 2013a; Linnakylä et al., 2004).

In Finland, the percentage of poor readers increased from 6.9% in PISA 2000 to 8.1% in PISA 2009. The change is not very big, but means that in 2009 there were about 750 more poor readers in this year's class than in 2000. Nonetheless, the percentage was still small in comparison to other countries. Within the same period, the OECD average percentage of poor readers increased from 17.9% to 18.8%.

In Finland the percentage of students leaving compulsory education with inadequate reading literacy skills is still relatively small in international comparison, actually one of the smallest. One particular reason for concern is that in the light of recent PISA assessments the percentage of these students seems to be increasing further. However, as PISA 2012 data for this domain is fairly limited in scope, it is

too early to say anything absolutely certain about the continuation of the negative trend.

During the same period the percentage of excellent readers (Level 5) has decreased at a worrying rate in Finland. Although their percentage (14.5%) was internationally still one of the highest in 2009, it had dropped by four percentage points within a decade. This decline was one of the biggest among the participating countries. Considering the overall competence pool of the nation, the change is alarming. A corresponding undesirable trend took place at the same time in many other OECD countries as well. While in PISA 2000 almost ten per cent of students within OECD countries reached Level 5 in reading literacy, in PISA 2009 their percentage was only 7.6%.

A similar negative trend in student performance as in reading literacy can also be seen in mathematics. The assessments in focus are PISA 2003 and PISA 2012, in which mathematics was the main assessment domain (Figure 3).

During this period the percentage of students performing poorly in mathematics (below Level 2) was doubled in Finland from six to twelve per cent. Correspondingly, the percentage of high-achievers (Levels 5 and 6) decreased to 16 per cent, while in 2003 it had been nearly 25 per cent of the age group. From the viewpoint of developing the nation's educational capital this trend is alarming.

In comparison to OECD countries in general, the situation in Finland is still reasonably good for mathematical literacy. The percentage of poorly performing students in OECD countries is still over 20 per cent of the age group. In PISA 2012 only 12% of the students reached Level 5 or 6 in mathematics, while in 2003 this percentage was 15%.

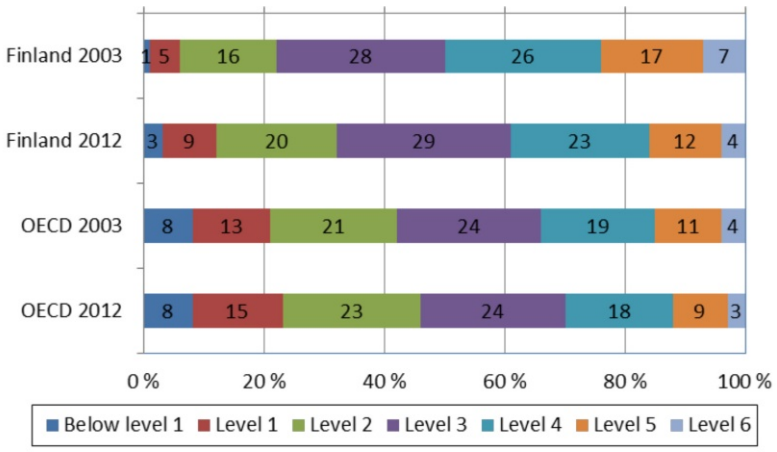

Figure 3. Percentage of students at each proficiency level in mathematics in 2003 and 2012

Results Trends for Different Levels of Achievement

Educational equality in terms of learning outcomes can also be examined through test score percentiles. Percentile refers to a threshold value in the distribution of students' test scores, below which a specific percentage of students remain as indicated by the particular percentile. For example, the tenth percentile is the score value below which remain 10% of students in PISA tests, while 90% reach beyond this limit. Correspondingly, the 75th percentile is the score value that defines the cut between the highest performing quarter of students and the lower three quarters. It can be said that the closer the scores of the highest and lowest percentiles are to each other, the better the equality among students in terms of learning outcomes. Percentiles can also be used in investigating how this kind of equality has developed over time, i.e. whether the difference between the highest and lowest percentiles has increased or decreased.

Table 1 shows that from PISA 2000 to PISA 2009, the biggest decline in the percentiles for reading literacy (the main assessment domain in these years) in Finland was found among the best-performing students. In 2009 the placement to the top five per cent called for a test score that was 15 points lower than in PISA 2000. Also the score level of low-achievers was lower in 2009 than in 2000, even though the difference in percentiles was smaller than among the high-achievers; 8 score points for the 5th percentile and 10 score points for the 10th percentile.

In mathematics the decline from PISA 2003 to PISA 2012 (mathematics as the main assessment domain) was similar but clearly steeper than the decline in reading literacy performance. This concerns the high-achievers, in particular. In the Finnish PISA 2012 data a student reached the top ten per cent with a test score that was 29 points lower than that required in PISA 2003; and for the top five percent the

Table 1. Percentiles in reading and in mathematics in Finland

	PERCENTILE					
	5th	10th	25th	75th	90th	95th
READING						
PISA 2000	390	429	492	608	654	681
PISA 2009	382	419	481	597	642	666
Change 2000–2009	*–8*	*–10*	*–11*	*–11*	*–12*	*–15*
MATHEMATICS						
PISA 2003	386	421	477	602	658	690
PISA 2012	376	409	463	577	629	657
Change 2003–2012	*–10*	*–12*	*–14*	*–25*	*–29*	*–33*

threshold value fell by 33 score points. Translated into school years this would mean that in Finland the top-performing students in mathematics were almost one year behind the level of their peers in PISA 2003. This gap is considerable and will inevitably influence the level from which further studies, especially in mathematics, can start in secondary and higher education (OECD, 2013a; Välijärvi et al., 2015).

Also at the low-achieving end in the mathematics tests the decline was evident, although clearly smaller than among the top performers. At the lower end the trend was quite similar in mathematics and reading literacy scores.

Gender Differences in Student Performance

The difference between girls and boys in PISA reading literacy tests has always been exceptionally large in Finland in comparison to other OECD countries. In different PISA assessments, the difference in favour of girls has varied from 44 to 62 score points (Figure 4), while in OECD countries on average it has varied from 31 to 38 score points. Finland's gender differences in reading literacy performance have been the largest or one of the largest in the OECD throughout the PISA programme. Despite many national measures to promote the equality of genders, this gap appears to be growing rather than diminishing in Finland (OECD, 2013b).

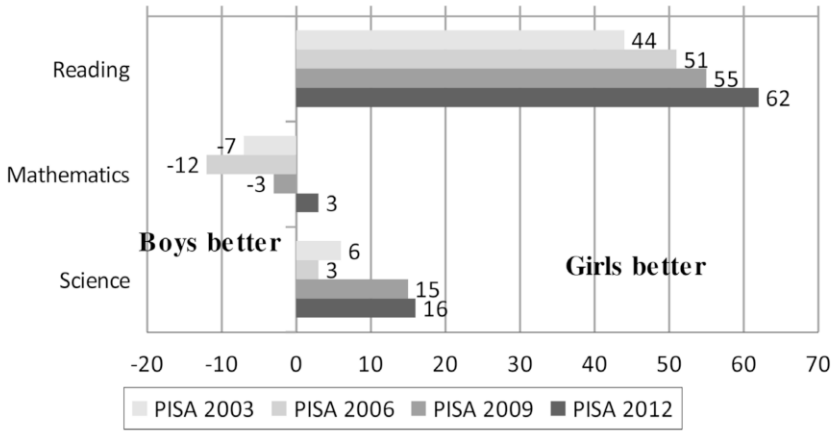

Figure 4. Gender gap in Finland

The differentiation of genders in terms of test achievement is even more striking when it comes to girls' and boys' distribution across the different performance levels of reading literacy. Among boys the risk of poor reading skills has clearly grown more than among girls.

In PISA 2000 only 4% of girls but 11% of boys were on Level 1 or below in reading literacy. In 2009, 13% of boys belonged to this risk group and in 2012 this percentage was as high as 18%. The last percentage figure should be considered with slight reservation, however, as it is based on a much more limited array of test items than the PISA 2000 and 2009 assessments. Anyway, it seems that among boys the share of poor readers has been clearly increasing, while among girls the percentage of poor readers has remained almost unchanged. Thus, according to the PISA 2012 results, the likelihood of boys being poor readers is nearly four times greater than that of girls. Different levels of basic reading literacy skills will inevitably influence boys' and girls' engagement and success in post-compulsory education. It would be important to investigate by follow-up studies, for example, how strongly deficiencies in reading literacy skills at the end of compulsory school predict drop-out in secondary education.

Among girls, the largest change is seen in the percentage of excellent readers (Level 5). While in PISA 2000 more than a quarter (26%) of Finnish girls reached this performance level in reading literacy, in 2009 their share decreased to 21%. In PISA 2012 the percentage of excellent readers among girls seems to have stayed pretty much the same. Among boys the percentage of excellent readers has been diminishing; from 11% in PISA 2000 to 8% in 2009 and further to 7% in 2012. Hence, the future competence potential generated by the group of top performers seems to have decreased significantly during the first decade of this century. Reading performance has remained relatively stable since 2000 among girls who come from families with the highest level of cultural capital (ie. classical literature, art) and the highest number of books. Among boys with a similar family background, reading performance has decreased but the decline has been subtle. However, the decrease has been substantial with both girls and boys coming from culturally disadvantaged families. In the disadvantaged groups, the decline in the average reading score has been particularly pronounced among boys (Chiu, 2006; Arffman & Nissinen, 2015).

Finnish students' exceptional gender-based differences are not limited to reading. In mathematics and science, the difference between the boys' performance in comparison to the girls is lower in Finland than in OECD countries on average (Figure 4). This characteristic was further highlighted in PISA 2012. This was the first time when Finnish girls outperformed boys in mathematics, although only by a slight difference of three score points. In all previous PISA mathematics assessments the difference has been in favour of boys, most clearly in PISA 2006, where the gap was 15 score points. In the PISA 2012 mathematics test, in OECD countries on average, boys scored 11 points higher than girls. As for science, Finnish boys were clearly (16 points) behind girls in PISA 2012 test scores, whereas in OECD countries on average, boys performed on level with or slightly better than girls in each assessment. Overall in PISA 2012 the difference was only one score point in favour of boys (Kupari et al., 2013).

Another characteristic of gender differences in student performance in all three assessment domains is that the variation of test scores is greater among boys. This difference has been observed in each PISA round. In Finland, the standard deviation of girls' test scores in reading literacy has ranged from 73 to 85 score points, and for boys correspondingly from 81 to 94 score points. In mathematics these figures have ranged from 78 to 81 score points for girls and from 81 to 89 score points for boys. In science performance the standard deviations have usually been somewhat higher for both genders than in mathematics or reading literacy: for girls this range is 82 to 88 score points and for boys 90 to 97 score points.

In comparison to boys in other countries, the Finnish boys' standard has been good, however, and in many parts even excellent, especially in science (OECD, 2013b). Nonetheless, in the most recent PISA assessments the performance of Finnish boys' has clearly declined more than that of Finnish girls, and the rankings of Finnish boys in international comparisons have also declined more significantly than Finnish girls. Gender differences in achievement have implications for seeking to further one's studies and for access to secondary and higher education, for example.

The Connections of Students' Socioeconomic Background to Their Performance

In PISA, the connection of students' socioeconomic background to their performance has been one of the main areas of interest. It has always been a key issue of Finnish education policy as well. In Finland, as in many other countries, one of the core objectives of basic education is to minimise the negative effects of the family's social and economic circumstances on learning outcomes.

The PISA student's socioeconomic background indicator consists of four types of variables: (1) family wealth, (2) parents' occupations, (3) parents' education, and (4) home cultural capital. These variables are compiled into a single index.

In all PISA countries, the students' socioeconomic background has an effect on student performance. Figure 5 illustrates this connection in mathematics performance in Finland and in all OECD countries in PISA 2003 and 2012. In the Finnish data for PISA 2003, the students belonging to the highest socioeconomic quarter based on their home background outperformed the lowest quarter by 61 score points on average, which is the equivalent of being about one and a half school years ahead. This difference can be interpreted as added value, which is produced by the parents' higher educational level, occupational and economic status as well as the cultural capital of the home, and enjoyed by the students in the highest socioeconomic group. In comparison to the OECD average difference between the highest and lowest socioeconomic groups in the PISA 2003 mathematics test (93 score points), the effect of this background factor was clearly lower in Finland (OECD, 2013).

In PISA 2012 the difference between the highest and lowest quarters in Finland was 67 score points, which was slightly more than in 2003. Hence, the effect of students' background on their mathematics performance increased to some degree in this period. In contrast, in OECD countries on average the difference between

the highest and lowest socioeconomic groups were slightly decreasing (by 3 score points), although remaining clearly larger than in Finland in PISA 2012. Thus, while in Finland educational equality relative to student's socioeconomic background did decrease to some extent, it was still on a higher level than in OECD countries on average (OECD, 2013b).

Between-School Differences

In Finland, the differences between school-specific results have remained small during the whole PISA programme in comparison to the between-school variations in other countries. In this respect, Finnish national variations have usually been the smallest or second smallest of all PISA countries in all three assessment domains.

In Finland, the between-school variation in the PISA 2012 mathematics test scores was only 6% of the total variation. The between-school variation was small also in other Nordic countries. This result indicates a great deal about the comprehensive school system pertinent to the Nordic countries. A core objective of these systems is to guarantee equally high-quality instruction for all students irrespective of the particular school (OECD, 2010b). Large between-school variations were found in Chinese Taipei, the Netherlands, Hungary, Belgium, Germany, and also in Shanghai.

In most Asian countries (and regions) schools differed greatly from each other in terms of their PISA 2012 results, where the main assessment domain was mathematics. In PISA 2009, however, the between-school variations in these countries in reading literacy performance were considerably lower.

In Finland, the between-school variation in PISA results has remained at a low level irrespective of the assessment domain. In 2009, when reading literacy was the main assessment domain, the school-based variation was 8% of the total variation, i.e. a little greater than in PISA 2012. On the other hand, compared to PISA 2003 with mathematics as the main domain, the between-school variation was about two percentage points higher. Although this change is not statistically significant, it is worth noting.

Student Attitudes and Time Spent on Reading

One of the strongest factors explaining PISA reading literacy proficiency is the amount of time spent on reading outside of school (engagement in reading). The amount varies among the Finnish students to a large extent. There are also large gender differences in this respect. Moreover, the time-spending profile of adolescents changed considerably from the year 2000 to 2009. The change occurring in engagement in reading explains, to a notable degree, the decline in PISA reading literacy performance (OECD, 2010d, 2013a; Arffman & Nissinen, 2015).

Still in PISA 2000, only slightly more than a fifth of Finnish students reported that they did not read at all in their free time, while nearly one half read for pleasure

for at least an hour a day. Nine years later the share of students reporting no reading engagement outside of school hours had increased up to a third, which meant an increase of 50%. Correspondingly, the share of those spending nearly an hour a day in free-time reading diminished to roughly a third of all students.

This is a dramatic change when compared to other OECD countries. Students' free-time reading has been decreasing in the 2000s in all developed countries, but much more moderately than in Finland. In 2000 Finland was distinguished as a country of keen young readers, however, by 2009, Finnish adolescents' time-spending profile was already close to the OECD average. In PISA 2000 the OECD average percentage of students reporting no free-time reading activity at all was 10 percentage points higher than in Finland. In PISA 2009 this difference was only 4 percentage points. Correspondingly, the notable decrease in the percentage of keen readers (reading for fun more than an hour a day) in Finland brought them down to the level of the OECD average (OECD, 2010d; Välijärvi, 2014).

There is a considerable gender gap in reading for fun. In PISA 2009 nearly half (47%) of the Finnish boys reported that they were not reading at all in their free time. In PISA 2000 the percentage of such boys had been clearly lower, about a third (35%). For girls the corresponding percentages were 19% in PISA 2009 and 10% in PISA 2000, which means that the proportion almost doubled within nine years.

According to the PISA 2009 data, Finnish boys' free-time reading activity was very close to the OECD average (48% did not read for fun), whereas the percentage of non-reading Finnish girls (19%) was clearly below the OECD average (27%). Overall, in comparison to PISA 2000 statistics, the percentages of non-readers increased strongly among both genders in Finland. The respective OECD averages increased as well, but more moderately (for girls 23% -> 27% and for boys 40% -> 47%).

Besides gender, also socioeconomic background is strongly associated with the reading activity trends (Figure 5). When students are divided into four equally sized groups based on their socioeconomic status, in PISA 2000 over 90% of girls in the highest group reported that they read for fun at least sometimes. In PISA 2009 this figure was 5 percentage points lower. By the same token, in PISA 2000, 86% of girls in the lowest socioeconomic group reported some reading for fun, whereas in PISA 2009 this share had decreased by as much as 11 percentage points, which means that the decrease was more than twice as large as the one evidenced among girls in the highest socioeconomic group (Välijärvi, 2014).

Correspondingly, in PISA 2009, 64% of boys in the highest socioeconomic group (quarter) reported that they were reading for fun for at least half an hour on a daily basis, which was 8 percentage points lower than in PISA 2000. Among boys in the lowest quarter, this share decreased by 19 percentage points; declining from nearly two-thirds in PISA 2000 to less than a half in PISA 2009.

The relatively greater rate of rejecting reading activities among boys, and especially among students in the lowest socioeconomic group, largely explains the fact that in Finland the overall PISA reading literacy scores have been decreasing, while the

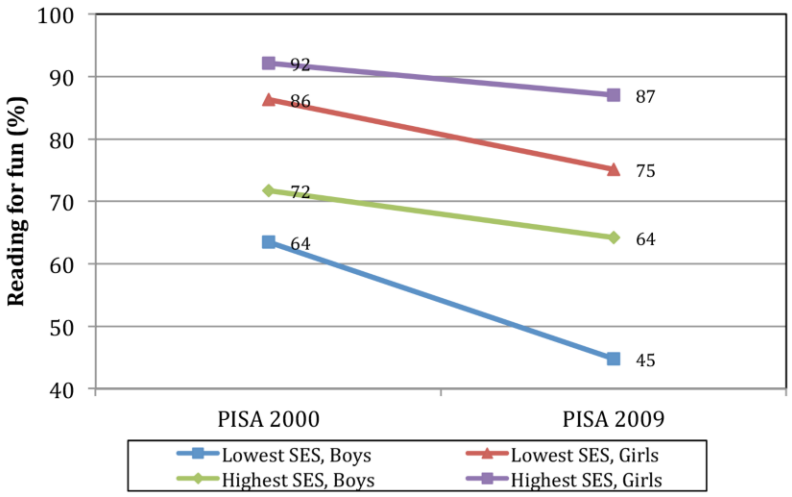

Figure 5. Reading for fun by gender and socio-economic status (SES)

gender gap as well as the impact of home background on student performance in reading literacy have been increasing. The association between decreasing reading activity and socioeconomic background is also reflected in the performance results which show that the decrease in reading performance is pronounced among students from culturally disadvantaged families (Arffman & Nissinen, 2015).

Diversity of Reading and Interest in Reading Activities

According to PISA data, Finnish students did less reading in most forms of print media in 2009 than in 2000. Girls' and boys' reading profiles have always been different in many respects. According to the PISA 2009 data, even though the frequency of reading newspapers was fairly similar for both genders, two-thirds of girls read magazines at least a few times a month, whereas only slightly over half of boys did so. For comics, it was the other way around. Among regular readers of fiction, girls are clearly in the majority with the ratio of three girls to one boy, while non-fiction books are somewhat more popular among boys than among girls.

An index indicating the diversity of reading has been developed based on the above-mentioned genres and related frequencies of reading. The OECD average of the index was set to 0 with a standard deviation of 1. In terms of the diversity of student reading, Finland is one of the top countries within the OECD, even though the diversity has diminished (Figure 6). According to the PISA 2000 data, Finnish girls' reading activities were clearly more diverse (0.70) than those of boys (0.51). In comparison to the OECD average, the diversity of reading was very high in both groups. In PISA 2009, the gender gap for the diversity of reading remained similar

in Finland. Although these index values decreased equally for boys (0.36) and girls (0.55), they were still very high in international comparison (OECD, 2010a,c).

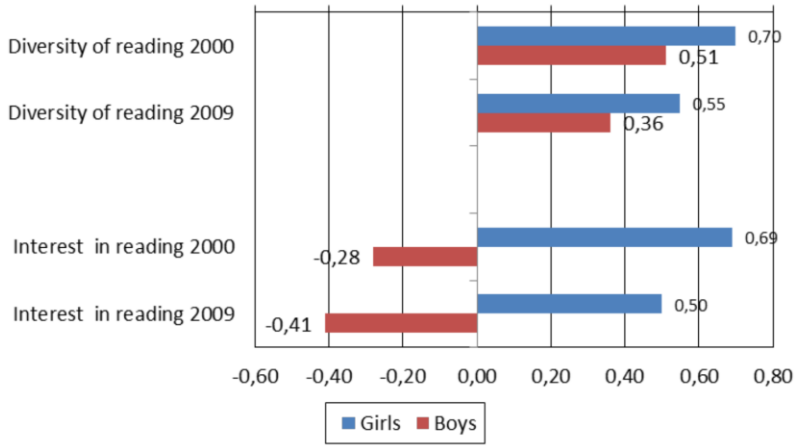

Figure 6. Diversity and interest in reading among boys and girls in PISA 2000 and 2009

Figure 6 also shows that Finnish students' interest in reading clearly decreased since PISA 2000, and for both genders. The difference in interest between boys and girls has remained very large. In PISA 2000 Finnish girls' interest in reading (0.69) was exceptionally high compared to girls across all OECD countries (0.33) and especially to boys. In PISA 2009 the difference was considerably smaller, although Finnish girls' interest in reading was still on a high level (0.50) in comparison to the OECD average for girls (0.32). In PISA 2000 Finnish boys were roughly on level with the OECD average (–0.24 vs. –0.23) in this respect, but in PISA 2009 their rating fell down to –0.41. Hence, within nine years interest in reading declined in Finland for both genders, more than in almost any other OECD country.

In Finland the connection between student's interest and observed reading literacy levels has been exceptionally strong compared to other advanced school systems (OECD, 2010d, 2013a). The same applies to the correlation between diversity of reading and reading literacy performance, even though it is weaker than the connection with interest. When students are divided into four equally sized groups based on the reading interest index, the most interested quarter group in PISA 2009 scored about 121 points higher on average than the students in the least interested quarter. This difference equals approximately three school years. The difference between these groups had increased by 10 score points since PISA 2000, and was clearly above the OECD average (103 score points). In the PISA 2009 data for Finland, the reading interest index alone explained as much as 27% of the total variation in reading literacy scores, which was the highest percentage among OECD countries. The corresponding OECD average was 18.1%.

In the PISA 2009 reading literacy assessment, students in the highest quarter in terms of their reading diversity index outperformed their peers in the lowest quarter by 81 score points on average, which means a difference of about two school years. In PISA 2000 the difference was almost identical. The OECD average for the difference between these student groups in PISA 2009 was 55 score points. Statistically this index alone explained 13.7% of the total variation in PISA 2009 reading literacy test scores in Finland (the highest percentage within OECD countries), while the OECD average for the explanatory power of this index was only 5.9%.

CONCLUSIONS

In this chapter, the analysis of PISA results and trends in Finland is focused particularly on the weaknesses and concerns shown by the results. This approach is useful for determining the most important issues for improving education. Even though Finland is still in many respects one of the top achieving countries, along with some Asian countries, trend analyses are crucial for the continuous development of education.

The decreasing trend in average performance and the increasing number of low-performers have gained wide attention in the educational field in Finland, and rightly so. Moreover, it is evident that educational equality and equity, which have been – and still are – at the heart of educational policy in Finland, show disconcerting deterioration as the gender gap is widening and the impact of home background on students' reading literacy performance has increased. Particularly students from culturally disadvantaged homes are at risk and show relatively steep decreases in both reading engagement and performance. These trends show that the Finnish schools have difficulties in supporting students' growth and development of key competencies in the current context, where technologies related to literacy, textual landscapes and literacy practices are changing constantly (Leu et al., 2013, pp. 1158–1162), as are students' immediate environments, needs, and interests. Moreover, the Finnish schools are no longer able to overcome the effects of family background on learning outcomes to the same extent as before. The increasing number of immigrant students makes this issue even more challenging (Harju-Luukkainen et al., 2014). Thus, we need to find new pedagogical ways to promote the development of students' reading and mathematical literacy (including digital literacy) and also to support the growing number of low-performing students who do not necessarily receive adequate support from home.

DISCUSSION

Education is highly regarded in Finnish society, and the present Finnish government also has guidelines for education on its agenda. The government emphasises not only the role of new learning environments and digitalisation in pedagogy, but also motivational support for students, as a means to improve learning outcomes.

One goal set by the government is for Finland to be the leading country in modern education (Finnish Government, 2015, 15). This implies and requires continuous educational development for which international assessments of learning outcomes, such as PISA, provide valuable information.

Based on the most recent results in PISA and other assessments, several measures and national programmes have been launched to turn the negative trend around and update Finnish education for the 21st century. The Finnish National Core Curriculum for Basic Education was recently revised following the usual 10-year cycle. The curriculum emphasises new pedagogical culture in which learning is a holistic process in which different school subjects are not only taught separately but also integrated into a meaningful and coherent whole and in which students will have ownership and an active role in their learning (Finnish National Board of Education, 2014). As a response to the declining reading literacy performance in both PISA and national assessments (e.g. Harjunen & Rautopuro, 2015), multiliteracy was introduced in the new curriculum as one of the cross-curricular competencies for all school subjects. This will broaden the concept of texts in all subjects, and thus integrate digital texts into instruction, and explicitly introduce literacy as a topic for the whole curriculum, making teaching of (disciplinary) literacy skills a responsibility of all teachers in all subjects.

In addition, the Finnish Ministry of Education and Culture launched a national development programme called *Basic education of the future – Let's turn the trend!* The overall aim of the project was to provide an analysis and recommendations for updating Finnish basic education. Based on a research review, the educational experts produced a report describing the current status of basic education and the reasons for the deteriorating learning outcomes. The report (Ministry of Education and Culture, 2015) included several development proposals for basic education, and underlined the need to develop a new pedagogical culture to support, on the one hand, collaborative learning and, on the other hand, individual learning where students have an opportunity for "voice and choice" (Harinen et al., 2015, 75). It further emphasised that digital technology offers many possibilities that have not yet reached their full potential in education in Finland. To some degree, the proposed changes in education have already been realised in the new curriculum. As suggested also in the *Basic education of the future* report (Jordman et al., 2015, 81), the success of the intended new curriculum relies on implementation which now requires systematic professional development for teachers (Silander & Välijärvi, 2013).

In order to disseminate innovative practices among schools, the Finnish National Board of Education coordinates the school network for educational development (Finnish National Board of Education, 2015). The schools of the network are in the frontier of educational development in Finland, as the purpose is to create and disseminate pedagogical innovations, to promote learning motivation and school enjoyment, and also to support teachers' professional development. For this work,

the network provides a structure for collaborative learning and cooperation. Many of the areas for development relate to the use of ICT in education and teachers' professional development.

In addition to the development related to the whole education system, there are also domain specific interventions. There have been several national efforts, for instance, to digitalise education, starting from the cross-curricular topic of ICT use in the new national curriculum (Finnish National Board of Education, 2014, 21) to the targeted state grants for the development of digital services and materials as well as for teachers' professional development. Additionally, the Ministry of Education and Culture is financing EduCloud service (www.educloudalliance.org), which aims at supporting teachers and students in using digital learning resources. Through the EduCloud platform, teachers and students can get easy access to learning materials, pedagogical games, applications and services (ECA, 2015).

In response to the decrease in learning outcomes and motivation to learn, the Ministry of Education and Culture has launched two national programmes. Lukuinto (Joy of reading) was launched in 2012 to strengthen the literacy skills of 6–16-year-olds and increase their reading engagement. A special target group for this was boys, who are overrepresented among the low performers (Lukuinto, 2015; Ministry of Education and Culture, 2012). The programme emphasises the collaboration between schools and libraries. Also the learning of mathematics and science has been addressed by a national programme (Ministry of Education and Culture, 2014). In this programme also, the target group consists of 6–16-year-old students and their teachers. The programme aims at finding innovative teaching and learning methods and learning environments for mathematics and science education.

It is evident that many efforts to improve the Finnish education system have been directed specifically to basic education, which is the stepping stone for students' future educational choices and careers. This illustrates the dedication with which Finns approach the development of the comprehensive school, and similar approaches can be seen at other education levels as well. Basic education is a natural place to start as it covers the whole age group. The extent and nature of the proposed changes reflect the determination to develop education and stop the declining trend rather than the dramatic nature of the decline itself.

NOTE

[1] In PISA, the national test scores have been standardised so that the OECD average in PISA 2000 was 500 score points for all three domains and the respective standard deviation was 100 score points. In subsequent PISA assessments the scores are standardised similarly so that the results from different years are comparable both across and within individual countries. Roughly speaking, in Finland a difference of a little less than 40 score points on the PISA scale is estimated to correspond to proficiency development occurring during a school year; in other words, if the difference between two students or student groups is 60 points on the reading literacy scale, for instance, it is roughly equivalent to one and a half years of schooling. The same applies to mathematics and science as well.

REFERENCES

Arffman, I., & Nissinen, K. (2015). Lukutaidon kehitys PISA-tutkimuksissa [The trend in reading literacy results in PISA assessments]. In J. Välijärvi, P. Kupari, A. Ahonen, I. Arffman, H. Harju-Luukkainen, K. Leino, M. Niemivirta, K. Nissinen, K. Salmela-Aro, M. Tarnanen, H. Tuominen-Soini, J. Vettenranta, & R. Vuorinen (Eds.), *Millä eväillä osaaminen uuteen nousuun? PISA 2012 tutkimustuloksia* [How to support performance? Results from PISA 2012] (pp. 28–49). Helsinki: Publications of the Ministry of Education and Culture 2015: 6.

Chiu, M. M., & McBride-Chang, C. (2006). Gender, context, and reading: A comparison of students in 43 countries. *Scientific Studies of Reading*, *10*, 331–362.

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2016* [National core curriculum for basic education]. Helsinki: Finnish National Board of Education.

Harju-Luukkainen, H., Nissinen, K., Sulkunen, S., Suni, M., & Vettenranta, J. (2014). Avaimet osaamiseen ja tulevaisuuteen. *Selvitys maahanmuuttajataustaisten nuorten osaamisesta ja siihen liittyvistä taustatekijöistä PISA 2012 -tutkimuksessa* [Immigrant students' performance in PISA 2012]. Finnish Institute for Educational Research, University of Jyväskylä.

Kupari, P., Välijärvi, J., Andersson, L., Arffman, I., Nissinen, K., Puhakka, E., & Vettenranta, J. (2013). *PISA 12. Ensituloksia* [PISA12. First results]. Publications of the Ministry of education and culture 2013:20.

Leu, D. J., Kinzer, C. K., Coiro, J., Castek, J., & Henry, L. A. (2013). New literacies: A dual-level theory of the changing nature of literacy, instruction, and assessment. In D. E. Alvermann, N. J. Unrau, & R. B. Ruddell (Eds.), *Theoretical models and processes of reading* (6th ed., pp. 1150–1181). Newark, DE: International Reading Association.

Linnakylä, P., Malin, A., & Taube, K. (2004). Factors behind low reading literacy achievement. *Scandinavian Journal of Educational Research*, *48*, 231–249.

Linnakylä, P., Välijärvi, J., & Arffman, I. (2011). Finnish basic education: When equity and excellence meet. In K. Branden, P. Avermaet, & M. Houtte (Eds.), *Equity and excellence in education. Towards maximal learning opportunities for all students* (pp. 190–214), *Routledge Research in Education*, *50*. London: Routledge.

Mullis, I., Martin, M., Foy, P., & Drucker, K. (2012). *PIRLS 2011 international results in reading*. TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College, Chestnut Hill, MA.

OECD. (2001). *Knowledge and skills for life. First results from PISA 2000*. Paris: OECD.

OECD. (2004). *Learning for tomorrow's world. First results from PISA 2003*. Paris: OECD.

OECD. (2010a). *PISA 2009 results: What students know and can do. Student performance in reading, mathematics and science* (Vol. I). Paris: OECD.

OECD. (2010b). *PISA 2009 results: What makes a school successful? Resources, policies and practices* (Vol. IV). Paris: OECD.

OECD. (2010c). *Pathways to success: How knowledge and skills at age 15 shape future lives in Canada*. Paris: OECD.

OECD. (2010d). *PISA 2009 results: Learning to learn. Student engagement, strategies and practices* (Vol. III). Paris: OECD.

OECD. (2013a). *PISA 2012 results: What students know and can do – Student performance in mathematics, reading and science* (Vol. I). Paris: OECD.

OECD. (2013b). *PISA 2012 results: Excellence through equity: Giving every student the chance to succeed* (Vol. II). Paris: OECD.

Silander, T., & Välijärvi, J. (2013). The theory and practice of building pedagogical skill in Finnish teacher education. In M. Heinz-Dieter & A. Benavot (Eds.), *Pisa, power and policy: The emergence of global educational governance* (pp. 77–98), *Oxford studies in comparative education*, *23*(1), Number 1). Oxford: Symposium Books.

Välijärvi, J. (2006). Chancengleichheit und Bildung in der finnischen Schule. In D. Fischer & V. Elsenbast (Eds.), *Zur Gerechtigkeit im Bildungssystem* (pp. 103–115). Münster: Waxmann.

Välijärvi, J. (2014). *Osaaminen kestävällä perustalla: Suomen PISA-tulosten kehitys vuosina 2000–2009: Tilannekatsaus helmikuu 2014* [The Finnish PISA results 2000–2009]. Helsinki, Finland: Opetushallitus. Muistiot, 2014:1.

Välijärvi, J., Kupari, P., Ahonen, A., Arffman, I., Harju-Luukkainen, H., Leino, K., & Vuorinen, R. (2015). *Millä eväillä osaaminen uuteen nousuun? PISA 2012 tutkimustuloksia* [PISA 2012 results in Finland]. Opetus- ja kulttuuriministeriö: Opetus- ja kulttuuriministeriön julkaisuja, 2015:6.

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2. THE SOCIETAL FACTORS CONTRIBUTING TO EDUCATION AND SCHOOLING IN FINLAND

The Finnish Education: Equity and Quality as Its Main Objectives

ABSTRACT

The chapter introduces the reasons why teaching and learning have a high priority in Finnish society and how teacher education support teachers' role to work as high quality professionals. The chapter provides a brief review of the historical and cultural movements that have had an influence on respect for education and learning in Finnish society. The chapter also provides a description of the Finnish educational system with the comprehensive school as one of its important element. The major reasons for the success of Finnish education are a combination of political will, purposeful efforts to promote equity by the educational system, high quality teacher education, teachers' professional and moral responsibility, and society's trust in the educational actors.

Keywords: teacher education, equity, educational system, teaching profession, teachers

INTRODUCTION

The Finnish education system has received attention from all over the world because of the great success of Finnish 15-year-olds in the OECD's PISA surveys in 2000, 2003, 2006, 2009, and 2012 (e.g. OECD, 2006, 2009, 2010, 2013). The knowledge and skills of Finns in problem solving, scientific, mathematical and reading literacy are representative of the highest level of international standards. Only a very few Finnish students are in the lowest PISA categories. Likewise, the differences of learning outcomes among schools are small. Major reasons for these high learning outcomes are a purposeful educational policy and the high standards of teachers. According to researchers (Schleicher, 2005; Välijärvi, 2004; Simola, 2005; Laukkanen, 2006; Niemi & Jakku-Sihvonen, 2006), the Finnish educational policy has aimed at equity in education and has promoted the common comprehensive school model. In the process, many important decisions have been made. One of those has been the decision that all teacher education, including primary school teacher education, was raised to the MA level (5-year programs). This chapter gives an overview of the major drivers of this policy, why they were taken, and

H. Niemi et al. (Eds.), Miracle of Education, 23–40.

how they have influenced educational practice and teachers' professional roles. In the beginning of the chapter there is a brief review of the historical and cultural movements that have influenced Finnish education. Thereafter the structure and major features of the Finnish educational system are introduced. Finally there is a description of the Finnish research-based teacher education and its major qualities.

Respect for Learning and Education in the Finnish Culture – Education of a Nation and Comprehensive Schooling for All

In Finland, the promotion of equity, learning and education is a central factor in our national history, which can be seen in the framework of cultural and historical background factors. Thus, in Finland we like to think that our success in the PISA surveys has been only a side product in the development of our educational system.

A major influential cultural background factor is the Finnish national identity. Having been first a part of the Swedish realm from 1249 to 1809, then from 1809 to 1917 existing as a Grand Duchy in the Russian Empire, Finland finally became independent in 1917. From the late 19th century onwards, a strong Finnish nationalist movement, known as the Fennoman movement, grew. Milestones included the publication of what would become Finland's national epic, the *Kalevala*, in 1835, and the Finnish language achieving equal legal status with Swedish in 1892. The stories of the Kalevala tell about strong individuals whose power was based on mental abilities and wisdom, not on physical strength. The national movement in the 19th century was inspired and promoted by many influential university professors who, apart from working in their areas of expertise, also had political power. They strongly advocated the education of the nation. Especially J.V. Snellman (1806–1881), philosopher, statesman and later also Head of the Bank of Finland, stressed the value of education and learning for the nation. The main message of representatives of the Finnish national movement was the education of a nation. The power of the nation depends especially on competent leaders, quality civil servants and teachers. Teacher education was seen as a necessary means for national education. Teacher education has had a close relationship with universities since its beginnings in the 19th century. The first teacher education seminar was established in 1863 and in 1866 the first decree for basic education was given. The most influential promoter of basic education was Uno Cygnaeus who created the main guidelines for education for all children and developed the first teacher education models. In 1852 the first professorship in education was established at the University of Helsinki and it was closely related with teacher education and the role of education in society. It was the first professorship of education in the Scandinavian countries. The first advocates of a national identity put a strong emphasis on basic education. Respect for learning and education provided also the possibility of elevation from the lower strata of society. Historically, many teachers had peasant family backgrounds.

Respect for learning and teachers' work has long historical roots in Finland and has been a deep cultural feature in Finnish society. Teachers were considered to be

important persons in local communities. They were often responsible for cultural activities in villages when a six-year basic education became compulsory for all children in 1921. Teachers were called "candles of the nation" and very often they educated the whole village and people in local regions by organizing choirs, theatre performances and parental education in addition to their normal school work. This education process was strongly supported by the Finnish Lutheran Church that had demanded literacy as a basic requirement for obtaining permission to marry since the 15th century until the school system in society took responsibility for basic education and literacy.

Educational Policy for Equity

After the Second World War the baby boom increased the number of pupils in the 1950s. At the same time the concept of a welfare society emerged. Education was seen as a basic factor for equity in society. An important part of this process was the ideal that free education is a basic right for all citizens. At the time, there was a wide consensus between politicians that a small country has to promote equality in education by implementing a system that provides educational opportunities for as long as possible to all those who are motivated to learn, regardless of their socioeconomic status, gender or residence. In those days Finland had a parallel system in education in which ten-year-old children had to decide what would be their future prospects and careers. They had to seek entrance and pass examinations into academically oriented schools or go on a route that led to vocational fields. If they selected the vocational route they could not seek entrance to higher education. The educational system put individuals into one of two categories at a very early stage of their lives, thus creating a divided nation. The academic schools very often had tuition fees, which further strengthened the divide.

Moving to a new school system that would be the same for all children was not an easy process in spite of a common general vision of the importance of education. After a very contradictory and hard political debate in the 1960s, it was decided in 1968 that the parallel school system should be replaced by a national nine-year basic education that would represent the ideology of comprehensive education. When the Government delivered its bill to Parliament in 1967, one of the arguments for the common nine-year education for all was that it was too early to judge individual capacities after students had only had four or even six years of basic education. In the beginning of the new school system, streaming was allowed but it was abolished in the 1980s because of unwanted consequences. It did not increase learning outcomes but strengthened the divide between different learners. In the 1970s and 1980s the comprehensive school was a very centralized system. It was a time when a new concept of pedagogy had to be developed and teacher education was radically reformed. In the 1980s a general decentralization in all administrations was implemented in Finland and also in educational policy. It gave more freedom as well as responsibility to local educational providers. The teacher education system was

also developed to provide new teachers with better competences to meet the whole age cohorts and to take more responsibility for curriculum development. During the 1980s and 1990s there were many political debates about the relevance of the common comprehensive school for all. Critical voices demanded more attention, especially for gifted children. However, the comprehensive school model remained. The main policy was that the comprehensive school could have different profiles locally and support students' individual qualities without streaming or separate schools, e.g. for gifted pupils.

Since the late 1960s, Finnish basic education has been logically developed towards the comprehensive model, which guarantees everybody equal opportunities in education irrespective of sex, social status, ethnic group, etc., as outlined in the constitution. The Finnish educational policy has purposefully aimed at equity in education, and this has been seen as the main reason for its good learning outcomes (Schleicher, 2005; Välijärvi, 2004; Simola, 2005; Laukkanen, 2006; Niemi & Jakku-Sihvonen, 2006). Finland has built up an education system with the following characteristics: uniformity – free education, free school meals and special needs education. The principle of inclusion has been an important guideline. Since the 1980s, all Finnish students in basic education began to have the same goals in mathematics and foreign languages. In so doing, the Finnish Government was realistic. In reality, these goals are attained by individuals with different levels of success. However, with extra support for the weakest students, we can considerably raise the performance of the whole age group.

Laukkanen (2006) summarizes the most important decisions as: (1) the discontinuation of streaming, (2) the strong allocation of affordable educational resources to lower secondary education, (3) the decentralization of decision-making powers, (4) raising primary school teacher education to the MA level, (5) providing support for weak students, and (6) inviting different stakeholders to express their opinions.

THE STRUCTURE AND AIMS OF THE EDUCATIONAL SYSTEM

In today's Finland (population 5.4 million) education is a public service. General education, vocational education and higher education are free of charge. All political parties see the comprehensive school model as an important investment for the future and defend even free higher education, even though there is pressure to set tuition fees for higher education from some business sectors. Basic education consisting of nine years of comprehensive school, upper secondary education and vocational education are financed by the state and local authorities. These educational services are provided by local authorities, which are municipalities or consortiums of municipalities. They have councils for strategic planning of educational issues and are responsible for the quality of education in local schools. Municipalities (local authorities) and their schools write their own curricula on the basis of the national

core curriculum. Local needs can be taken into consideration in these curricula. Schools can have their own profiles such as, e.g., science or music education.

Preschool education, mainly provided by social authorities in day-care centers, is offered for all six-year-olds. It has been an optional choice for families since August 2000, and almost the entire age cohort, about 96% of the age group, participated in preschool education. In 2015 it became obligatory for all children. Basic education lasts for nine years. The age group contains 60,000 pupils. Children start this compulsory schooling at the age of seven. In the comprehensive schools, class teachers are mainly responsible for grades 1–6, and most of the subjects are taught by subject teachers in grades 7–9 (also called lower secondary school). In basic education, students get all their study materials and one meal for free from the school. All students living five km or farther from their schools have transportation to and from school arranged by their education providers. For the Swedish speaking population (about 6%) there are separate schools as well as administrative services. The aim of immigrant education is equality, working bilingualism and multiculturalism. The goals of immigrant education are to prepare immigrants for integration into the Finnish education system and society, to support their cultural identity and provide them with a functioning bilingualism so that in addition to Finnish or Swedish, they have a command of their own native language (Finnish National Board of Education, 2009; Jakku-Sihvonen & Niemi, 2007).

Upper secondary schools usually obtain their students from many local comprehensive schools. After compulsory education at the age of 15, about half of the age group choose to go to upper secondary schools, which have academically oriented curricula and prepare students for higher education. Students who, at the end of upper secondary education, obtain passes in four matriculation exam subjects are awarded matriculation certificates, which provide eligibility for universities and vocational higher education. The other half of this age group chooses a vocational school. They also have access to universities and vocational higher education. Teachers at the lower and upper secondary schools are called subject teachers. They have qualified to teach one or two academic subjects (Finnish National Board of Education, 2009; Jakku-Sihvonen & Niemi, 2007).

The Higher education sector consists of universities and polytechnics, which now are mostly known as universities of applied sciences. The universities provide B.A., M.A. and Ph.D. degrees and have also rich variety of Open University programs and a wide provision of further education and in-service training. Polytechnics offer B.A. degrees and professionally oriented M.A. programs and also a lot of in-service training. All degree programs in higher education are free of charge. Open University programs have small registration fees and in-service training is fee based. Universities or polytechnics have entrance examinations because of the Numerus Clausus, this is a quota in each discipline that is based on negotiations between the higher education institutions and the Ministry of Education and Culture. They agree on how many degrees each institution can award over a fixed

time period. Funding is not dependent on the intake of students but outcomes and productivity. The numbers of degrees are based on the anticipated needs in society. This means that not all applicants can be accepted to higher education institutions, and competition is pretty fierce. Usually less than one fourth of the applicants can be accepted to universities.

Teacher education for teachers in comprehensive schools and upper secondary schools, as well as for those teachers who teach general subjects in adult education and vocational education, is provided at eight Finnish comprehensive universities around the country. According to previous decrees issued in 1979 and 1995, and the new 2005 decree, all candidates have to obtain a Masters degree to become a qualified teacher.

Usually less than one forth of applicants can be accepted into universities (Kansanen, 2003; Niemi & Jakku-Sihvonen, 2011). Teacher education, especially class teacher education, is one of the most desired study programs. Because of the large numbers of applicants for class teacher education, only 10–15% of the highly motivated and talented applicants can be accepted. Also, secondary teacher education has become more and more popular in most subjects. In general, admission to the university is difficult for young people wishing to pursue a career as a subject teacher as only a small percentage of the applicants are granted admission to the university department of their choosing. This is true particularly for biological subjects, but recently there have been problems in recruiting talented students in mathematics, physics, chemistry and some foreign languages. There have been many efforts to attract new students and this has resulted in a change from the "elimination approach" to a "recruitment approach" in the organization of the student admission programs of the faculties. These efforts include utmost flexibility in the timing of studies and arranging entrance tests in some departments occasionally as often as three times a year (Meisalo, 2007, p. 172). Pedagogical studies of subject teachers are normally undertaken in the individual study plans of teacher students in the middle of subject studies, e.g., during the third and fourth study years. However, it is possible to transfer from a Master's degree program at a subject faculty to pedagogical studies afterwards, by taking an entrance examination for pedagogical studies. All students applying for teacher education programs are tested and interviewed individually (Meisalo, 2007, p. 172).

One of the aims of the Finnish education system is to have an educational infrastructure that is devoid of so-called "dead-ends". The compulsory education is the nine years of comprehensive school, but the national aim is to keep all children in connection with the educational system for at least 12 years and to provide several routes for life-long learning after that. The aim of the educational system is to enable an individual's education to continue. Nearly 100% of each age cohort completes the nine years of comprehensive schooling. Ninety-four per cent of those who finish the ninth grade of comprehensive school continue their studies in the same year either in upper secondary general school or upper secondary level vocational education (Statistics Finland, 2009). The six per cent of the age cohort

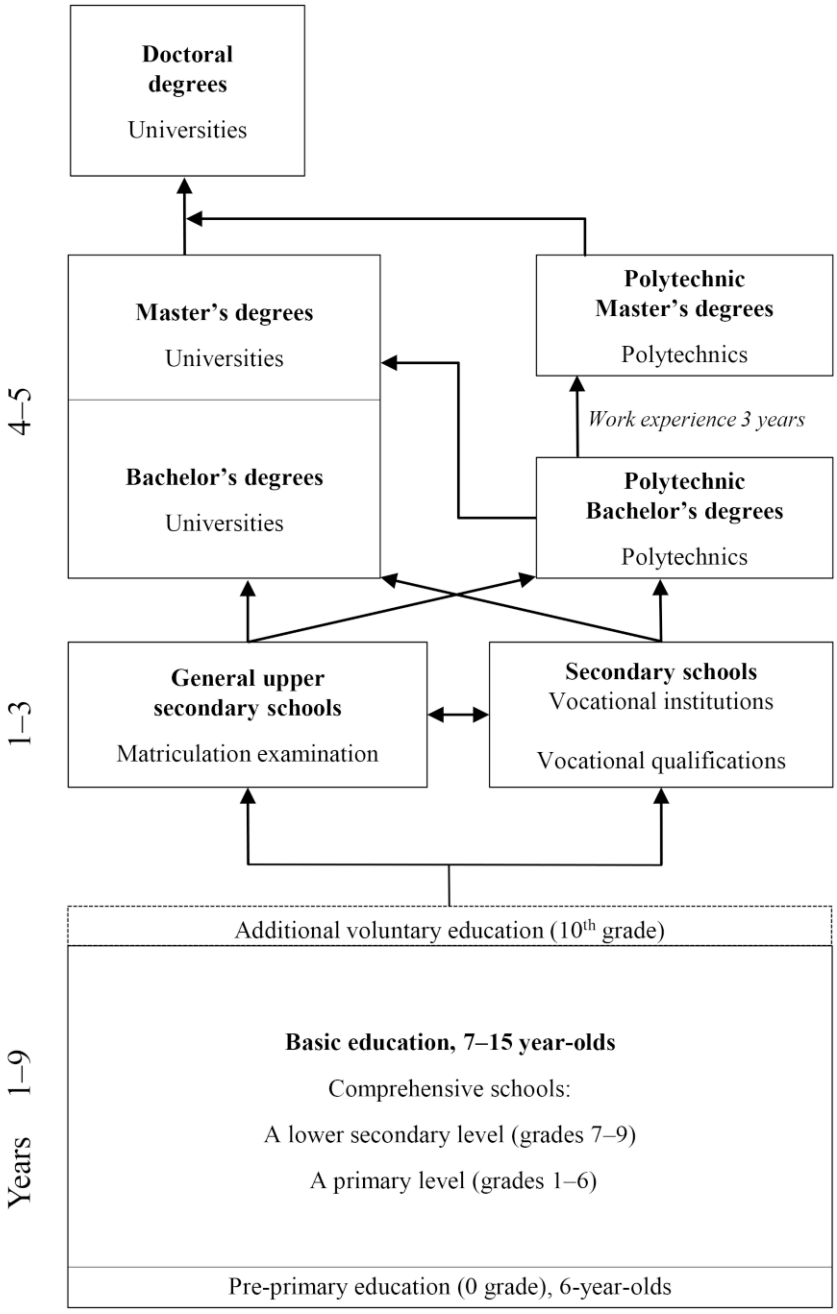

Figure 1. The educational system in Finland

who do not continue their studies are in danger of exclusion. Municipalities have launched various programs to keep them in touch with education and learning so that they will be able to find pathways to further education. Without additional education they are in danger of being excluded from the labor market. The aims related to equity and the enablement of all people's development through learning and education set special requirements on teachers, the teaching profession and teacher studies at universities.

An inclusion policy and special needs education are extremely important in promoting all students' right to learn. The basic principle is that all students with learning difficulties must be given help and support to overcome these difficulties. They can have extra teaching hours or/and special needs instruction integrated into their own class, and temporary or more permanent help in special classes or groups. In each school there is a multi-professional student care group to which the principal, teachers, special need teachers, social workers, and nurse belong. In 2011 a new decree was passed. Accordingly, every teacher is responsible to identify students' learning difficulties at the earliest stage possible (Finnish National Board of Education). This widens teachers' and local level responsibility to seek solutions for supporting these students. Inclusion has been the main principle in the last decade and this new law strengthens this trend.

In Finland, the teaching profession has been based on high moral and ethical principles for as long as teachers have been educated, i.e. for more than 150 years. This conception has continued undiminished after teacher education was moved to the universities in the 1970s (Niemi, 2011; Niemi & Jakku-Sihvonen, 2010). As an initiative of the national Teacher Union an ethical committee for the teaching profession was established in 2000. It is an independent organ and its main purpose is to advance the ethical nature of the teaching profession. The first ethical principles were published in 1998 (Ethical Committee for the Teaching Profession, 2002, pp. 164–167).

The principals of Finnish schools have an important role to play. They are qualified teachers with extra studies in management and leadership of school organizations. They have administrative tasks but they are also pedagogical leaders. Most of them have at least a small teaching load in order to keep in touch with grass root level issues. All teachers are also considered leaders in their own special areas and are expected to make active contributions to curriculum development.

ENHANCEMENT-LED AND FORMATIVE EVALUATION POLICY FOR PROMOTING QUALITY

A quest for good learning outcomes is on the educational agenda of many countries. Globally, much controversy exists over what is the best way to use assessment as a tool to achieve high learning outcomes. Some countries have chosen standardized testing, which stresses competition between schools and focuses on measurable performances. Other countries have applied more formative aspects of evaluation.

he Finnish choice has been enhancement-led evaluation at all levels of education. The assessment of outcomes is regarded as an important tool to improve education.

There is no inspection system to control the educational arrangements at schools or institutions. Instead of inspection, there is an evaluation system. For basic education, following up whether schools have reached the national goals for learning outcomes set in the national core curriculum for basic education is done by national sample based assessments. Upper secondary schools have their own standards based end examination system.

Since the mid 1990s, the Finnish National Board of Education conducted national assessments of learning outcomes, mostly in the ninth grade of basic education. In 2014, this task was moved to the Finnish Educational Evaluation Centre (http://karvi.fi/en/). Regular assessments have been carried out in mathematics, the students' mother tongue (either Finnish or Swedish) and literature, and occasionally in other subjects as well. National assessments produce information about the quality and results of education and training in relation to objectives stated in the national core curricula. These assessments are sample based and thus do not cover the whole age group. This is because the results are used for the development of education. The purpose is to enhance the use of evaluation for formative purposes. All schools in a sample of an assessment receive an individual feedback report. These reports are delivered to schools as soon as possible after the assessment data has been collected, as fresh results are more interesting for schools than results that are months old. Feedback has usually been received as early as two months after the data was collected (Laukkanen, 2006).

The Ministry of Education and Culture is responsible for general policy making and financing educational evaluations. The Finnish Educational Evaluation Centre (http://karvi.fi/en/) is responsible for evaluating general education, vocational education, and adult education as well as higher education. The center is an independent expert body assisting schools and other educational institutes including universities and polytechnics with matters relating to evaluation and quality assurance systems and providing information to the Ministry of Education and Culture and other policy makers. Beside the national evaluations, international evaluations are important in developing Finnish education. Since 2000, PISA has provided important information for the development of Finnish basic education (Jakku-Sihvonen & Niemi, 2007, p. 14).

At the local level, municipalities are encouraged to produce internal and external evaluations to develop education. Policy-makers are informed about the status of education by assessments and special up-to-date reports organized by the Ministry of Education and Culture, and the Finnish National Board of Education. Evaluations are implemented to find evidence to support the continuous development of education and learning. The aim of the national evaluation system is to support the local/municipal education administration and the development of schools as goal-oriented and open units, and to produce and provide up-to-date and reliable information on the context, functioning, results and effects of the education system.

Balancing between a Centralized and Decentralized Administration

Finland has also balanced between a centralized and decentralized administration of education. At the beginning, comprehensive schools were very centralized, but in 1985 the municipalities' freedom and responsibility was increased. The status of the then new national curricular guidelines was to create a framework for curriculum design in the municipalities (e.g. Laukkanen, 2006). Ten years later, in 1994, the Finnish National Board of Education only gave very broad aims and content guidelines for teaching different subjects. The municipalities and, ultimately, the schools set up their own curricula on the basis of the national core curriculum. Since 1999 new legislation has been provided to mainstream decentralization. Providers of education – meaning municipalities, coalitions between municipalities and private foundations – have been given wide freedom when it comes to writing their local curricula. Still, the local curricula have to be drawn up in accordance with the National Core Curriculum for both comprehensive and upper secondary schools.

The local curricula have to determine the teaching and educational practices of the schools concerned. The curricula must be drawn up in such a way that they take into account the schools' operating environments, local value choices and special resources. Education providers may decide about the implementation of curriculum in co-operation with interest groups. The aim is to ensure a high standard of general education, with relevance to society and commitment from the community as a whole to the jointly determined objectives and procedures. As it concerns pupil welfare and home-school cooperation, the curriculum must be drafted in collaboration with authorities charged with tasks that are part of the implementation of the local authority's social and health services (Finnish National Board of Education, 2014, 2015).

TEACHER EDUCATION AS A KEY PLAYER

In Finland, the responsibility for providing education to prospective teachers in primary and secondary schools has been transferred to universities. Since 1974, teacher education for all teachers in basic education has been arranged at universities. Before 1974, primary school teachers were educated at teacher-training colleges. In 1979, the basic qualification for secondary and elementary school teachers was defined as a Master's degree obtained in programs requiring 4 to 5 years to complete. The purpose of this modification was to unify the core aspects of elementary and secondary school education and to develop an academically high standard of education for prospective teachers. Teacher education for the secondary school level was also reformed by expanding the scope of pedagogical studies (Niemi, 2010; Niemi & Jakku-Sihvonen, 2006).

According to decrees issued in 1979 and 1995, all teachers had to obtain a Master's degree for teacher qualification. In terms of the Bologna process,

the degree of qualified teachers was equivalent of a second cycle degree in the European higher education area. As part of the Bologna process, teacher education in Finland moved to a two-tier degree system on 1 August 2005. The combination of a three-year Bachelor's degree and a two-year Master's degree in appropriate subjects qualifies teachers to teach subjects in primary and secondary schools or general subjects in vocational institutions. Since moving to the Bologna process the kindergarten teacher's degree has to be Bachelor in Education (180 ECTS); all other teachers must attain a Master's degree (BA 180 + MA 120 = 300 ECTS; 1 ECTS is about 25–28 hours work). Teachers for vocational schools study their vocational subjects in higher education institutions (e.g. technological universities), which are specialized in vocational content areas. All other teachers are educated in comprehensive universities.

The main elements of all teacher education curricula consist of studies in:

- Academic disciplines. These can be whatever disciplines are taught in schools or educational institutions or in science of education. Academic studies can be a major or minors depending on the qualification being sought. Class teachers have a major in educational sciences and minors in other disciplines.
- Research studies consist of methodological studies, a BA thesis and an MA thesis.
- Pedagogical studies (min. 60 ECTS) are obligatory for all teachers. They also include teaching practice.
- Communication, language and ICT studies are obligatory.
- The preparation of a personal study plan has been a new element in university studies in Finland since 2005. Its main function is to guide students to develop their own effective programs and career plans, and to tutor them in achieving their goals.
- Optional studies may cover a variety of different courses through which students seek to profile their studies and qualifications.

Pedagogical Studies

The traditional distinction between class teachers and subject teachers has been retained but the structures of the respective degree programs allow them to take very flexible routes to include both in the same program or permit later qualification in either direction. The pedagogical studies (60 ECTS) are obligatory for qualification as a teacher and are approximately the same for both primary and secondary teachers as well as vocational and adult education teachers. These studies give a formal pedagogical qualification to teachers at all levels in the Finnish educational system regardless of the programme in which they are provided. According to legislation, pedagogical studies must be studies in the science of education with an emphasis on didactics. The pedagogical studies can be part of the degree studies, or they can be taken separately after completion of a Master's degree.

Universities have a high degree of autonomy in designing their curricula. Therefore, no detailed "curriculum of teacher education" covering all universities in Finland

can be presented. However, there are some principles and general outlines followed by all institutions of teacher education. These are partly due to recommendations by the Ministry of Education, partly by national working groups, e.g., related to teacher education reforms such as the Bologna and partly to an agreement of the Deans of the Faculties of Education and the Directors of the Departments of Teacher Education who have regular contact with each other and with the Ministry. The Ministry of Education has full confidence in the departments and faculties involved in teacher education (Meisalo, 2007, p. 163).

The main principles of the Finnish teacher education system can be summarized in the following way.

A Research-Based Approach as the Main Guideline

For decades, the Finnish orientation toward teacher education has committed itself to the development of a research-based professional culture (Niemi & Jakku-Sihvonen, 2011; Jakku-Sihvonen & Niemi, 2006). The critical scientific literacy of teachers and their ability to use research methods are considered to be crucial. Accordingly, Finland's teacher education programs require studies of both qualitative and quantitative research traditions. The aim of these studies is to train students to find and analyze problems they may expect to face in their future work. Research studies provide students with an opportunity to complete an authentic project, in which students must formulate a research question in an educational field, be able to search independently for information and data, elaborate on their findings in the context of recent research in the area, and synthesize the results in the form of a written thesis. They learn to study actively and to internalize the attitude of researchers as they do their work (Niemi, 2011).

Professors have the responsibility to guide students in the research-oriented aspects of their education. The main object of this guidance is not the completion of the Bachelor or Master thesis itself, but actually to engage students to become active participants of education society. In this aspect of the degree program, the processes of active working and thinking are integrated in various complex and sometimes unexpected ways. The aim of the guiding process is to help students to discover and tap into their own intellectual resources and to enable them fully to utilize the resources of the study group in which they are working (Nummenmaa & Lautamatti, 2004, 117).

The goal of Finnish TE is to equip teachers with research-based knowledge and with skills and methods for developing teaching, cooperating at school and communicating with parents and other stakeholders. The leading guidelines are:

- Teachers need a deep knowledge of the most recent advances of research in the subjects they teach. In addition, they need to be familiar with the latest research concerning teaching and learning. Interdisciplinary research on subject content knowledge and pedagogical content knowledge provides the foundation for developing teaching methods that can be adapted to suit different learners.

Table 1a. Main components of the teacher education programs for primary school teachers (class teachers) (Niemi & Jakku-Sihvonen, 2006)

Primary school teacher education program	*Bachelor's degree 180 ECTS*	*Master's degree 120 ECTS*	*TOTAL*
Class teacher's pedagogical studies (as a part of major in education)	25 (including supervised teaching practice)	35 (including a minimum of 15 ETCS supervised teaching practice)	60
Other studies in a major in education	35 (including a BA Thesis, 6–10)	45 (including a MA Thesis, 20–40)	80
Subject matter studies for comprehensive school	60		60
Academic studies in a different discipline, minor	25	0–35	25–60
Language and communication studies including ICT, optional studies	35	5–40	40–75

Table 1b. Main components of the teacher education programs for secondary school teachers (subject teachers) (Niemi & Jakku-Sihvonen, 2006)

Secondary school teacher education program	*Bachelor's degree 180 ECTS*	*Master's degree 120 ECTS*	*TOTAL*
Subject teacher's pedagogical studies (minor)	25–30 (including supervised teaching practice)	30–35 (including a minimum of 15 ETCS supervised teaching practice)	60
Academic studies in different disciplines (major)	60 (including a BA Thesis, 6–10)	60–90 (including a MA Thesis, 20–40)	120–150
Academic studies in different disciplines (1–2 minors)	25–60	0–30	25–90
Language and communication studies including ICT, optional studies	35–40	0–30	35–70

ECTS means European Credit Transfer System (also called The European Credit Transfer and Accumulation System): 1 ECTS = 28 hours of students' work in studies including lessons, contact hours, examinations and all independent and collaborative activities, BA = 180 ECTS, MA 120 ECTS

- Teacher education in itself should also be an object of study and research. This research should provide knowledge about the effectiveness and quality of teacher education implemented by various means and in different cultural contexts.
- The aim is that teachers internalize a research-oriented attitude towards their work. This means that teachers learn to take an analytical and open-minded approach to their work, that they draw conclusions based on their observations and experiences, and that they develop their teaching and learning environments in a systematic way.

The Social and Moral Code of the Teaching Profession

Teachers' work is context-bound, depending on learner age level, cultural conditions, available resources and the contents that they are mediating to learners. Teachers and teacher education are clearly related to national goals and purposes. The welfare and economy of the society are related to the quality of educational outcomes, which are associated with teachers' competences. Besides being guided by national and local community-based goals, teachers' work also has more generic aims. Teachers open doors and windows to cultural enrichment and help people to understand other human beings and their cultural contexts. Teachers are key actors in promoting human rights, justice and democracy in a global world (e.g. Aloni, 2002; Niemi, 2008a). In Finland the school law contains values that promote these aims. Teachers are expected to implement them in their daily work. Since 2000, Ethical Council for the Teaching Profession has worked to promote teachers' ethical awareness. Also teacher education programs emphasize teachers' social and moral responsibility. A survey in 2010 showed that Finnish student teachers are committed to the teaching profession and are aware of the ethical basis of teaching (Niemi 2011).

Integration of Theory and Practice

Teachers' pedagogical studies include supervised teaching practice (approx. 20 ECTS). The aim of guided practical studies is to support students in their efforts to acquire professional skills in researching, developing and evaluating teaching and learning processes. In addition, teacher students should be able to reflect critically on their own practices and social skills in teaching and learning situations. During their supervised practice periods, student-teachers meet pupils and students from various social backgrounds and psychological orientations and have opportunities to teach them according to the curriculum.

Teaching practice is integrated with all levels of TE time. It is supervised by university teachers, university training school teachers or local school teachers depending on the phase of practice (Jyrhämä, 2006) (Figure 2).

The main principle is that practice should start as early as possible and support student teachers' growth towards expertise. At the beginning it guides student teachers to observe school life and the pupils from an educational perspective,

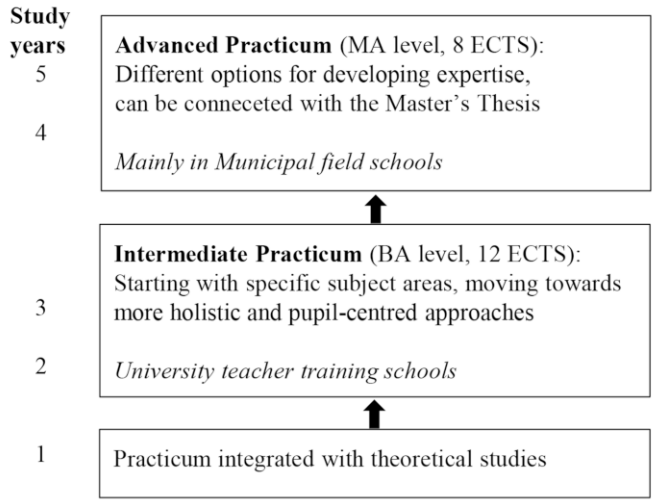

Figure 2. Teaching practice in the Finnish teacher education curricula

then it focuses on specific subject areas and pupils' learning processes. Finally it supports student teachers as they take holistic responsibility in their teaching and schools. This period can be tightly connected with their research studies and master's dissertation.

Universities' teacher training schools (so-called "Normal schools") play a crucial role in the Finnish teacher education. The Normal Schools are state schools and their teachers have a different status than teachers in other schools. The teachers have a dual role: on one hand they teach pupils and on the other, they supervise and mentor student teachers. Many of the Normal School teachers are active in research and development and are members of teams that produce learning materials for schools.

There is also frequent critique based on the demand of having at least a substantial part of the teaching practice in more typical schools. Actually, parallel to the Normal Schools there have been so-called field schools with an important contribution to the capacity and volume of teacher education in the times of high demand of qualified teachers (Meisalo, 2007, p. 167).

TEACHERS AS PROFESSIONALS – TRUST IN UNIVERSITIES AND TEACHERS' WORK

Teachers in Finland are representatives of a high-quality academic and ethical profession. Teachers have to take an active role in raising serious questions about what they teach, how they teach, and the larger goals for which they are striving. Teachers need to view themselves as public intellectuals who combine conception

and implementation, thinking and practice in the struggle for a culture of democratic values and justice. Teachers have a right and an obligation to articulate educational needs and challenges in the society they serve. They also have to be active in public debates and decisions affecting the development of schools and education. As professionals, teachers cannot only be implementers of decisions, but must also be partners in their development. Teachers are expected to be able to take an active role in evaluating and improving schools and their learning environments. They are also expected to refresh their professional skills, to cooperate with parents and other stakeholders, and to be active citizens (Teacher Development Education Programme, 2001).

Universities do not give any certificate of teacher qualifications. They only provide the education and training required to fulfill the demands that are needed for teacher qualifications. At graduation, students are given a certificate for their university degree. Students can choose between different options for their own teaching career, and there are a variety of possible degrees that qualify them as teachers. Employers or, in the Finnish case, municipalities, require that a teacher candidate has completed all the studies required by law for the teaching profession and the teacher qualification. Universities are autonomous and can provide different profiles in teacher education. Universities negotiate every three years with the Ministry of Education on their strategic plans and results in teacher education.

Finnish teachers are recognized as professionals, and the teachers' trade union considers this status to be very important. Almost all teachers belong to the same teachers' trade union (OAJ), which is a very powerful agency. It has been invited to play an active role as a partner in all major reforms of teacher education and school curriculum in recent decades. It has also promoted the policy of the master's degree as teachers' basic qualification. Finland has no inspectorate, no probation time for newly graduated teachers' or national school achievement testing. Finnish society considers teachers to be professionals who are morally responsible for their work.

The society's trust in universities' degrees as well as teachers' competences is mediated via trust in the universities and makes them very accountable. Trust is not a stable and permanent status. Results and quality must be assessed and evaluated systematically. Therefore universities' own quality assurance methods are important (all Finnish universities will be audited by 2011). Teacher education has also been evaluated several times nationally and internationally in the last two decades. Evaluations have been enhancement led and their purpose has been to produce improvements in teacher education. There is a close cooperative relationship between universities and the Ministry of Education in teacher education issues. Many research projects into teacher education have been also carried out jointly. The recent recommendations from the Ministry of Education stress the importance of strengthening research in and on teacher education. The Ministry of Education also requires universities to reorganize conditions for teacher education research.

CONCLUSION

The OECD review team looking at equity in the Finnish education system (OECD, 2006, 48) expressed the view that the Finnish strategy has taken a long time to mature and is composed of several interrelated issues. The team writes: "This is a complex of practices that has emerged over time, but it must be maintained since any weakness in one component will undermine other practices." The miracle of the Finnish education is an outcome of a purposeful policy and practice. The educational system and teacher education have together supported the aims of equity and teachers' professional autonomy. There are a number of reasons that all together have resulted in high learning outcomes. Many of those factors are mutually dependent and interconnected. If any one of the factors is dramatically changed, it may affect the whole. The success is based on the combination of political will, purposeful efforts to promote equity by the educational system, high quality teacher education, teachers' professional and moral responsibility, and society's trust in the educational actors.

REFERENCES

Aloni, N. (2002). *Enhancing humanity: The philosophical foundations of humanistic education*. Boston, MA: Kluwer Academic Publishers.

Ethical Council for the Teaching Profession. (2002). *Etiikka Koulun Arjessa* [Ethics in a School's Everyday Life]. Keuruu: Otava, OAJ (In Finnish).

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014* [National Core Curriculum of Basic Education 2014]. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Finnish National Board of Education. (2015). *Lukion opetussuunnitelman perusteet* [National Core Curriculum of upper secondary schools 2015]. Retrieved January 12, 2016, from http://www.oph.fi/saadokset_ja_ohjeet/opetussuunnitelmien_ja_tutkintojen_perusteet/lukiokoulutus

Jakku-Sihvonen, R., & Niemi, H. (2007). Introduction. In R. Jakku-Sihvonen & H. Niemi (Eds.), *Education as societal contributor* (pp. 9–20). Frankfurt am Main: Peter Lang.

Jyrhämä, R. (2006). The function of practical studies in teacher education. In R. Jakku-Sihvonen & H. Niemi (Eds.), *Research-based teacher education in Finland – Reflections by Finnish teacher educators* (pp. 51–70). Turku: Finnish Educational Research Association.

Kansanen, P. (2003). Teacher education in Finland: Current models and new developments. In M. Moon, L. Vlăsceanu, & C. Barrows (Eds.), *Institutional approaches to teacher education within higher education in Europe: Current models and new developments* (pp. 85–108). Bucharest: Unesco-Cepes.

Laukkanen, R. (2006, September 15–16). *Finnish strategy for high-level education for all*. Paper presented at the conference Educational Systems and the Challenge of Improving Results, University of Lausanne, Lausanne, Switzerland.

Meisalo, V. (2007). Subject teacher education in Finland: A research-based approach – The role of Sibject didactics asn networking in teachre eduation. In R. Jakku-Sihvonen & H. Niemi (Eds.), *Education as societal contributor* (pp. 161–180). Frankfurt am Main: Peter Lang.

Niemi, H. (2010). Teachers as high level professionals: What does it mean in teacher education? Perspectives from the Finnish teacher education. In K. G. Karras & C. C. Wolhuter (Eds.), *International handbook of teacher education: Issues and challenges* (Vol. 1 & ll, pp. 237–254). Athens, Greece: Atrapos.

Niemi, H. (2011). Educating student teachers to become high quality professionals: A Finnish case. *Center for Educational Policy Studies Journal*, *1*(1), 43–66.

Niemi, H., & Jakku-Sihvonen, R. (2006). Research-based teacher education in Finland. In R. Jakku-Sihvonen & H. Niemi (Eds.), *Research-based teacher education in Finland: Reflections by Finnish teacher educators* (pp. 31–51). Turku: Finnish Educational Research Association.

Niemi, H., & Jakku-Sihvonen, R. (2011). Teacher education in Finland. In M. Valenčič Zuljan & J. Vogrinc (Eds.), *European dimensions of teacher education: Similarities and differences* (pp. 33–51). Slovenia: University of Ljubljana & The National School of Leadership in Education.

Nummenmaa, A. R., & Lautamatti. L. (2004). *Ohjaajana Opinnäytetöiden Prosesseissa. Ryhmäohjauksen Käytäntöä ja Teoriaa* [As a Supervisor in a Thesis Processes. Praxis and Theory of Group Guidance]. Tampere: Tampere University Press.

OECD. (2006). *Equity in education. Thematic Review. Finland Country Note*. Retrieved from http://www.oecd.org/document/3/0,2340,en_2649_34531_36296195_1_1_1_1,00.html

OECD. (2009). *What PISA is*. Retrieved from http://www.pisa.oecd.org/pages/0,3417, en_32252351_32235907_1_1_1_1_1,00.html

OECD. (2010). *PISA 2009 results: What students know and can do: Student performance in reading, mathematics and science* (Vol. I). Paris: OECD.

OECD. (2013). *PISA 2012. Results in focus. What 15-year-olds know and what they can do with what they know.* Paris: OECD.

Schleicher, A. (2005, March 14). *Analysis of the PISA process and its results. Finland in PISA studies – Reasons behind the results*. Conference Helsinki, Palmenia Centre for Continuing Education, University of Helsinki. Retrieved from http://www.palmenia.helsinki.fi/congress/pisa2005/index.asp

Simola, H. (2005). The Finnish miracle of PISA: Historical and sociological remarks on teaching and teacher education. *Comparative Education*, *41*(4), 455–470.

Statistics Finland. (2009). Retrieved June 19, 2009, from http://www.stat.fi/til/khak/2007/khak_2007_2008-12-12_tie_001.html

Teacher Education Development Programme. (2001). Ministry of Education. Retrieved from http://www.minedu.fi/julkaisut/OPEKO/opekoeng.pdf

The Parliamentary Committee on Education. (1998). 3/ 1998 – HE 86/1997. Helsinki. Finland.

Välijärvi, J. (2004). The system and how does it work – some curricular and pedagogical characteristics of the Finnish comprehensive schools. *Educational Journal*, *31*(2) & *32*(1), 31–55.

WEBSITES

The Finnish Educational Evaluation Centre (http://karvi.fi/en/)
The Finnish National Board of Education (http://www.oph.fi/english/)
Ministry of Education and Culture in Finland. (Helsinki. http:/www.minedu.fi)

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3. FINNISH TEACHERS AS 'MAKERS OF THE MANY'

Balancing between Broad Pedagogical Freedom and Responsibility

ABSTRACT

Finnish teachers have been the focus of interest of the international media, public decision makers and politicians as well as researchers into teaching. The results of Finnish pupils in PISA have encouraged many people to inquire about the characteristics and atmosphere of Finnish schools, especially the working conditions, as well as the enthusiastic, committed orientation of Finnish teachers. This chapter describes the work of Finnish teachers, their pedagogical responsibilities and freedom related to their role as well as their pedagogical thinking at the background of their everyday work in classrooms with pupils. Finnish teachers participate in the administrative and the pedagogical decision-making processes of their own schools as well as at the various levels of the Finnish school system; they are able to influence their work, and thus, they have broad pedagogical freedom and also broad responsibilities related to these role tasks. Finnish teachers manage their work as teachers and educators by negotiating, dialogue, a democratic way of pedagogical thinking and acting in challenging situations. These ways of working are based on a certain kind of ethos, which is mainly characterized by hope and trust among teachers, principals, and administrators. This kind of ethos provides additional support for successful teaching. Finnish teachers are committed to learning, participation and active agency in their pedagogy, in their collaborations with various people as well as active participation in questions related to schooling and education. Their academic, master's level teacher education as well as their societal role encourage them to act according to this manner. Although Finnish teachers are committed to their work, recent research and reports of teacher's trade organizations have shown that they also feel inadequate and exhausted by their work.

Keywords: teacher's role, pedagogical freedom, responsibility, negotiation

INTRODUCTION

A career in teaching is an appreciated and popular profession in Finland, and many young people are willing to choose it as their life career. There are several thousands applicants to teacher education institutions every year, and only 8–10% of the applicants will enter universities to start their studies (Statistics of VAKAVA, 2014,

H. Niemi et al. (Eds.), Miracle of Education, 41–55.

2015). The OECD report (2003), *Attracting, Developing and Retaining Effective Teachers (Country Background Report for Finland)*, emphasizes "high social status" and "competitiveness for entry" as the well-known characteristics of a teaching career in Finland (OECD report, 2003; see also OECD, 2014). Consequently, the calibre of Finnish student teachers is high. As noted in the report, "entry to teacher education is still highly competitive from well-qualified candidates" (OECD Report, 2003).

This broad interest towards the teaching profession and the number of highly qualified applicants for teacher education programmes are naturally the starting point and fundamental prerequisite for successful teacher recruitment. Most Finnish teachers continue in the teaching profession for all their working lives and quite independently take care of their professional development (Webb et al., 2004). There is no precise data available on the extent of teachers' transition from school work to other labour markets. According to the OECD report (2003), it is estimated that approximately 10–15% of those who have completed teacher education programmes will move on to assignments outside teaching at some point in their careers. Some teachers progress to headmaster positions during their careers, and some move on to other educational professions, like publishing companies or personnel management positions. There is a growing need for continuous in-service teacher education and support for teaching work in order to retain effective teachers in schools. The intention is that teachers should remain in the teaching profession for as long as possible – even to the point of retirement. Both nationally and internationally, there is growing evidence (Boyd et al., 2011; Mancuso et al., 2011; Pyhältö et al., 2011) that management of educational institutions and schools is an effective way to support teachers in their work.

Although Finnish teachers have strong master's level education, pedagogical knowledge and theoretical understanding of their work, pedagogical action and decision-making in practical classroom situations is not an easy task. Current research on Finnish teachers has shown that interaction with pupils in socially and pedagogically challenging situations constitutes the core of teachers' pedagogical wellbeing. Success in both the pedagogical goals and more general social goals seems to be a fundamental precondition for teachers' experienced pedagogical wellbeing in their work. Also, teachers' pedagogical wellbeing is centrally generated in the challenging social interactions of their work (Soini et al., 2010). According to the teachers themselves, they do not necessarily have the relevant competences to do their work, and they are not always aware of the impact and possible consequences of their actions and decisions (Husu & Tirri, 2001; OECD, 2014). Teachers' working environments in Finnish schools have become more heterogeneous, and teachers feel that challenges related to their pupils' backgrounds, diversity, differences in schools, and the role of school have increased, and thus, the implications for their teaching and for their pupils' learning has become more significant (*cf*. Hautamäki et al., 2000; Jakku-Sihvonen, 2002). The emotional load and stress related to working conditions has affected teachers' wellbeing, and thus, there have also

been discussions in Finland about the rise in the numbers of teachers leaving the profession (*e.g*. Pyhältö et al., 2011; Heikonen et al., 2016).

This chapter describes the principles and structures framing Finnish teachers' work as well as the practices and challenges within this framework at the school level that these academically educated teachers have to face. In order to understand the comprehensive construction of Finnish teachers' work in schools, their pedagogical work is considered from the viewpoint of the role requirements for modern teaching work. The educational context within which Finnish teachers work is relatively open and is based on trust between political and administrative decision makers and teachers, but – at the same time – it sets rather demanding expectations and responsibilities for teachers. The teaching profession requires thoughtfulness, consideration, and tolerance in the midst of teaching and educational work, and teachers are educated for this way of teaching during their pre-service teacher education.

TEACHERS' WORKING SPACE IN FINNISH SCHOOLS AND CLASSROOMS

The working space of Finnish teachers is understood and defined at many different levels. The legislative and administrative frames of educational policy regulate the functions of educators on a more practical level. The Basic Education Act 628/1998 defines the main guiding principles concerning educational equality and equity. In the educational setting and practice, this means, e.g., the same comprehensive schools for all pupils, a very limited number of private schools, allowing a great heterogeneity of pupils, and fostering multicultural policies and practices in schools. The time allocation of subjects and the National Core Curriculum (2014) defined by the Council of State formulate the prerequisites for school-level instructional work. The local school curricula planned and constructed by the municipal authorities, principals and teachers regulate the pedagogical activities – principals' pedagogical leadership, teachers' teaching and pupils' learning – at the school level.

The guidelines for the formation of school operational culture and the learning environment are defined in the Finnish *National Core Curriculum* (Finnish National Board of Education, 2014), which emphasizes the uniform development of all official and unofficial school practices in order to support teaching and learning at schools. The aim is to create an open work culture that supports cooperation both within the school and with the home and rest of the society (Finnish National Board of Education, 2014, pp. 10–15, 66). Multiple learning environments promoting interaction and dialogue between teachers and pupils, as well as among the pupils, are explicitly outlined throughout the curriculum (Finnish National Board of Education, 2014). As Kumpulainen and Lankinen (in this book) point out, one of the major goals of Finnish basic education is to support the growth and development of all pupils, strengthening their opportunities and involvement in learning. It is important that this definition of equity is comprehensive in nature, meaning that all teaching to all pupils should take into account these factors. Thus, equity is measured both in

terms of good and appropriate teaching and supportive and individualized care being provided for the pupils.

The administrative regulations of educational policy outline the framework within which Finnish teachers work. Through these outlines, the norms, requirements and demands on the teaching profession and the *teacher role* in Finland are also determined and set. Teachers should act both directly and indirectly according to the public interests that are related to communal values. Teachers as professionals hold social role positions, which encompass expectations both for their behaviors and that of their colleagues (see *e.g*. Brophy, 1982; Buchmann, 1986; Beck, 2008). The teacher role embodies high aspirations, and in the school context it provides certain mechanisms and patterns for guiding action in its light. Teachers should act in a professional role in their work; this should apply regardless of their own personal opinions. Therefore, in order to fulfill their mandate correctly, teachers are not allowed to operate in an informal, ad hoc manner (*cf.* Lortie, 1975).

In Finland, teachers are expected to act according to prescribed educational aims and values. Their work is carried out within schools, where the given educational aims and values are contextualized. Naturally, all the criteria for teachers' pedagogical actions cannot be stated explicitly. The variety and pervasiveness of pedagogical situations is such that a great deal of teaching depends on the personal presence of teachers and their ability and willingness to do what is appropriate in teaching situations (Husu, 2002). Thus, making pedagogical judgments can be understood as an on-going aspect of teachers' daily work and all teacher action has an inescapable moral dimension (Tirri & Husu, 2002; Husu & Tirri, 2007; Tirri, Toom, & Husu, 2013). In addition to teaching academic skills, Finnish teachers are responsible for many other pedagogical tasks and duties found in their profession. A teacher's main professional task is to promote the full potentiality found in every pupil. This educational aim brings the concept and practice of care to the forefront of teachers' work in schools. In teaching, care is conveyed in many ways. At the institutional level, schools are organized to provide pedagogical continuity and support for trusting relationships between teachers and pupils. At the local and individual level, teachers do their best to show their caring for pupils through specific forms of attention, by co-operating with their pupils' parents, and by carefully guiding the growth of the pupils in their charge. As educational research has shown (see e.g. Noddings, 2002; Niikko, 2004; Juujärvi et al., 2010), these kinds of personal manifestations of care are crucially important and effective in pupils' lives. However, it should be emphasized that the concept of practicing caring is not confined to personal relations in schooling. Also, the curriculum can be selected and developed with caring in mind. Teachers can manifest their care in their choice of curriculum, and an appropriately chosen curriculum can contribute to the growth and development of pupils (Vitikka et al., in this book). Finnish teachers participate in the preparation of local school level curriculum and make choices related to it, participate in general pedagogical decision-making and distribution of resources at schools (Sahlberg, 2007; Niemi, in this book; Kumpulainen & Lankinen, in this book).

TEACHER'S RESPONSIBLE PEDAGOGICAL ACTION

The context of Finnish school presupposes and requires multidimensional and pro-active pedagogical action from teachers. This role makes demands on a teacher and the responsibilities and requests related to the task of teaching itself formulate the ground on which Finnish teachers work. Teachers are expected to act within the borders of their professional role. In addition to those role-oriented manners, their personal characteristics and preferences play a role in their professional work as teachers.

Finnish Teachers' Role Requirements

Finnish teachers are strongly involved in the construction of their own local school level curriculum that is based on the National Core Curriculum. The school level curriculum sets the concrete framework for teachers and guides their practical work by defining the aims, contents and methods for teaching and learning. This school level curriculum allows teachers to organize classroom activities quite freely and choose the teaching methods, teaching materials and assessment methods they use with their pupils. Teachers can also influence the grouping of pupils and their teaching schedules to some extent in order to optimize their pedagogical action. Finnish teachers teach those subjects that they specialized in during their teacher studies and they are able to make use of their personal strengths in choosing the methods they use to teach their classes. Most Finnish teachers use innovative teaching and learning methods, and materials as well as ICT and educational technology (e.g. Lakkala, 2010; Muukkonen, 2011; Ilomäki, 2008), but many of them still teach in a relatively traditional, teacher-centered manner. Interestingly, this may be one of the reasons behind the Finnish success in international PISA assessments. As Sahlberg (2007) and Simola (2005) have argued, ideas for improving teaching and learning in schools have usually been transferred from past good practices and teaching traditions in Finland. This kind of pedagogical conservatism has created "a pedagogical equilibrium between progressivism and conservatism through learning from the past and teaching for the future" (Sahlberg, 2010, p. 337).

Finnish teachers are encouraged to collaborate pedagogically with their colleagues, and they have opportunities to do this during their working hours. Teachers organize shared teaching periods, co-prepare teaching materials for pupils and even co-teach with colleagues (see Niemi, in this book). The school festivals and other special events related to specific profiles and school topics, like nature weeks, science projects, sports events, and the like are often organized collectively. Parents are actively involved in school-home partnerships, for example, through curriculum work, membership in a school's board, assessment discussions, parent events, school festivals and meetings. Finnish teachers also actively collaborate with other important institutions, companies and actors in their communities (see Vitikka et al., in this book). Finnish teachers are also intensively integrated in multi-professional

collaborations, which aim to support their pupils' wellbeing comprehensively during their time at school. In Finnish schools, the principal, teachers, special education teachers, school psychologists, public health nurses and social workers form a group, which takes care of every pupil in the school (Laukkanen, 2008). These relationships form the multiple networks and democratic, negotiating co-operative relations that are involved in Finnish teachers' working contexts.

Finnish teachers' relationship with their pupils can mostly be characterized as equal and democratic. Teachers aim to construct their pedagogical authority in an equal relationship with their pupils, rather than in an authoritarian top-down manner (*cf*. Harjunen, 2009). The guidelines for this approach to the treatment of pupils are in the Basic Education Act as a principle of equality in the *National Core Curriculum* (2014) and in the conception of pupils as active agents in the learning process (Finnish National Board of Education, 2014). The general aims and goals of learning as well as guidelines for assessment, both during the learning process and at its end, support, guide and encourage the pupils' learning. Added to this, the task of assessment is to help pupils form a realistic image of their learning and development. Pupils should be assessed in multiple different ways in collaboration with their peers and parents in a constructive and encouraging way. Furthermore, "the multiple ways of assessment and feedback for pupils are teachers' essential pedagogical practices to support pupil learning and development" (Finnish National Board of Education, 2014, p. 47). With the help of assessment, the teacher guides the pupils in becoming aware of their thinking and actions and helps them understand what they are learning. Besides the outlined principles, the democratic ethos of relationships between teachers and pupils is influenced by traditions that have been developed over time in Finnish schools.

Finnish Teachers' Personal Characteristics and Qualities

The teaching profession is highly appreciated in Finland, and this fact is shown in the huge numbers of applicants for places in teacher education institutions. Every year, over 7000 young people apply primarily for class teacher education to institutions around Finland, and less than 800 of them pass the entrance examinations and start their studies (VAKAVA Statistics, 2014, 2015). In subject teacher education, students apply first to their subject faculty and then to the pedagogical studies organized in departments of teacher education. This means that student teachers are talented young people who have done well in their upper secondary school studies. Both class teachers and subject teachers complete about 5 years of master's level studies at university in order to become qualified teachers and to be able to work in the lower or upper grades of comprehensive schools (*c.f.* Niemi, in this book). The courses for Finnish student teachers are designed to impart a research-based orientation towards their practical teaching work on the students. They are also guided to learn reflection as a way of thinking and as a tool for continuous professional development (Husu, Toom, & Patrikainen, 2008; Juuti, Krzywacki, Toom, & Lavonen, 2011). Finnish

student teachers and employed teachers are highly committed to their teaching work (Niemi, 2011) and involved with their colleagues and schools.

One of the central aims of teacher education is to support student teachers in discovering their personal strengths and constructing their professional identities based on these strengths. However, teachers only fully realize their own strengths and find their own ways to teach when they start to work as teachers. This is problematic because everyone likes to be told that "being oneself" or "a firm following of the code of ethics" is all right, even laudable. But what are teachers' personal strengths and their own ways to teach? Teacher autonomy and self-realization are indisputably one of a teacher's personal goods. However, as Buchmann (1986) emphasizes, schools are for children, and children's autonomy and self-realization depend in part on what they learn in schools. Thus, "self-realization in teaching is not a good in itself, but only insofar as pursuing self-realization leads to appropriate student learning" (p. 538). Teachers are persons, but being one's self in teaching is not enough. The person must be paired with the obligations contained in a teacher's role.

Both through the terms of action outlined in National Core Curriculum as well as through the Finnish academic teacher education, Finnish teachers are able to make use of and act in an authentic way in their teaching practice (see *e.g.* Tirri & Husu, 2002; Tirri, 2003; Husu & Tirri, 2007; Hanhimäki & Tirri, 2009; Gholami & Husu, 2010). This means that a teacher's *role, obligations and personal prescriptions* can be combined (Sockett, 2009), and then the concept and practice of *authenticity* (Halliday, 1998; Kreber, 2010) constitute a crucial link between teaching and the achievement of students' complex educational and learning outcomes at the classroom level. Authenticity consists of pedagogical actions that are routinely performed by teachers; it involves working with students, promoting knowledge of the practice of teaching, prompting teacher self-reflection, and serving formative purposes (Iverson et al., 2008). When practicing authenticity, teachers balance their actions and thinking both with situationally appropriate role demands and personal preferences. Teachers' authentic way of action entails a disposition to act on reasons, and this is especially emphasized and practiced during Finnish research-based teacher education as a form of teacher's pedagogical thinking (*cf.* Kansanen et al., 2000; Husu, 2002; Toom, 2006). It is exercised in making decisions and built up by constant deliberation.

EDUCATING WITHIN A SOCIETY – THE MINDSET OF THE FINNISH EDUCATIONAL SYSTEM

Explaining the general high level of the schools in Finland is an extremely complex task: it involves good infrastructure (modern school buildings and facilities), qualified and well-trained teachers, state-of-the-art technology etc. – but the list does not explain everything. The way of organizing educational policy into pedagogical practice does not solely make good things happen in schools. Behind this foreground, there is also a background in Finnish educational policy that paves the way for

success in schoolwork: our democratic and consensus-seeking ethos in political decision-making. We call this the mindset of the Finnish educational system. This mindset of educational policy and educational thinking can be seen in attitudes and assumptions held by the majority of Finnish people. This mindset functions interdependently on all levels of educational decision-making and teaching practice, and between all civic and professional participants: major politicians, educational administration and governance, teachers, and parents – even pupils share it to some extent. It (tacitly) creates a powerful incentive within these people to continue to adopt or accept certain behaviors and choices in their actions and in their educational decision-making (*cf.* Bruner, 1996; Bonnet, 2002).

This tradition dates back at least a century to a respect for learning and education as a core of Finnish culture and the statehood of a developing nation (*cf*. Niemi, in this book; Simola, 2005). In modern times since the 1960's, political authorities from left to right have seen comprehensive education as the key to survive and thrive in our increasingly competitive world. All governments over the past four decades have emphasized economic growth as their primary goal, with comprehensive education as its critical driver. The phrase "*investment in people is the best investment*" summarizes this educational consensus and political aim. Consequently, educational policy in Finland has not been polarized either between major political parties or their supporting citizens. This may have proved to be one of the key factors behind the continuity of Finnish education policy – and the success of our schools (*cf*. Psacharopoulos & Patrinos, 2004; Sahlberg, 2007). Next, we will briefly characterize the Finnish educational mindset through which all parties involved – politicians, administrators, teachers, students, and parents – conduct their reflection of educational issues. We have defined two central interdependent facets of this Finnish educational mindset: *trust* and *hope,* through which we consider the context and background of Finnish teacher's work.

Trust in Education

Trust between individuals and groups provide the basis for social order and it is a foundation of solidarity and integration within societies (Durkheim, 1956). A normal and routine life would not be possible without both an explicit and an implicit and unconsidered trust. Hence, trust facilitates stability, co-operation and cohesion (Elster, 1989). Trust is the most basic premise upon which different approaches to educational policy and educational practice can rest (see *e.g*. Spiecker, 1990; Troman, 2000*;* Curson-Hobson, 2002*;* Cook-Sather, 2002). The educational institutions and practices that have prevailed in Finland both historically and currently reflect a long-standing trust between the partners in the educational system (Rinne, Kivirauma, & Simola, 2002; Simola, 2005; Sahlberg, 2007).

In Finnish society, the public's trust of professionals (including teachers) and public institutions (including schools) is seemingly high. Schools are given almost

full autonomy in developing their daily delivery of education services. This positive situation paves the way for a kind of democratic professionalism (Dzur, 2008; Husu & Toom, 2010), where teachers, while still valuing the specialized knowledge of their profession, can work collaboratively with lay people, enabling them to deliberate and make decisions on issues that affect them and their children. Teachers can be seen as democratic professionals, like "bridge agents" who connect the school institutions in which they work with the lay public of parents and their children to deliberate over important social issues. Schools can provide a sort of "middle democracy" and a "ground-level network of lay participation" between institutions and individuals (Dzur, 2008, p. 38). Here, teachers as professionals act as some of key players who create opportunities for citizen participation and deliberation in public issues within their community. It is difficult to evaluate the actual meanings and consequences of these pedagogical and social processes. However, the development of the teaching profession towards a "democratic profession" can be seen as an essential shift in the teaching profession in our society and our schools to one based on trusting, listening to, and respecting the opinions of all participants in schooling.

It is commonly acknowledged that educational relationships cannot be established and maintained without a strong bond of trust existing between teacher and pupils (Troman, 2000). In teaching, there is a basic need for trust because teaching is an "emotional practice" that involves trustful relationships between all partners (Hargreaves, 1998, p. 5). Trust is of prime importance in teaching: it ensures that participating individuals at every level of the educational system can be allowed greater freedom and afforded greater autonomy (Cook-Sather, 2002, p. 4). Also, trust is a pre-condition for co-operation (Gambetta, 1988). In pedagogical encounters, high levels of trust are required among participants (teachers, students, parents) for the development of *"communitas"* marked by a strong feeling of camaraderie, a sense of common destiny, [and] mutual support (Woods, 1995, p. 93). We especially consider important the trust relations between persons (administrators, teachers, students, parents) at all levels of schooling. These experiences of trust (and distrust) in daily schoolwork have deep and lasting impacts on individuals and their communities.

Hope for a Better Society and (Individual) Life

Hope most generally refers to a desire for positive futures that are considered possible, but not guaranteed. The term consists of understandings of future-oriented thought, feeling, and action (Amsler, 2008). Even if there have been serious attempts to systematize the definition of hope (see *e.g.* McInerney, 2007; Singh & Han, 2007; Renner, 2009) the concept remains discursively diverse. In the social sciences, hope is commonly associated with problems of subjectivity, agency, and social and political change. In other fields, it is related to motivation and self-esteem (psychology), imagination (creative arts), and pedagogy (education). The concept and practice of hope has been variously described e.g. as "an element of human

nature, a way of knowing, a form of action or behavior, [and] learned orientation to the future" (Amsler, 2008). As Inglis (2004) states, "a society's education entails (in all senses) its future" (p. 4). Hope is premised on the idea that human beings are capable of shaping the forces that structure their lives.

While not wanting to naïvely praise educational hope, we use the term in a 'good sense' (Coben, 2002) for its provision of legitimate optimism and anticipation about the meaning of education for the future of young people in particular, and for the Finnish society in general. These themes connecting education and hope are echoed by many authors (*e.g*. Albert, 2006; Giroux, 2002; Thrupp & Tomlinson, 2005) in the educational literature. Also, this literature connects education and hope with a particular vision of democracy (Giroux, 1989, 1997, 2005; Halpin, 2003) – one that renews a focus on justice and equal opportunities. Halpin (2003), for example, declares the aims of education as being "a more equal and more democratic education system and society" (p. 5). This kind of an optimistic vision provides a "vocabulary of hope" (Halpin, 2003, p. 34) – a notion that echoes what Giroux (1989) calls the "language of possibility" (p. 31). The stance is based on democratic ideals, because democracy itself, as Giroux (1997) conceives it, is a utopian project for the public good, a "project of possibility," an ideal end in itself (p. 223).

These idealistic tones are closely related to education's tasks and ability to promote social hope in societies. In Finland, the socio-political project to create a welfare state, where basic social services, including education, have become public services for all citizens, has promoted the social role of education (Sahlberg, 2007; Castells & Himanen, 2002). The welfare state can also be seen as an educational project where one of the main tasks of the educational system is to increase the level of social capital among citizens: i.e., improve their opportunities and willingness to learn. Carnoy (2007) calls this state-generated social capital that is expressed in social contexts for education. The efforts to make our schooling institutions and our civic attitudes stronger have been manifested in the development of social hope (*e.g.* Rorty, 1999; Green, 2008; Westbrooke, 2005). It aims to ground democratic institutions (*e.g.* schools) more deeply in the everyday living of our democratic societies. Also, promoting social hope means encouraging abilities to achieve more deep participatory democracy in society and in its institutions.

As presented, within the context of Finnish education, the language of hope is a powerful tool to move teachers and students in their educational settings. Teaching as a teacher's primary work can also be seen both as a practice and as a "discipline of hope" (Kohl, 1998). Conceptualizing education as a resource of hope (Amsler, 2009, p. 1191) gives us an insight into the power it can have for people in Finnish society in general, and people in educational institutions in particular: the hope that education can promise brighter individual and societal futures. Uncovering this idea allows us to better recognize how emotions such as hope (and fear) work to orient people's social action – in this case, shaping the character of educational practices and its outcomes.

DISCUSSION: NEGOTIATING FOR A HOPEFUL CURRICULUM AND SCHOOL PRACTICES

Finnish schools, like all schools globally, are more and more intensively understood as socio-political arenas (Dzur, 2008; Lieberman & Pointer Mace, 2010), where teachers, pupils and parents in collaboration with public administration and other citizens participate in the definition of school education and teaching as well as its practical implementation. Finnish teachers work in this Finnish context of education and schooling, which has its own characteristics, possibilities and challenges at every one of its levels. An interesting question is what would happen if one of these factors were shaken, changed or even removed from the context of action? What would happen, if actors on all levels lost their trust in education and hope for a better society and individual life? What kinds of pedagogical practices – teacher's teaching and pupils' learning – would emerge at the school level? Would it turn out to be a survival game in the classroom? As Sahlberg (2010) reminds us, there are future challenges to be met: (i) the Finnish educational authorities are also tightening their controlling grip over schools and the abilities of teachers to make autonomous decisions about schooling practices; (ii) the governmental Education Sector Productivity Programme (Ministry of Education, 2005) calls for schools and teachers to do more with less, proposes major changes in school networks and increasing class sizes; (iii) productive gains are sought by reducing special education and counseling services in schools and so on. In sum, these developments "may turn out to be harmful for the high social capital of Finnish schools" (Sahlberg, 2010, p. 345).

The unity of the entire educational system sets high demands and continuous challenges for all actors on all its levels. It requires shared views of education as well as continuous work and negotiations towards these aims. In the Finnish context, these negotiations are mostly concretized through the continuous processes of the National Core Curriculum and local school curricula. Renner and Brown's (2006) idea of a "hopeful curriculum" including the facets of *community*, *praxis*, and *courage* come close to the present Finnish way of action, which could be even more dynamic in many parts. Even more critical action and reflection among teachers, pupils, principals and parents in schools could be encouraged. Meaningful learning can take place in schools and classrooms only through a connectedness to the material contents of teaching and learning, an authentic connectedness between these and the world outside classrooms, and, most importantly a connectedness between pedagogical actors, teachers and students (Renner & Brown, 2006).

The hopeful curriculum aims at the thorough development of schooling and education through *praxis*: teachers' and students' action and reflection upon the world. The stance of praxis connects action with reflection and strives to craft new lenses on the world. These lenses provide us with a more nuanced and complex vision of the tasks facing our schools, and the teachers and students who tackle them (Renner, 2009). With a more critical understanding of their world, teachers

and students can work together to figure out how they can become transformative agents to deal with the problems facing us in our society. In this venture, *courage* is an essential element of pedagogical thinking and action (Renner & Brown, 2006; Renner, 2009).

In many aspects, the Finnish teachers' way of action within the framework of pedagogical freedom and responsibility are (still) well functioning and reasonable. A more difficult question is, how will Finnish teachers, principals, policy makers and researchers be able to maintain this united supporting and promising situation for the future generations?

REFERENCES

Albert, M. (2006). *Realizing hope: Life beyond capitalism*. London & New York, NY: Zed Books.

Amsler, S. (2008). Hope. In *The Blackwell Encyclopaedia of sociology online*. Retrieved from http://www.sociologyencyclopedia.com/public

Amsler. (2009). Promising futures: "Education" as a resource of hope in post-socialist society. *Europe-Asia Studies*, *61*(7), 1189–1206.

Beck, S. (2008). The teacher's role and approaches in a knowledge society. *Cambridge Journal of Education*, *38*(4), 465–481.

Bonnet, M. (2002). Education for sustainability as a frame of mind. *Environmental Education Research*, *8*(1), 9–20.

Boyd, D., Grossman, P., Ing, M., Lankford, H., Loeb, S., & Wyckoff, J. (2011). The influence of school administrators on teacher retention decisions. *American Educational Research Journal*, *48*(2), 303–333.

Brophy, J. E. (1982). How teachers influence what is taught and learned in classrooms. *Elementary School Journal*, *83*(1), 1–14.

Bruner, J. (1996). *The culture of education*. Cambridge, MA: Harvard University Press.

Buchmann, M. (1986). Role over person: Morality and authenticity in teaching. *Teachers College Record*, *87*(4), 529–543.

Carnoy, M., Gove, A., & Marshall, J. (2007). *Cuba's academic advantage. Why students in Cuba do better in school?* Stanford, CA: Stanford University Press.

Castells, M., & Himanen, P. (2002). *The information society and the welfare state. The Finnish model*. Oxford: Oxford University Press.

Coben, D. C. (2002). Metaphors for an educative politics: 'Common sense,' 'good sense,' and educating adults. In C. Borg, J. Buttigieg, & P. Mayo (Eds.), *Gramsci and education* (pp. 263–290). Lanham, MD: Rowman & Littlefield.

Cook-Sather, A. (2002). Authorizing students' perspectives: Toward trust, dialogue, and change in education. *Educational Researcher*, *31*(4), 3–14.

Curson-Hobson, A. (2002). A pedagogy of trust in higher learning. *Teaching in Higher Education*, *7*(3), 265–276.

Durkheim, E. (1956). *Education and sociology*. Glencoe, NY: Free Press.

Dzur, A. W. (2008). *Democratic professionalism: Citizen participation and the reconstruction of professional ethics, identity, and practice*. Pennsylvania, PA: The Pennsylvania State University Press.

Elster, J. (1989). *Cement of society*. Cambridge: Cambridge University Press.

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014 [National Core Curriculum of Basic Education 2014]*. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Gambetta, D. (1988). Can we trust trust? In D. Gambetta (Ed.), *Trust: Making and breaking cooperative relations* (pp. 213–237). Oxford: Basil Blackwell.

Gholami, K., & Husu, J. (2010). How do teachers reason about their practice? Representing the epistemic nature of teachers' practical knowledge. *Teaching and Teacher Education*, *28*(6), 1520–1529.

Giroux, H. A. (1989). *Schooling for democracy: Critical pedagogy in the modern age*. London: Routledge.
Giroux, H. A. (Ed.). (1997). *Pedagogy and the politics of hope: Theory, culture, and schooling, a critical reader*. Boulder, CO: Westview Press.
Giroux, H. A. (2002). Educated hope in an age of privatized visions. *Cultural Studies ↔ Critical Methodologies*, *2*(1), 93–112.
Giroux, H. A. (2005). *Schooling and the struggle for public life: Democracy's promise and education's challenge*. Boulder, CO: Paradigm Publishers.
Green, J. M. (2008). *Pragmatism and social hope: Deepening democracy in global contexts*. New York, NY: Columbia University Press.
Halliday, J. (1998). Technicism, reflective practice and authenticity in teacher education. *Teaching and Teacher Education*, *14*(6), 597–605.
Halpin, D. (2003). *Hope and education: The role of the Utopian imagination*. London/New York, NY: RoutledgeFalmer.
Hanhimäki, E., & Tirri, K. (2009). Education for ethically sensitive teaching in critical incidents at school. *The Journal of Education for Teaching*, *35*(2), 107–121.
Hargreaves, A. (1998). The emotional politics of teaching and teacher development: With implications for educational leadership. *International Journal of Leadership in Education*, *1*(3), 315–336.
Harjunen, E. (2009). How do teachers view their own pedagogical authority? *Teachers and Teaching: Theory and Practice*, *15*(1), 109–129.
Hautamäki, J., Arinen, P., Hautamäki, A., Ikonen-Varila, L., Kupiainen, S., Lindblom, B., et al. (2000). *Oppimaan Oppiminen Yläasteella* [Learning to Learn at Upper Level of Comprehensive School]. Oppimistulosten arviointi 7/2000. Helsinki: Opetushallitus.
Heikonen, L., Pietarinen, J., Pyhältö, K., Toom, A., & Soini, T. (2016). Early career teachers' sense of professional agency in the classroom: Associations with turnover intentions and perceived inadequacy in teacher-student interaction. *Asia-Pacific Journal of Teacher Education*. doi: 10.1080/1359866X.2016.1169505
Husu, J. (2002). *Representing the practice of teachers' pedagogical knowing* (Research in Educational Sciences 9). Turku: Finnish Educational Research Association.
Husu, J., & Tirri, K. (2001). Teachers' ethical choices in socio-moral settings. *Journal of Moral Education*, *30*(4), 361–375.
Husu, J., & Tirri, K. (2007). Developing whole school pedagogical values: A case of going through the ethos of "good schooling". *Teaching and Teacher Education*, *23*(4), 390–401.
Husu, J., & Toom, A. (2010). Opettaminen neuvotteluna – oppiminen osallisuutena: Opettajuus demokraattisena professiona [Teaching as negotiation – learning as participation: Teacher work as democratic profession]. In A. Kallioniemi, A. Toom, M. Ubani, & H. Linnansaari (Eds.), *Akateeminen Luokanopettajakoulutus: 30 Vuotta Teoriaa, Käytäntöä ja Maistereita* [Academic Class Teacher Education: 30 Years of Theory, Practice and Masters] (pp. 133–147). Research in Educational Sciences 52. Turku: Finnish Educational Research Association.
Husu, J., Toom, A., & Patrikainen, S. (2008). Guided reflection as a means to demonstrate and develop student teachers' reflective competencies. *Reflective Practice*, *9*(1), 37–51.
Ilomäki, L. (2008). *The effects of ICT on school: Teachers' and students' perspectives* (Doctoral dissertation Series B, Humaniora, 314). University of Turku, Turku.
Inglis, F. (Ed.). (2004). *Education and the good society*. London: Palgrave Macmillan.
Iverson, H. L., Lewis, M. A., & Talbot, R. M., III. (2008). Building a framework for determining the authenticity of instructional tasks within teacher education programs. *Teaching and Teacher Education*, *24*, 290–302.
Jakku-Sihvonen, R. (2002). Main results of the assessments concerning primary and secondary education between 1995 and 2002. In R. Jakku-Sihvonen (Ed.), *Evaluation and outcomes in finland – Main results in 1995–2002* (pp. 11–27). Evaluation 10/2002. Helsinki: National Board of Education.
Juujärvi, S., Myyry, L., & Pesso, K. (2010). Does care reasoning make a difference? Relations between care, justice and dispositional empathy. *Journal of Moral Education*, *39*(4), 469–489.
Juuti, K., Krzywacki, H., Toom, A., & Lavonen, J. (2011). Aineenopettajaksi opiskelevien näkemyksiä reflektoinnin oppimisen merkityksestä opettajaksi kehittymisessä [The subject teachers' views about

the importance of reflection during the professional development process]. In L. Tainio, K. Juuti, A. Kallioniemi, P. Seitamaa-Hakkarainen, & A. Uitto (Eds.), *Näkökulmia Tutkimusperustaiseen Opetukseen* [Various Perspectives to Research-based Teaching] (pp. 37–50). Helsinki: Suomen ainedidaktinen tutkimusseura.

Kreber, C. (2010). Academics' teacher identities, authenticity and pedagogy. *Studies in Higher Education*, *35*(2), 171–194.

Kansanen, P. Tirri, K., Meri, M., Krokfors, L., Husu, J., & Jyrhämä, R. (2000). *Teachers' pedagogical thinking: Theoretical landscapes, practical challenges*. New York, NY: Peter Lang.

Kohl, H. (1998). *The discipline of hope. Learning from the life of teaching*. New York, NY: The New Press.

Lakkala, M. (2010). *How to design educational settings to promote collaborative inquiry: Pedagogical infrastructures for technology-enhanced progressive inquiry* (Doctoral Dissertation). Studies in Psychology, University of Helsinki, Department of Psychology, Helsinki.

Laukkanen, R. (2008). Finnish strategy for high-level education for all. In N. C. Soguel & P. Jaccard (Eds.), *Governance and performance of education systems* (pp. 305–324). Dordrecht: Springer.

Lieberman, A., & Pointer Mace, D. (2010). Making practice public: Teacher learning in the 21st Century. *Journal of Teacher Education*, *61*(1–2), 77–88.

Lortie, D. C. (1975). *Schoolteacher: A sociological study*. Chicago, IL: University of Chicago Press.

Mancuso, S. V., Roberts, L., & White, G. P. (2011). Teacher retention in international schools: The key role of school leadership. *Journal of Research in International Education*, *9*(3), 306–323.

McInerney, P. (2007). From naive optimism to robust hope: Sustaining a commitment to social justice in schools and teacher education in neoliberal times. *Asia-Pacific Journal of Teacher Education*, *35*(3), 257–272.

Muukkonen, H. (2011). *Perspectives on knowledge creating inquiry in higher education* (Doctoral dissertation). Studies in Psychology, University of Helsinki, Department of Psychology, Helsinki.

National Core Curriculum for Basic Education. (2004). Helsinki: Finnish National Board of Education.

Niemi, H. (2011). Educating student teachers to become high quality professionals: A Finnish case. *CEPS Journal*, *1*(1), 43–66.

Niikko, A. (2004). Education: A joint task for parents, kindergarten teachers and kindergarten student teachers. *International Journal of Early Years Education*, *12*(3), 259–274.

Noddings, N. (2002). *Starting at home: Caring and social policy*. Berkeley, CA: University of California Press.

OECD. (2014). *Education at a glance 2014: OECD indicators.* Paris: OECD Publishing. Retrieved from http://dx.doi.org/10.1787/eag-2014-en

OECD Report. (2003). *Attracting, developing and retaining effective teachers*. *Country Background Report for Finland*. Helsinki: The Ministry of Education.

Psacharopoulos, G., & Patrinos, H. A. (2004). Returns to investment in education: A further update. *Education Economics*, *12*(2), 111–134.

Pyhältö, K., Soini, T., & Pietarinen, J. (2011). A systemic perspective on school reform: Principals' and chief education officers' perspectives on school development. *Journal of Educational Administration*, *49*(1), 46–61.

Renner, A. (2009). Teaching community, praxis, and courage: A foundations of pedagogy of hope and humanization. *Educational Studies*, *45*(1), 59–79.

Renner, A., & Brow, M. (2006). A hopeful curriculum: Community, praxis, and courage. *Journal of Curriculum Theorizing*, *22*(2), 101–122.

Rinne, R., Kivirauma, J., & Simola, H. (2002). Shoots of revisionist education policy or just slow readjustment? The Finnish case of educational reconstruction. *Journal of Education Policy*, *17*(6), 643–658.

Rorty, R. (1999). *Philosophy and social hope*. New York, NY: Penguin Books.

Salhberg, P. (2007). Education policies for raising student learning: The Finnish approach. *Journal of Education Policy*, *22*(2), 147–171.

Salhberg, P. (2010). Educational change in Finland. In A. Hargreaves, A. Lieberman, M. Fullan, & D. Hopkins (Eds.), *Second international handbook of educational change* (Pt. 1, pp. 323–347). New York, NY: Springer.

Simola, H. (2005). The Finnish miracle of PISA: Historical and sociological remarks on teaching and teacher education. *Comparative Education*, *41*(4), 455–470.

Singh, M., & Han, J. (2007). Making hope robust in teacher education. *Asia-Pacific Journal of Teacher Education*, *35*(3), 223–225.

Sockett, H. (2009). Dispositions as virtues: The complexity of the construct. *Journal of Teacher Education*, *60*(3), 291–303.

Soini, T., Pyhältö, K., & Pietarinen, J. (2010). Pedagogical well-being: Reflecting learning and well-being in teachers' work. *Teachers and Teaching: Theory and Practice*, *16*(6), 735–751.

Spiecker, B. (1990). Forms of trust in education and development. *Studies in Philosophy and Education*, *10*(2), 157–164.

Thrupp, M., & Tomlinson, S. (2005). Introduction: Education policy, social justice and 'complex hope'. *British Educational Research Journal*, *31*(5), 549–556.

Tirri, K. (2003). The teacher's integrity. In F. Oser & W. Veugelers (Eds.), *Teaching in moral and democratic education* (pp. 65–81). Bern: Peter Lang.

Tirri, K., & Husu, J. (2002). Care and responsibility in "the best interest of a child": Relational voices of ethical dilemmas in teaching. *Teachers & Teaching: Theory and Practice*, *8*(1), 65–80.

Tirri, K., Toom, A., & Husu, J. (2013). The moral matters of teaching: A Finnish perspective. In C. J. Graig, P. C. Meijer, & J. Broeckmans (Eds.), *From teacher thinking to teachers and teaching: The evolution of a research community* (pp. 223–239). Bingley: Emerald Publishing.

Toom, A. (2006). *Tacit pedagogical knowing: At the core of teacher's professionality* (Research Reports 276). University of Helsinki: Department of Applied Sciences of Education.

Troman, G. (2000). Teacher stress in the low-trust society. *British Journal of Sociology of Education*, *21*(3), 331–353.

VAKAVA Statistics. (2010). Retrieved June 1, 2011, from http://www.helsinki.fi/vakava/hakijamaarat.html

VAKAVA Statistics. (2011). Retrieved June 1, 2011, from http://www.helsinki.fi/vakava/hakijamaarat.html

Webb, R., Vulliamy, G., Hämäläinen, S., Sarja, A., Kimonen, E., & Nevalainen, R. (2004). Pressures, rewards and teacher retention: A comparative study of primary teaching in England and Finland. *Scandinavian Journal of Educational Research*, *48*(2), 169–188.

Westbrook, R. (2005). *Democratic hope: Pragmatism and the politics of truth*. Ithaca, NY: Cornell University Press.

Woods, P. (1995). *Creative teachers in primary schools*. Buckingham: Open University Press.

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4. THE CORE OF SCHOOL PEDAGOGY

Finnish Teachers' Views on the Educational Purposefulness of Their Teaching

ABSTRACT

This chapter explores the core of school pedagogy both theoretically and empirically. The main concepts in research into teaching are introduced with some discussion on their traditional background. The differences in the terminology used in German and Anglo-American literature is acknowledged and their influence on Finnish research on teaching is discussed. Educational purposefulness is identified as an important motivational factor behind the teaching-studying-learning process. Empirical data from Finnish teachers and student teachers are presented as examples of their views on the educational purposefulness of their teaching. In the secondary school context teachers need skills to teach their subject matter in ways that would open up its educational meaning. Finnish teachers' views on the educational purposefulness of their teaching are divided into two categories: general purposes in teaching and subject matter specific purposes in teaching.

Keywords: school pedagogy; educational purposefulness; secondary school teachers; teaching

INTRODUCTION

In many European countries, for example in Finland, the goal of education is to support the development of the whole person, rather than merely the cognitive domain (Finnish National Board of Education, 2014). This kind of education acknowledges the importance of social and affective domains in students' development, including their emotional and spiritual concerns. In this chapter we discuss how didactics, the science and art of teaching, can promote this educational goal, and what kinds of views Finnish secondary teachers of different subjects have of the educational purposefulness of their teaching.

First, we will define some central concepts in the research on teaching and discuss the different terminology used in this field in Europe and in the United States. The two main concepts discussed here include didactics (Hopmann, 2007; Kansanen, 2002) and pedagogical content knowledge (Shulman, 1986, 1987). Second, we will discuss the nature of educational purposefulness from philosophical (Watermann,

H. Niemi et al. (Eds.), Miracle of Education, 57–68.

1993), developmental (Damon, 2008), and didactical (Hopmann, 2007) points of views and show its importance in the totality of the teaching-studying-learning process (Kansanen, 1999).

Third, we will present some examples of Finnish secondary school teachers' and student teachers' views on the educational purposefulness of their teaching. Based on the empirical data we will discuss the general purposes in teaching that are mutual to teachers of different subjects and subject-matter specific purposes in teaching that are related to the subjects taught. Finally, we will identify the core of school pedagogy by reflecting on the empirical data against the theoretical concepts and discussions about research into teaching. The results show a strong value-base on holistic pedagogy among Finnish teachers that is in accord with the educational goals in the national curriculum.

MAIN CONCEPTS IN RESEARCH ON TEACHING

Didactics

The modern understanding of "Didactics" (die Didaktik) is an invention of nineteenth-century teacher education in Germany and in Nordic countries including Finland (Hopmann, 2007, 110; Kansanen, 2002, 430–431). In the Anglo-American literature the concept of didactics is not usually used with the same meaning as in our tradition. Kansanen warns against the negative connotations this term might imply to Anglo-American colleagues and suggest using some other terms in translating this concept into English (Kansanen, 2009b, 29–30). The Anglo-American terms that may have the closest meanings to the European didactics include the concepts of "pedagogy", "teaching-studying-learning process" or "the science and art of teaching".

Hopmann and Riquarts (1995) recommend using the term "didaktik" instead of didactics as a translation of the German Didaktik in the English language texts. They have made an effort to create a concept without the negative connotations of didactics while retaining a term that is close enough to the original in order to indicate the real nature of the term. Kansanen has followed their recommendation in his writings and used "didaktik" with a small letter (Kansanen, 2009b, 30). In the title of this chapter we have acknowledged this discussion on translating didactics into English and use the broadest concept available, school pedagogy, that is understood in similar ways by both European and Anglo-American readers. This term reflects the holistic and context-dependent nature of teaching in Finnish schools.

One important aspect of the German Didaktik that our didactics is based on is that it has both descriptive and normative faces. Values play an important role in German didactic models and they also guide the teacher in the teaching-studying-learning process. This has influenced the Finnish tradition in teaching mainly through the curriculum. The mutual value base of teaching is defined in the national curriculum and teachers of different subjects need to conform to the values in the curriculum

(Finnish National Board of Education, 2014). This makes education normative in nature and has implications for the teacher's role as a moral educator. Every teacher is a moral educator regardless of the subject matter taught. Another important aspect that discerns didactics from educational psychology is that it is always context-dependent. Context-dependency means that the teaching-studying-learning process is intentional; that actions are based on values and purposes; and that the process is located in some institution in the society. Furthermore, the teachers are involved as professionals with institutional teacher education and it is assumed that the outcomes of studying, with learning as the most important aspect, are achieved within the framework of a systematic curriculum (Kansanen, 2002, 434).

Pedagogical Content Knowledge

In the Anglo-American tradition, Shulman (1986) has developed a new framework for teacher education by introducing the concept of pedagogical content knowledge. He argues that teacher education programmes should combine two knowledge bases to more effectively prepare teachers. These two knowledge bases are content and pedagogy. A crucial aspect of teachers' knowledge development of how to teach their subject is subject matter knowledge. A second kind of content knowledge is pedagogical knowledge, which goes beyond knowledge of the subject matter per se to the dimension of subject matter for teaching. Pedagogical content knowledge is located in the intersection of content knowledge and pedagogical knowledge. Pedagogical content knowledge is unique to teachers and separates, for example, a science teacher from a scientist. With this knowledge a teacher can teach a certain context to different learners effectively and with special attributes that help her/him guide a student to understand content in a manner that is personally meaningful (Shulman, 1987).

Kansanen (2009a,b) has discussed the similarities and differences between the Anglo-American concept "pedagogical content knowledge" and the European concept "subject-matter didaktik". According to him pedagogical content knowledge is a rather narrow concept. It is the teachers' professional knowledge, knowing how to prepare content for the students in a way that studying and learning is as effective as possible. However, it does not contain the process of how to transform the disciplinary content to subject matter content in the classroom; that is, creating a school subject. According to German thinking, this process of transformation is a central feature in constructing the instructional process in the classroom. In order to make this distinction clear Kansanen argues that in pedagogical content knowledge the teacher is functioning in a smaller circle than in subject-matter didaktik wherein the relation to the basic discipline of the school subject is active all the time. The teacher must also be competent enough to deal with this relation successfully (Kansanen, 2009b, 34).

In the current Anglo-American research in teaching, the concept of pedagogical content knowledge has been developed further. For example, in the context of

science teaching and technology the concept has been extended to the phenomenon of teachers integrating technology into their pedagogy (Mishra & Koehler, 2006).

Pedagogical content knowledge can also be used to broadly refer to pedagogy in general. Used in this way it comes close to the German concept. The German researchers have started to use the term "school pedagogy" with which they refer to a broader context of teaching in the school context. Kansanen (2009b, 37) suggests a possibility of combining the promising aspects of pedagogical content knowledge and subject-matter didaktik that might lead to new insights in future research. In this chapter issues related to school pedagogy are seen as such issues.

Teaching-Studying-Learning Process

The activities that invite students' knowledge construction in school include teachers' teaching and students' studying. Uljens (1997) argues that both teaching and studying are intentional activities that are directed to promote students' learning. These activities are, however, not necessary prerequisites for learning; students can learn new things without intentional studying or teaching. In addition, teaching and studying cannot guarantee learning. According to Uljens: "Teaching and studying may thus be called activities supporting individual growth through the process of learning. Learning in itself is therefore a process, among others, through which individual growth is achieved. Competence and changes in one's personality may then be called the results of individual growth" (Uljens, 1997, 40). Interaction between teacher and students, and among students, is fundamental in teaching. According to Husu, interaction seems to be important for at least two reasons: first, a certain amount of interaction is necessary so that teachers and students can understand each other and perform their teaching and studying activities. Without this basic interactive understanding it would be difficult to know whether teaching and studying activities respectively are focusing on the shared aims that both teachers and students intend. Second, teaching and studying methods are interactive to varying degrees. They can be interactive in themselves (the discussion method) or they can allow interaction to a lesser degree (methods of student's individual studying) (Husu, 1996, 39).

Kansanen talks about indirect interaction that includes the pre-interactive and post-interactive phases that both teachers and students need in order to be prepared for the next instructional situation (Kansanen, 1999). When the teacher prepares for his/her lessons s/he must consider the previous study-history and personal characteristics of the students. Furthermore, s/he must create an appropriate learning environment for a heterogeneous group of students. The students, on the other side, must organize their own study schedules and do their homework.

EDUCATIONAL PURPOSEFULNESS

The goals of education are established in a national core curriculum (Finnish National Board of Education, 2014). Both teachers and students should agree on

the goals and aims of education to make them meaningful in the teaching-studying-learning process. Self-fulfilment is also an important part of purposeful education. Waterman (1993) labelled the state of living in which one feels most authentic and alive, i.e., living in accordance with one's *daimon*, as "personal expressiveness," and suggested that this state is most likely to occur when one is engaged in activities congruent with one's deepest held values and life goals. In this view, it is from the well of the pursuit of self-realization and the fulfilment of one's unique potential that the good life most fruitfully springs.

Purpose is defined as a stable, long-term goal to contribute to the world beyond the self that is also meaningful to the self (Damon, Menon, & Bronk, 2003; Damon, 2008). One can identify two kinds of goals in life, one that has as its primary intent the benefit of the world beyond oneself (a purpose), and another that has as its primary intent the benefit of the self (a self-oriented life goal). This conceptualization of purpose extends Frankl's (1988) notions of responsibility and "giving to the world," which emphasize the essential nature of self-transcendent goals toward experiencing purpose in its deepest sense. To this end, a purpose may function not only as a life aim, but also as a "moral beacon" which motivates one to commit to and engage in pro-social, generative behaviours in adolescence and the years to follow (Damon, 2008). To live purposefully, one must understand one's purpose in life, plan and be future-oriented, and believe that one has the capacity to achieve one's life goals. Teachers need a sense of purpose to find their work educationally meaningful and also to be able to foster purposefulness in their students.

Teachers' visions or their images of ideal school practices are ways to access teachers' sense of purpose. Vision can provide inspiration and motivation to teachers and also guide them to reflect on their work (Tirri & Husu, 2006; Husu & Tirri, 2007). According to Darling-Hammond (1990), one of the most powerful predictors of teachers' commitment to teaching is a sense of efficacy; the teachers' sense that they are making a positive difference in the lives of their students. In the secondary school context teachers need skills to teach their subject matter in ways that open up its educational meaning. The German Didaktik is based on the idea that any given subject matter can represent many different meanings, and many different subjects can lead to any particular meaning. But there is no matter without meaning, and no meaning without matter (Hopmann, 2007, 116). Meaning is what emerges when the content is enacted in a classroom based on the methodological decisions of a teacher. In this process the individual growth of a student is fostered. Hopmann (2007) describes this process in the following way: "The purpose of teaching and schooling is in this perspective neither to transport knowledge from society to a learner (curriculum), nor a transpositioning of knowledge from science or other domains to the classroom, but rather the use of knowledge as a transformative tool of unfolding the learner's individuality and sociability, in short: the "Bildung" of the learners by teaching" (p. 115).

The German concept of "Bildung" also refers to the holistic aspect of pedagogy. It includes both development of one's talents and abilities as well as development of

one's society. "Bildung" requires a passionate search for continual individual growth and an ability to engage in critical development of one's society in order to actualize the highest ideals.

TEACHERS' VIEWS ON THE EDUCATIONAL PURPOSEFULNESS OF THEIR TEACHING

In this section we present some examples of teachers' views on the educational purposefulness of their teaching. We use data from secondary school teachers of different subjects (N = 19) who have already experienced teaching in a school context with different students. The teachers came from two schools in Finland that both emphasized mathematics in their curriculum. The teachers had been interviewed in 2008 and asked to reflect on what kind of things they find important in teaching their own subject. More detailed information on this study can be found in Tirri (2011). Another set of data includes essays from first year student teachers of different subjects (N = 280) who reflected on the educational purposefulness of their teaching in their own subject (Tirri & Ubani, 2013). In this chapter we take examples from student teachers of mathematics (N = 48) and religious education (N = 46) to be able to compare them with the examples from teachers of the same subjects in the other study.

General Purposes in Teaching According to Teachers

Teachers of different subjects identified quite similar purposes in their teaching. Ten teachers out of nineteen emphasized the importance of worldview as an educational goal for their teaching. All the teachers wanted to promote a scientific worldview with basic thinking skills. The teachers wanted to give some basic elements and skills to their students so that they could form their own worldviews. This emphasis was the same for the teachers of both mathematical subjects and teachers of subjects from the humanities. Elsa, a teacher of religious education and philosophy, wanted to advocate global citizenship skills to her students. According to her, independent thinking, argumentation skills and ethical reflection are important skills for students to acquire. She also mentioned tolerance as an important quality she wants to emphasize in her teaching. Philosophy and ethics are both subjects that require mastery of certain concepts before good quality argumentation is possible. The other teachers also emphasized the importance of central concepts in the teaching-studying-learning process. One of the general purposes in teaching in the secondary level was to educate students to master the central concepts of each subject taught and to be able to discuss these subjects with the help of these concepts.

All the teachers emphasized the importance of teaching at the appropriate ability level of students. The teaching should start from the familiar contents and proceed to the unknown, begin with the simple things and end up with the more complex issues.

Teachers' thinking reflected the ideas of finding the "zone of proximal development" identified by Vygotsky (1978).

Teachers with different subjects viewed the social life in schools as very important for the ethos of the school. In both of the schools that the teachers came from, students played chess and music together which contributed to the positive pedagogical environment. Also the teachers co-operated with each other and planned courses together. For example, the teachers in native language and art planned and taught a common course. The teachers also felt that they could share their fatigue and potential stress with each other and support each other in their teaching.

The General Purposes in Teaching According to Student Teachers

The student teachers emphasized the content knowledge of their own subjects as a very important factor in being able to make their teaching educationally purposeful. An interesting observation was that student teachers of both mathematics and religious education viewed subject matter knowledge of their own subject as more important than pedagogical knowledge or pedagogical content knowledge. The following quotes from student teachers are examples of how they emphasized these things in their essays:

> The core of a teacher's knowledge is her knowledge of her own subject. The teacher needs to be ready to answer the questions of her students and to acquire new knowledge about the subject. In addition to knowledge of her own subject a teacher of religious education should have a good knowledge base of societal issues and society. (Female student teacher of religious education)

> I think the knowledge base in mathematics is important because the students don't respect a teacher who doesn't know her own subject well enough. (Female student teacher of mathematics)

In addition to subject-matter knowledge the student teachers viewed the educational role of the teacher as very important. They emphasized pedagogical love from teacher to students as the necessary condition that would make teaching educationally purposeful. They saw the relationship between the teacher and his/her students as the starting point for any meaningful teaching. The essays mostly emphasized a respectful and caring learning environment that would meet the needs of different learners. The following quotes demonstrate this tendency of student teachers:

> In order for my teaching to be educationally purposeful I need to support my students in their growth and personal development not only in knowledge development. I think the most important thing is that the teacher really cares for her students. (Female student teacher of religious education)

> Education is the main function of the school, and that is why I, as a teacher of mathematics, have the same responsibility to contribute to the development

> of the students as all the other teachers. We should educate the students to be rounded, co-operative and just citizens. We should also encourage them to be life-long learners. (Female student teacher of mathematics)

An interesting observation is that practicing teachers of different subjects put more emphasis on students than on themselves. This finding is in accord with theories on teachers' professional development that presents experienced teachers as being more student-centered in their thinking than beginning teachers (Huberman, 1992). Both practicing teachers and student teachers valued the social and ethical dimensions of education and acknowledged the importance of a positive and supportive learning environment in the teaching-studying-learning process.

Subject-Matter Specific Purposes in Teaching According to Teachers

Nine of the practicing teachers taught subjects related to the main interests of the students: mathematics, physics, chemistry or computer science. Even though these teachers emphasized the holistic nature of teaching, like Mary verbalized: "Teaching is holistic and not only teaching the one subject". They also acknowledged the specific nature of mathematical thinking. In teaching mathematics, Jack, who has a long teaching experience of the subject and who wants to influence people with strong leadership qualities, wanted to teach students the skills of structures, procedures and abilities with the clear understanding that mathematics is part of the historical heritage of humankind. According to Jack, the same things apply to the teaching of physics. He also emphasized the importance of practice and concrete skills in doing mathematics. Mathematics is both knowledge and craft and both sides must be present in teaching the subject.

The teachers emphasized the importance of teaching mathematics for the future of the students. They wanted to prepare their students for their future studies at the universities and research centres. They also wanted to give them the skills to compete in national and international competitions in mathematical subjects. According to the teachers their students had already achieved 17 places in the final competitions. This is not a surprise because the students have been selected into their school according to their abilities in mathematics. These students already had the structures, procedures and abilities to do math faster than the average-ability students. In mathematical subjects one way to assess the level of giftedness in the student is the speed in processing the subject matter. One goal of the teachers was to help the students to understand their level of giftedness and give them possibilities to develop their special strengths. According to Jack, the power of community is crucial in developing the strengths of individuals to the maximum level. As an experienced teacher of mathematics and a leader in his own field he guided his students to work as a team and had a clear educational vision and purpose to guide this group to the maximum results and only secondarily searched for learning experiences for himself.

The teachers emphasized the importance of the community for the students' personal growth. The following quote is from Kim, who had attended the same school himself and now taught mathematical subjects at his old school.

> The students learn social skills here and find a community with same spirited people. Many of our students have been bullied in their former schools and here they find that they can be themselves in a friendly environment and learn scientific thinking and form scientific worldview without losing their personalities.

Another math teacher, Matt, emphasized that the scientific worldview does not have to contradict the religious worldview, for example.

Subject-Matter Specific Purposes in Teaching According to Student Teachers

Student teachers of religious education viewed religion as a very personal subject that required different kinds of personal reflection than many other subjects in schools. They thought that the teacher needs to be aware of his/her own religious identity in order to help the students find theirs. The following quote is a good example of this aspect:

> The teacher needs to know what he or she believes and who he or she is. In religious education the teachers' role is to guide the students to reflect on different religions and their own Lutheran faith. (Female student teacher of religious education)

The student teachers of mathematics emphasized the ability to meet the needs of different learners in mathematics. They also reflected on gender stereotypes related to their subject. The following quote from a male student teacher is a good example of the challenges related to gender in mathematics teaching:

> My educational purpose is to advance gender equality and equal rights and tolerance. Mathematics is such a male-dominated field and girls underestimate their potential in mathematics or hide their talent. I need to be aware of these stereotypes in order to provide the same options for boys and girls. (Male student teacher of mathematics).

Another male teacher of mathematics regards the ability of a teacher to meet the needs of different learners as the most important professional skill. Both weak and gifted students should be taught mathematics in ways that won't kill their motivation. The student teacher wrote about this aspect in the following ways:

> The most important professional skill is to meet the needs of different learners. Mathematics is a very sensitive subject, which can expose students to experiences of failure and frustration. We also need to identify and encourage

special talent because it is needed in society and we lack experts in the field. (Male student teacher of mathematics).

Both practicing teachers and student teachers of mathematics emphasized the importance of meeting the needs of different learners and especially those of the gifted. The teachers and student teachers of religious education stressed the skills in reflection. According to them the teacher of religious education should be able to reflect her own philosophies and also guide his/her students to reflect on different worldviews.

THE CORE OF SCHOOL PEDAGOGY

In this chapter we have shown that the Finnish research on teaching has a strong value and knowledge base in German tradition with Anglo-American influences. Especially in Finnish teacher education our aim is to educate autonomous, professional teachers who build their practice on research-based knowledge and ethical values. The normative nature and context-dependency of teaching are acknowledged. The teaching-studying-learning process is guided by the national curriculum and it takes place in an institutional context, usually in schools. Teachers need a sense of purpose to find their work educationally meaningful and also to be able to foster purposefulness in their students. According to empirical data presented here both practicing teachers and student teachers emphasize some general purposes in teaching regardless of the subject matter taught. They all view themselves as responsible professionals whose task is to teach the students the basic knowledge of their subject matter. Furthermore, they hold themselves responsible for the holistic education of the students including their personal and ethical growth. The practicing teachers seem to have a stronger emphasis on the students than the student teachers whose main concern is still their own mastery of subject matter and the educational responsibility involved in teaching.

We could also see some subject matter specific purposes in teaching. In this chapter we have presented some differences between mathematics teachers and religious education teachers. The teachers and student teachers of mathematics both emphasized the importance of meeting the needs of different learners, for example, very gifted students and girls. Mathematical thinking can be seen as a basic skill in many sciences and the teachers of this subject wanted to promote this kind of thinking in order to give their students the best chances to succeed in their studies in school and beyond. The teachers of religious education and especially the student teachers in this subject emphasized the personal nature of their subject matter. Their view was that in order to promote educational purposefulness in their field the teacher needs to be aware of his/her own religious identity and nature to discuss different worldviews with the students.

We can conclude that the core of school pedagogy can be found in the purposeful, holistic, normative and context-dependent nature of teaching. Secondary school

teaching in Finland requires strong subject-matter knowledge, knowledge of students and the totality of the teaching-studying-learning process. We are fortunate to have teachers of different subjects who can see the educational purposefulness of their teaching and who are committed to practising it.

REFERENCES

Damon, W. (2008). *The path to purpose: Helping our children find their calling in life*. New York, NY: Simon & Schuster.

Damon, W., Menon, J., & Bronk, K. C. (2003). The development of purpose during adolescence. *Applied Developmental Science*, *7*(3), 119–128.

Darling-Hammond, L. (1990). Teacher professionalism: Why and how? In A. Lieberman (Ed.), *Schools as collaborative cultures: Creating the future now*. London: The Falmer Press.

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014 [National Core Curriculum of Basic Education 2014]*. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Frankl, V. E. (1988). *Man's search for meaning*. New York, NY: Pocket Books.

Hopmann, S. (2007). Restrained teaching: The common core of Didaktik. *European Educational Research Journal*, *6*(2), 109–124.

Hopmann, S., & Riquarts, K. (1995). Starting a dialogue. Issues in a beginning conversation between Didaktik and the curriculum traditions. *Journal of Curriculum Studies*, *27*, 3–12.

Huberman, A. M. (1992). *The lives of teachers*. London: Cassell.

Husu, J., & Tirri, K. (2007). Developing whole school pedagogical values: A case of going through the ethos of "good schooling". *Teaching and Teacher Education*, *23*(4), 390–401.

Husu, J. (1996). Distance education in the school environment: Integrating remote classrooms by video conferencing. *Journal of Distance Learning*, *2*(1), 34–44.

Kansanen, P. (1999). Teaching as teaching-studying-learning interaction. *Scandinavian Journal of Educational Research*, *43*(1), 81–89.

Kansanen, P. (2002). Didactics and its relation to educational psychology: Problems in translating a key concept across research communities. *International Review of Education*, *48*(6), 427–441.

Kansanen, P. (2009a). The curious affair of pedagogical content knowledge. *Orbis Scholae*, *3*(2), 5–18.

Kansanen, P. (2009b, March). Subject-matter didactics as a central knowledge base for teachers, or should it be called pedagogical content knowledge? *Pedagogy, Culture & Society*, *17*(1), 29–39.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, *18*(6), 1017–1054.

National Core Curriculum for Upper Secondary School. (2003). Helsinki: Finnish National Board of Education.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, *15*(2), 4–14.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, *57*(1), 1–22.

Tirri, K. (2011). Holistic school pedagogy and values: Finnish teachers' and students' perspectives. *International Journal of Educational Research*, (in press).

Tirri, K., & Husu, J. (2006). Pedagogical values behind teachers' reflection of school ethos. In M. Klein (Ed.), *New teaching and teacher issues* (pp. 163–182). New York, NY: Nova Science publishers.

Tirri, K., & Ubani, M. (2013). Education of Finnish student teachers for purposeful teaching. *The Journal for the Education of Teaching, 39*(1), 21–29.

Uljens, M. (1997). *School didactics and learning.* Hove: Psychology Press.

Waterman, A. S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness (eudaemonia) and hedonic enjoyment. *Journal of Personality and Social Psychology*, *64*, 678–691.

Vygotsky, L. S. (1978). *Mind and society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

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PART II

THE FOUNDATIONS: THE DESIGN OF EDUCATIONAL SYSTEM ON VARIOUS LEVELS

KRISTIINA KUMPULAINEN AND TIMO LANKINEN

5. STRIVING FOR EDUCATIONAL EQUITY AND EXCELLENCE

Evaluation and Assessment in Finnish Basic Education

ABSTRACT

In this chapter, we shall provide an introduction to the evaluation and assessment practices in Finnish basic education. We shall highlight the primary premises and goals set for the evaluation work and illuminate its realization at different levels of the system. Our introduction reveals the holistic development and enhancement function that educational evaluations and assessments play in Finnish basic education. We shall conclude our chapter by outlining the future challenges and developments of Finnish basic education with a special focus on evaluation and assessment.

Keywords: equity, evaluation, assessment, education, teaching

THE UNIQUENESS OF FINNISH BASIC EDUCATION

Finnish basic education has attracted international interest for over a decade. International comparisons of learning outcomes have ranked Finland among the best performing countries on several occasions, placing Finnish education firmly among the top elite of the world. But what is behind this success? How can we explain these results? Closer investigation of Finnish basic education has revealed intriguing facts about the system and its functioning. For example, unlike many other countries, in Finland students start school fairly late – at the age of seven – and spend less time at school. The students have relatively little homework and are rarely tested at a national level. In Finland, the schools create their own curriculum based on the national core curriculum. The teaching profession is highly valued and trusted. The teachers are not subjected to evaluations either. All these features highlight the uniqueness of the Finnish basic education system as compared to many other countries. Yet, before making any systematic conclusions about these educational features, it is necessary to understand the systemic whole of the Finnish basic education system and the core elements that contribute to this entity. This is likely to open up new understandings about the core features and functioning of Finnish basic education.

In this chapter, we shall provide an introduction to one of the core elements of Finnish basic education, namely the evaluation and assessment practices. We shall highlight the primary premises and goals set for the evaluation work and illuminate

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its realization at different levels of the system. Our introduction demonstrates that the evaluation and assessment framework of the Finnish education system stresses the holistic developmental and enhancement function of evaluation. Evaluation is not exercised to control or sanction, but, rather, to develop education at all levels of the system, creating the best learning opportunities for every learner. The nature and function of educational evaluations distinguishes Finland from many other countries. Evaluation may be considered as one of our strengths in maintaining and developing the high standards of the Finnish education system.

EDUCATIONAL EQUITY – THE FOUNDATIONAL VALUE OF FINNISH EDUCATION

The pursuit of educational equity has long been a major goal of the Finnish education system. Creating and maintaining a system of education where all children have equal access to quality education and widely available opportunities to learn to their fullest human potential has been elusive. A strong national vision of the importance of equal basic education is seen as promoting intellectual and social capital as well as prosperity within the whole nation and its individuals. Educational evaluation and assessment work plays an important role in monitoring the realization of educational equity throughout the nation and within and across its districts and municipalities, educational providers and individuals (Atjonen, 2007; Jakku-Sihvonen, 1993; Korkeakoski, & Tynjälä, 2010; Raivola, 2000).

The objective of Finnish basic education is to guarantee sufficient equity in education throughout the country. Equity of education stands for equality of opportunities. A further premise for educational equity is respect for the diversity of individuals. Learners' aptitudes, objectives and educational needs differ and the educational system needs to be able to flexibly respond to these needs. Equal opportunities for education do not mean the same education for everyone, but, rather, equal opportunities to develop one's own aptitudes and personality. Given the educational stratification of diverse students, the implications for equity would suggest the allocation of resources relative to the needs of learners.

Educational equity is supported in Finland in many different ways. The basic prerequisites for students' learning are created by providing education, support and guidance free of charge, offering free school meals, health care, school transport, learning materials and tools, as well as student welfare and other support services. Caring for students in educational and personal terms has become one of the leading educational principles in Finnish basic education alongside ensuring a high-quality curriculum and competent teachers.

Holistic and systemic evaluation and assessment work plays a pivotal role in ensuring the realization of educational equity in Finnish basic education. Nationally defined quality criteria for evaluation, which are based on recent research and evaluation knowledge as well as on national legislation, create a common framework for education professionals and policymakers to monitor and further develop

education and its outcomes across the system (Ministry of Education and Culture, 2010; Välijärvi & Kupari, 2010).

Chelimsky (1997) distinguishes three dimensions in educational evaluation that are shaped by the goals and purposes set for the evaluation work, namely (a) an accountability dimension, (b) a research evidence and data production dimension and (c) a developmental dimension. Evaluations based on accountability aim primarily at providing information to policy makers and education providers about the effectiveness and impact of education. Evaluations based on data production aim at understanding educational systems and programs. The developmental dimension aims at enhancing the educational system, curricula and teaching methods. It monitors possible changes in educational outcomes, develops indicators for the education sector, and also creates development proposals serving the needs of education providers and developers. The Finnish education system aims to promote all three of these dimensions in its holistic and systemic evaluation and assessment work.

STRIVING TOWARDS EXCELLENCE AND A JOY OF LEARNING: THE FINNISH BASIC EDUCATION SYSTEM

The role of Finnish basic education is to provide students with multiple learning paths that create opportunities to develop skills and competences for lifelong learning and active citizenship. The most essential objective of basic education is to support life-wide and lifelong learning. This means building and reinforcing learning skills and competences as well as providing the motivation for learning (Finnish National Board of Education, 2004, 2014). Competence is Finland's most important resource and it is imperative to attend to its high standard on a continuous basis. This requires setting objectives for school development that aim at supporting every learner to reach their full potential.

One of the major goals of Finnish basic education is to support the growth and development of every learner, strengthening their operating opportunities and involvement. Learners are seen as individuals whose age and capabilities form the starting points for the provision of education. Learning is defined as being complex, dynamic, linked to human development and embedded within a specific cultural context. A definition of equity should take into account these factors. Equity then could be measured in terms of quality education, care and rigor as well as individual achievement indicators (Raivola, 2000).

The Finnish education system consists of one-year-long pre-primary education and a nine-year basic education followed by voluntary vocational or upper secondary education. Higher education is provided by universities and polytechnics. Adult education is available at all levels of the education system. Participation in pre-primary education was made compulsory for all six-year-olds, from August 2015 (Kumpulainen, 2015). Yet, already in 2014, 98.5 per cent of the age group

of six-year-olds participated in pre-primary education. Compulsory education begins at the age of seven. The basic education syllabus is nine years, and nearly all children complete their compulsory schooling by attending a comprehensive school. Comprehensive schools can also provide additional basic education: a voluntary 10th grade (National Board of Education, 2010).

The national core curriculum issued by the Finnish National Board of Education determines the objectives and core contents of different subjects and sets out the principles for student assessment, special needs education, student welfare and guidance counselling. It also defines the principles of a good learning environment, working methods and the concepts of learning (Finnish National Board of Education, 2004, 2014).

In basic education and upper secondary education the education provider is usually the local education authority and the school draws up its own curriculum within the framework set forth by the national core curriculum. This local curriculum may be devised for the municipality as a whole or for an individual school.

The government defines the minimum number of classroom hours for core subjects in basic education. In Grades 1–6, the content is roughly the same for all students across the country, but a school may focus on subjects in different ways due to the flexible allocation of lesson hours. In Grades 7–9, there are more elective elements in the curriculum. The curriculum also includes a work familiarization period. Students, together with their parents or caretakers, decide which optional subjects made available by the school they should take (Finnish National Board of Education, 2004, 2014).

THE PREMISES OF EVALUATION AND ASSESSMENT IN FINNISH BASIC EDUCATION

The evaluation of education in Finland is governed by the Basic Education Act (http://www.finlex.fi/fi/laki/kaannokset/1998/en19980628.pdf). The purpose of evaluation is to safeguard the implementation of the Act, to contribute to the development of education and to create favourable conditions for learning. There is a specific decree on the evaluation of education that sets out the following aims for evaluation:

- to provide and analyze evaluation data in support of national decision making on education and as a basis for educational development
- to provide and analyze evaluation data as a basis for local educational development and decision making
- to support learning, the work of school personnel and institutional development.

The Ministry of Education and Culture adopts an Evaluation Plan that sets the overall objectives for external evaluation and lists upcoming evaluations undertaken by the Education Evaluation Council, learning outcome assessments carried out by The Finnish Education Evaluation Centre (FINEEC) and evaluations contracted by the Regional State Administrative Agencies. The plan contains all Finnish

educational levels including Finnish Higher Education evaluations and international evaluations of higher education.

The Regional State Administrative Agencies evaluate the regional availability of education. Education providers have the duty to evaluate the education they provide and its effectiveness. The method of evaluation is not regulated, but the evaluations must be carried out systematically and regularly. Education providers also undergo external evaluations. Each municipality must have an inspection board appointed by the municipal council to evaluate the implementation of the operational and financial aims set by the council (Ministry of Education and Culture, 2011).

The evaluation findings are utilized by the Ministry of Education and Culture in the preparation of legislation and strategies and in financial planning. The Finnish National Board of Education applies the evaluation findings to curriculum development and other educational development work. The way in which evaluation data is used by education providers, schools or teachers is not subject to a particular act or decree. This is a matter within the discretion of the education provider, such as decisions concerning educational arrangements overall.

School Assessment

In Finnish basic education, school assessment is based on self-evaluation. Under the current legislation, education providers must assess the quality of the education they provide and participate in external evaluations. In Finland, there is no school inspectorate. This was abolished in 1991. It is up to education providers to decide what they want to review in their internal evaluations and how the findings are reported and published (Ministry of Education and Culture, 2011).

In the year 2010, the Ministry of Education and Culture devised national quality criteria for basic education with a view to facilitate internal assessment and quality enhancement. The criteria focus on:

- leadership
- personnel
- financial resources
- evaluation
- implementation of the curriculum
- teaching arrangements and instruction
- support for learning, growth and well-being
- inclusion and influence
- school-home collaboration
- safe learning environment

The national quality criteria focus on a wide array of elements in the education system and the realization of these elements. The quality criteria aim to promote high-quality education, enrich educational provision and ensure equal educational rights for every learner irrespective of their background. The criteria are also seen as

a tool for leadership, which municipalities and schools can monitor and further use to develop their local educational practices in flexible ways (Ministry of Education and Culture, 2010).

TEACHER COMPETENCIES IN ASSESSING LEARNING OUTCOMES

Teacher education and in-service education courses and programs play an important role in providing teachers with skills, knowledge and understanding about educational evaluation and assessment. The initial education for teachers includes modules focusing on student assessment. In addition to introducing research-based knowledge on educational evaluation and student assessment, these modules often utilize national evaluation reports in order to explain the culture of evaluation and assessment within the Finnish education system. The courses and modules on assessment and evaluation also educate future teachers about the ways in which they can use evaluation data in their teaching. The education of future teachers on student assessment varies across teacher education programs, since there is no national curriculum for teacher education in Finland.

The Finnish National Board of Education, university continuing education centres and regional authorities arrange short-term programs and training on the assessment and evaluation criteria for education providers.

Teacher Appraisal

Neither teachers nor instruction are evaluated in Finland. The principal is, however, always the pedagogical leader of the school and, thus, responsible for both the quality of instruction and the teaching staff. Most schools have quality assurance systems that include annual development discussions and/or appraisals.

Teachers' qualification requirements are laid down in a decree (986/1998). The Ministry of Education and Culture monitors teachers' formal qualifications as well as age structure at the national and regional levels by means of triennial data collections. The data is used in forecasts and decision-making on teacher education in order to secure the availability of qualified teaching personnel. Participation in continuing professional education is also assessed and the needs for future initial and continuing teacher education programs are identified.

Student Assessment Is Part of Daily Schoolwork

In Finnish basic education, teachers carry out assessments in their respective subjects on the basis of the objectives stated in the curriculum. Assessment is an ongoing part of daily school life. Each student receives a report at least once every school year. In addition, an intermediate report may be given at least once during the school year. Achievement is assessed both continuously and through tests set by teachers. A certificate is awarded when a student has successfully completed the full nine

years of comprehensive schooling. An additional certificate is awarded for those completing the optional 10th year (Ministry of Education and Culture, 2011).

In basic education, the assessment is criteria-based. The objectives and core content of instruction are defined in the national core curriculum by subject or a group of subjects. The objectives, core content, descriptions of good performance and the criteria used in the final assessment are determined to help in the assessment. The grade scale is from 4 (weak) to 10 (excellent). The criteria for Grade 8 are defined in the National Core Curriculum for each subject (Finnish National Board of Education, 1999).

During particular terms, student assessment is mostly formative in nature. Summative assessments should be used at the end of the school year. The main purpose of the end-of-school summative evaluations is to assess how well the student has attained the aims set out in the curriculum. During basic education, there are no national examinations or compulsory tests. Since 1998, national school performance has been measured by means of sample-based national tests. It is obligatory for all schools in the sample to participate in these tests (National Board of Education, 1999).

Although the main purpose of student assessments is to investigate how well the students have attained the aims set out in the curricula, the feedback must also promote further learning and maintain and enhance motivation for learning. Assessments also provide information about the success of the education in helping students to learn.

Student assessments are often accompanied by authentic and formative assessment methods, such as via students' self-evaluations and learning portfolios (Patton, 1996; Williams, 2010). Students' personal involvement in monitoring their learning practices, processes and achievements has been found valuable in supporting the development of their meta-cognitive awareness and lifelong learning skills. Parental involvement is also welcomed in the monitoring of students' progress and learning. Joint meetings between students, their parents and teachers facilitate collective reflections, during which all parties can document developments and possible challenges in students' learning from their own particular viewpoints.

External National Assessments of Learning Outcomes

The Finnish Education Evaluation Centre (FINEEC) is responsible for national assessments of learning outcomes. The purpose is to provide information for the development of education and the core curriculum. National external evaluations are performed according to pre-defined criteria (see e.g. Finnish National Board of Education, 1999). The information sources, compilation procedures and the methods of analysis are described and justified. The aim is that the information collected is reliable and valid. All assessment projects are carried out and reported as transparently as possible. The salient findings are reported and published in a way that does not do injustice to the individual education provider, the school,

the personnel or the students. Ranking lists of schools based on national learning outcome assessment results are practically non-existent in Finland (Simola et al., 2009).

External national assessments are sample-based. The purpose of these assessments is to obtain information for the purpose of educational and curricular development. The overall sample size is 5–10% of the age group, between 3000 to 6000 students. Assessments are usually conducted during Grades 3, 5, 7, and 9, but most commonly in Grade 9, which represents the end of compulsory education (Ministry of Education and Culture, 2011).

The Education Evaluation Plan determines what subjects are evaluated in a given year. Mathematics and the mother tongue (Finnish and Swedish) are assessed systematically. Students' performance in other subjects is assessed at irregular intervals.

External national assessment projects are led by project managers who take responsibility for the entire evaluation process and how it is reported. The method of planning and implementation is quality-assured and fairly similar in all subject-specific assessments. Typically, an assessment process has several phases:

1. Development of instruments
2. Preparation of the sample
3. Pre-test and item analysis
4. Data collection and input
5. Data analysis
6. Feedback to schools
7. National report

The assessment process usually takes 1.5 years. The purpose of evaluation is to provide information about the state of affairs in schools which can be utilized in decision-making on the development of education at different levels, namely at the level of the school, the municipality, the region and the whole country (Ministry of Education and Culture, 2011).

Evaluations relating to basic education have an important function in ensuring educational equity by determining whether or not students achieve roughly the same basic competencies regardless of their place of residence, gender and home background. All national assessment reports are submitted to the Parliamentary Education and Culture Committee and to the Ministry of Education and Culture. Seminars are organized for education experts and teachers. Each school in the sample receives its own results and some reference data concerning the whole sample. The education provider (almost always the local authority) receives the same information. School-based reports are delivered to the school as soon as possible, typically within 6–8 weeks of the collection of data. The importance of communicating and disseminating evaluation outcomes among education professionals on a continuous and systematic basis is regarded as pivotal in order to ensure that shortcomings in

outcomes are recognized and acted upon (Korkeakoski & Tynjälä, 2010; Välijärvi & Kupari, 2010).

CHALLENGES OF FINNISH BASIC EDUCATION

Education plays a key role in building competitiveness and well-being in society. Only through education is it possible to create new high-level competences, which form the foundation for society to continue to develop and prosper. Basic education plays an important role in this development work. Basic education must enable learning and development for entire age groups and encourage them towards lifelong learning in various learning environments. Evaluation and assessment work plays an important role in monitoring the processes and outcomes that support and also challenge the realization of these educational goals (Atjonen, 2007).

In light of current research and national assessment results, Finland also needs to continuously develop its basic education to better respond to the needs of the society and its individuals (Finnish National Board of Education, 2011). Recent assessment and follow-up studies have revealed growing differences in learning outcomes, student welfare services, children's and young people's psychosocial welfare and health care services. There are differences between genders, regions and population groups. Based on the research, it is evident that not all Finnish local authorities have sufficient resources or political will to provide high-quality education, which puts students in an unequal position.

The demographic landscape in Finnish basic education schools is clearly becoming more complex. Increasing cultural, linguistic and ethnic diversity among learners makes it timely to re-examine educational equity and its realization in Finnish education. The need to obtain evidence that indicates the degree of equality attained in Finnish schools makes educational evaluation and assessment work extremely valuable for monitoring the situation and adequately responding to the emerging challenges in order to create better learning opportunities that match the needs of diverse learners (Hursh, 2005; Meyer, 2001).

Responding to the Multiple Needs of Diverse Learners

One of the key questions for the development of basic education is how to safeguard encouraging and motivating education for all students. The development of basic education is premised on giving due consideration to students' age and abilities, their individual growth and development, and their different needs. Any possible difficulties should be identified at the earliest possible stage and all students should be supported in a socially empowering way (Liinamo & Kannas, 1995; Linnakylä, 1993). Student welfare services, social services and mental health services should form an effective whole. School health care needs assistance from an effective adolescent psychiatric service system that provides support for children and young people requiring treatment.

Schools are also expected to motivate and support students more clearly, so as to provide them with opportunities to make the most of their potential as individuals. These objectives can be supported by creating increasingly flexible learning pathways that recognize different learning styles, needs and talents. The right of students to systematic, early and preventive support for learning and schooling was reinforced by a 2010 amendment to the Basic Education Act. Education providers need national guidance in carrying out reforms in order to establish procedures in a consistent manner throughout the country.

Student assessment is one of the most essential issues when developing basic education. Student assessment may be perceived too narrowly as being about examining the outputs of learning and awarding grades. However, the primary role of student assessment is to guide the learning process of learners and to support motivation for learning. Students construct their perceptions of themselves as learners through the feedback received as part of assessment. Experiences of success and finding the joy in learning are important for every student. At the same time, students must also be guaranteed equal treatment in terms of assessment; students showing an equivalent level of competence must be awarded the same grade regardless of location, school and class.

Assessment should support the development of students' learning skills and competences. This requires the development of both the methods of and criteria for student assessment. It is necessary to ensure that assessment criteria and specified objectives are consistently linked to each other. The objectives, in turn, must be formulated in such a way that makes it possible to assess them. Schools need new assessment practices that support the learning process and make use of information and communications technology. These must be consistently supported through national guidance.

STEPS FORWARD IN ENSURING EQUITY AND EXCELLENCE FOR EVERY LEARNER

Developing the best comprehensive school system in the world so that it becomes even better calls for a nationally shared vision of the goal of basic education, its objectives, as well as the implementation and continuous evaluation of development work. It requires securing resources for maintaining and developing the availability and quality of basic education. Success entails determined and persistent leadership and good co-operation at all levels. The development of education should be consistently seen as a development task for the entire education system and as a continuous process. It is not solely determined by degrees. Instead, it should form a natural part of everyday operations within the administration, local educational services and schools.

In order to ensure the integrity of learning, it is essential to determine the key development targets for the education system, which are then pursued through each aspect of the education system. This should be visible throughout the

system: in policy decisions (legislation, distribution of lesson-hours), steering documents (National Core Curriculum), funding, teacher education and training, and the provision of education and school operations, in the selection of learning environments, the use of various teaching and learning methods, and the forms of guidance as well as in support and evaluation measures. Ensuring the performance of learning outcomes requires stability from the national steering system when pursuing the targets. Legislation, funding and other national steering bodies need to support and steer education providers to carry out statutory and education policy objectives (Lahtinen & Lankinen, 2010).

The development of basic education needs to continue to recognize the needs and aptitudes of diverse learners. The most essential objective of development is to promote learning and maximize learning outcomes for every student. The curriculum together with educational evaluation and assessment work are key instruments for developing and reforming basic education in Finland. They are the cornerstones of the whole system, through which objectives are refined into steps that guide schoolwork.

Teachers and principals also play an important role in the development and evaluation of basic education; professional competence relating to teaching and management should be constantly supported and consolidated. Building a collaborative culture and developing collaborative competence require attention and effort. Basic education must be developed through partnership and shared leadership. The need for change and the objectives of reform should be understood throughout the system. The prerequisite for achieving the objectives is commitment from all participants in the education system: national and local administration, schools and teachers. Consistent development of the entire education system, supported by development and enhancement-led evaluation and assessment work, is likely to create education, competences and wellbeing that form the most important resource for Finnish society.

REFERENCES

Atjonen, P. (2007). *Hyvä, Paha Arviointi* [Good, Bad Evaluation]. Helsinki: Tammi. (In Finnish)

Chelimsky, E. (1997). The coming transformations in evaluation. In E. Chelimsky & W. R. Shadis (Eds.), *Evaluation for the 21st century: A handbook* (pp. 1–26). Thousand Oaks, CA: Sage Publication.

Finnish National Board of Education. (1999). *A framework for evaluating educational outcomes in Finland* (Evaluation, 8). Helsinki: Yliopistopaino.

Finnish National Board of Education. (2004). *National core curriculum for basic education* (Regulation 1/011/2004). Sastamala: Vammalan Kirjapaino Oy. Retrieved from http://www.oph.fi/english/publications/2009/national_core_curricula_for_basic_education

Finnish National Board of Education. (2011). *The school of opportunities – towards every learner's full potential.* Helsinki: Kopiojyvä Oy.

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014* [National Core Curriculum of Basic Education 2014]. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Hursh, D. (2005). The growth of high-stakes testing in the USA: Accountability, markets and the decline in educational equality. *British Educational Research Journal*, *31*(5), 605–622.

Jakku-Sihvonen, R. (1993). Tuloksellisuuden arvioinnin käsitteitä opetustoimessa [Concepts for educational accountability]. In K. Hämäläinen, R. Laukkanen, & A. Mikkola (Eds.), *Koulun Tuloksellisuuden Arviointi* [Evaluating the Effectiveness of Schooling]. Helsinki: VAPK-kustannus. (In Finnish)

Korkeakoski, E., & Tynjälä, P. (Eds.). (2010). *Hyötyä ja Vaikuttavuutta Arvioinnista* [Benefits and Effectiveness from Evaluation] (Koulutuksen arviointineuvoston julkaisuja 50). Saarijärvi: Saarijärven Offset Oy (in Finnish).

Lahtinen, M., & Lankinen, T. (2010). *Koulutuksen Lainsäädäntö Käytännössä* [Educational Legislation in Practice]. Tietosanoma, Tallinna: Tallinna Raamatutrukikoda. (In Finnish)

Liinamo, A., & Kannas, L. (1995). Viihdynkö, pärjäänkö, selviänkö turvallisesti: Koulunkäynti oppilaiden kokemana [Do I like school, do I get on, am I safe: School as students perceive it]. In L. Kannas (Ed.), *Koululaisten Kokema Terveys, Hyvinvointi ja Kouluviihtyvyys. WHO-Koululaistutkimus* [Health, Well-Being and School Satisfaction as Perceived by School children. WHO Health Behaviour in School-Aged Children Study] (pp. 109–130). Helsinki: National Board of Education. (In Finnish)

Linnakylä, P. (1993). Miten oppilaat viihtyvät peruskoulun yläasteella? Kouluelämän laadun kansallinen ja kansainvälinen arviointi [School satisfaction in the upper level of comprehensive school? National and international assessment of the quality of school life]. In V. Brunell & P. Kupari (Eds.), *Peruskoulu Oppimisympäristönä. Peruskoulun Arviointi 90 Tutkimuksen Tuloksia* [The Comprehensive School as a Learning Environment. Results of the Assessment of the Comprehensive School 90 Study] (pp. 39–56). University of Jyväskylä Institute for Educational Research. Jyväskylä: Jyväskylän yliopisto. (In Finnish)

Meyer, W. (2001). The evolution of modern stratification systems. In D. B. Grusky (Ed.), *Social stratification: Class, race and gender in sociological perspective* (Vol. 2, pp. 881–890). Oxford, UK: Westview.

Ministry of Education and Culture. (2010). *Perusopetuksen Laatukriteerit* [Quality Criteria for Basic Education]. Opetusministeriön julkaisuja, 6. Helsinki: Yliopistopaino. (In Finnish)

Ministry of Education and Culture. (2011). *OECD review on evaluation and assessment frameworks for improving school outcomes. Country background report: Finland*. Helsinki: Ministry of Education and Culture.

Patton, M. Q. (1996). A world larger than formative and summative. *Evaluation Practice*, *17*(2), 131–144.

Raivola, R. (2000). *Tehoa vai Laatua Koulutukseen* [Efficiency or Quality in Education]. Helsinki: WSOY. (In Finnish)

Simola, H., Rinne, R., Varjo, J., Pitkänen, H., & Kauko, J. (2009). Quality assurance and evaluation (QAE) in Finnish compulsory schooling: A national model or just unintended effects of radical decentralisation? *Journal of Education Policy*, *24*(2), 163–178.

Välijärvi, J., & Kupari, P. (2010). Koulutuksen arvioinnin näkökulmat ja arviointien hyödyntäminen. In E. Korkeakoski & P. Tynjälä (Eds.), *Hyötyä ja Vaikuttavuutta Arvioinnista* [Benefits and Effectiveness from Evaluation] (pp. 21–29). Koulutuksen arviointineuvoston julkaisuja 50. Saarijärvi: Saarijärven Offset Oy. (In Finnish)

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6. THE FINNISH NATIONAL CORE CURRICULUM

Design and Development

ABSTRACT

The national core curriculum as a means for enabling and managing educational change has an important development role in the Finnish school system. The national core curriculum is the pedagogical foundation for the organization and implementation of education, and a framework around which local curricula are designed. The national core curriculum contains the objectives and core contents of teaching for all school subjects, and also describes the mission, values, and structure of education. It describes the conception of learning and goals for developing the learning environment, school culture and working methods. This gives the core curriculum a dual role: on one hand it is an administrative steering document, on the other a tool for teachers to develop their own pedagogical praxis. In Finland, development of the core curriculum through a process of collaboration between national and local authorities is a highly developed practice. This has afforded a shift in the focus of curriculum development towards its pedagogical functionality. The Finnish core curriculum renewal process of 2014 is mainly pedagogical and aims to change the school culture, learning environments and pedagogy.

Keywords: curriculum system, curriculum design, curriculum development

MAIN FEATURES OF THE CURRENT CURRICULUM SYSTEM IN FINLAND

The Finnish national core curriculum is a fairly new invention, which has only been in place for the past forty years. Before 1970, Finland had two parallel education systems, which placed children on different educational routes at an early age. This division had a strong connection to the socio-economical background of the children and resulted in inequality of learning opportunities and an achievement gap between different groups. A long politically heated debate preceded the 1968 Basic Education Act, which stated that all children should attend the same school for the first nine years of education. The foundation for Finnish basic education was born.

The first reformed national curriculum was published in 1970 and was a strongly centralized document. The curriculum was first renewed in 1985 after the 1983 Basic Education Act, and the direction toward decentralization and teacher autonomy was set. Before 1985, streaming was the usual practice in schools, a vestige from the time

H. Niemi et al. (Eds.), Miracle of Education, 83–90.

of two parallel education systems. The curriculum renewal discontinued this practice and set higher standards for all pupils. Municipalities were given more decision-making power, and individual pupil needs became the focus point of education.

The decentralization process continued during the 1990s. The curriculum renewal of 1994 gave the municipalities' local authorities a large degree of autonomy. Being the primary educational provider, municipalities were given the right to freely determine how they wished to use state provided financial grants. Local authorities received autonomy to organize schools, the education process and funding. School based decision-making became a central part of formulating curriculum. Additionally, previously all textbooks had been inspected, and school inspectors regularly visited schools, but these practices were abolished in order to provide more autonomy to local authorities.

This was followed by a major reform of educational legislation in 1998. The emphasis was placed on goals, pupil rights and duties (Finnish National Board of Education, 2010). For the first time, national criteria for pupil assessment were introduced (Finnish National Board of Education, 2004). However, there has never been a comprehensive national testing system for all pupils. The curriculum renewal of 2004 was consequently more centralized. The national core curriculum was again a more centralized document, which emphasized national decision-making and reduced the differences in local implementation. The centralization focused more on subject content.

The curriculum renewal of 2014 was the fifth in the history of Finnish comprehensive basic education and its goal was to renew both pedagogy and school culture. In terms of subject content, no big changes were made. Due to the pedagogic nature of this renewal, the new core curriculum included significantly more pedagogical guidance than the previous curriculum documents. The aims of this renewal emphasized the proactive role of the school in terms of building the future. Moreover, development of school culture, the pupils' active role and principles and attitudes of and towards sustainable ways of living were essential in the renewal. The new core curriculum will be implemented in August 2016 (Finnish National Board of Education, 2015).

The goal of basic education is to guarantee equality in education around the country. The Finnish legislation defines the juridical framework for organizing and implementing basic education. The current legislation sets the educational goals, contents, levels, organization and pupils' rights and responsibilities (Basic Education Act 628/1998). The curriculum is an educational tool shaped by the decisions made at different administrative levels. The curriculum plays an essential role by providing the educational frame for aims, content and pedagogy. Schools are not the objects of regulation; rather plenty of decision-making power is relegated to the local level (Lahtinen & Lankinen, 2013). In Finland the core curriculum functions as an educational guide aiming at guaranteeing educational equality across the country. Plans, procedures and policies of various levels are part of the curriculum system, and assure that the legislated aims and essential principles reach all schools.

On behalf of the state, the Finnish National Board of Education devises the national core curriculum. The National Core Curriculum includes the objectives and core contents of teaching for all school subjects, the subject-specific parts, and also describes the mission, values, and structure of education in the so-called general parts of the curriculum document. The National Core Curriculum determines a common structure and basic guidelines that the local curriculum makers use in order to build a local curriculum.

Municipalities and schools devise their own curricula, which are supposed to be context-driven taking into account the features and possibilities of local environments. The local curriculum functions as a norm and guide for educationally consistent teaching in the area. Municipalities and schools are granted great autonomy in organizing education and implementing the core curriculum (Halinen & Järvinen, 2008).

CURRICULUM RENEWAL PROCESS IN FINLAND

The curriculum process is a product of the steering system. The starting point for each curriculum renewal is all the knowledge and experiences acquired from national and international research and development projects and evaluations of learning outcomes (Halinen, Holappa, & Jääskeläinen, 2013). Already for several decades, the renewal of the Finnish national core curriculum has been a democratically structured and hierarchical process. However, it is not a process purely governed by administrators, even though it involves several levels of administrative work. The Finnish national core curriculum is the result of a cooperative effort between a broad network of administrators, unions, education providers, schools, educational professionals, parents and a wide range of societal interest groups.

Network collaboration aims to reach an open dialogue and a consensus among stakeholders. In addition, network collaboration in the curriculum process has served in increasing the ownership of education providers, local authorities and schools in the curriculum process. This consensus policy has been a successful effort. Finland has well functioning practices and a strong working tradition of renewing curricula, and this is seen through the involved curriculum process. Developing and establishing structures for collaboration have been a central part of this.

During the latest national core curriculum renewal process, in 2012–2014, a new means for fostering the collaboration and open dialogue between the administrators and society was introduced. Throughout the renewal process, the drafts of the new core curriculum for basic education were posted on the website of the Finnish National Board of Education for public commentary and feedback. During the first commentary period in November-December 2012, 1,120 comments were received regarding the general part of the curriculum, which describes the mission, values, and structure of education. During the second commentary period in April-May 2014, 2,517 comments were given concerning the draft of the whole curriculum document, which included the general and subject-specific parts. Commentators were required

to provide their real name and, optionally, their background organization. The comments were all public and visible on the website during the commentary period. The comments were given by teachers, heads of schools, various organizations, research groups, university staff, student unions and parent unions. The public online commentary system provided a new and easily accessible way for individuals and organizations to influence the new curriculum.

Broad topics in the first commentary period included, for instance, educational equality, new learning environments and sustainable development. Educational equality, the corner stone of the Finnish education system, received a great deal of attention and was discussed from several points of view, including the definition of educational equality, gender sensitivity in teaching, gifted pupils' individual needs, and the different amount of resources allocated to ICT in municipalities. Moreover, the use of authentic, out-of-school learning environments and multi-professional collaboration with the surrounding community were regarded as important. Additionally, several comments contributed to the importance of sustainable lifestyles, education towards global justice, responsibility in teaching, and schools' everyday practices (Rikabi-Sukkari, 2014).

The comments received in April-May 2014 were mainly positive. At this stage, the curriculum was nearly ready and included both the general guidelines and the subject-specific sections. Based on the given comments, the curriculum was seen to be future-oriented, and strongly supported the drawing up of local curricula. Issues related to personal growth, sustainability, participation and equality were regarded as important and many commentators expressed the desire to further foster these elements in the final curriculum. About 90% of the commentators agreed with the main areas of focus in the curriculum and about 75% thought the curriculum structure was clear (Finnish National Board of Education, 2014b).

Generally, the given comments dealt with broad issues related to the social meaning of schooling in Finnish society, and provided an overview of the current Finnish educational policy discussion. The comments were analytical and well argued, and included both positive and critical feedback. The topics reflect the values and topics the commentators deem important for the future in terms of developing the Finnish school and society.

FINNISH CURRICULUM DESIGN

The Core Elements of the Finnish National Core Curriculum

The national core curriculum is the pedagogical foundation for the organization and implementation of education. It sets the goals and general guidelines for development of school culture, learning environments and working methods as well as pupil assessment and support for learning.

What is noteworthy is that Finland does not have a purely competence-based curriculum due to the legislation, which rests strongly on a subject-based academic

tradition. However, for the first time in the Finnish curriculum tradition, seven competence areas were defined:

- Thinking and learning to learn
- Cultural competence, interaction and expression
- Participation and influence, building a sustainable future
- Multiliteracy
- ICT-competence
- Working life competence and entrepreneurship
- Taking care of oneself and others, managing daily activities, safety
  (Finnish National Board of Education, 2015)

These competence areas cover each subject and, therefore, subjects are responsible for building pupils' competencies. The goals of the competences are linked to the subject-specific objectives (Finnish National Board of Education, 2014a). The new curriculum aims to build a clear connection between the traditional subjects and new competence areas. When compared to other competence definitions, the competence areas of the Finnish core curriculum stress well-being, health and safety, and they synthesise a variety of competence definitions, including elements, for example, from 21st century skills.

Another new element in the Finnish curriculum is the inclusion of multidisciplinary learning modules, which seek to build connections and collaboration between subjects. Each school is obliged to build at least one multidisciplinary learning module for each grade every school year. The definition of the aims, contents and implementation of these learning modules is also decided locally, and thereby the schools plan, define and implement the learning modules (Finnish National Board of Education, 2014a).

Still, the Finnish legislation states that pupils are assessed based on how they have reached the subject-specific aims. This binds assessment to subjects, and competence areas are not directly assessed. Therefore, the local curricula are strongly based on determining the subject-specific aims and contents.

The Ideological and Pedagogical Background of the Finnish National Core Curriculum

In practice the dual structure of the Finnish curriculum design has become a discussion about learner-centred curricula and subject-based curricula. Maybe because of our parallel tradition of schooling before comprehensive school, curriculum renewal in Finland has always been a debate about whether the core curriculum should be subject oriented or take a more integrated view of teaching and learning.

Curriculum design is always based on certain ideologies, which define teaching and learning. Saylor and Alexander (1981) introduce one possible ideological division. They suggest that curricula can be divided into four basic designs, each of which reflects a unique ideology. These include subject-based curriculum, competence-

based curriculum, social functions curriculum and learner-centred curriculum (Saylor et al., 1981; McKernan, 2008; McNeil, 1985; Schiro, 2008). In the field of curriculum design, these types rarely exist as such, rather they characterize the principal idea, on which the curriculum is based.

Curriculum based on *societal needs and functions* relies on socially and historically relevant issues and problems (Kansanen, 2004; Saylor et al., 1981). The *learner-centred curriculum* is about the needs of individual learners and includes information on the interests and needs of certain age groups, as well as individual pupils (Saylor et al., 1981). These two ideologies relate to the pedagogical approach of the curriculum. These ideologies have their own importance in the curriculum discussion; however, the debate usually concerns the balance between integrated curricula and subject-based curricula. Today, the discussion about curriculum integration relates to the role of competences and skills.

In *subject-based curricula* the basis for the goals and content comes from the discipline, therefore mastering the subject specific content becomes the central goal of learning (Pinar, Reynolds, Slattery, & Taubmann, 1995; McKernan, 2008). According to Young (2010), the main international education policy trends include the shift from subject-specific to generic, competence-based curriculum. The *competence-based curriculum* highlights skills and competences deemed central by society. The curriculum defines the skills and knowledge needed to attain these competences, which are also the bases for forming aims and content (Saylor et al., 1981). These two ideologies refer to the construction of knowledge formation in the curriculum.

Although traditionally the Finnish curriculum design for comprehensive school has represented a subject-based approach, it is noteworthy that since the beginning of the 20th century there has been a strong shift towards subject integration among the Finnish educationalists, e.g. Aukusti Salo, Mikael Soininen. The balance between these two different traditions is also at the centre of curriculum design internationally (Eisner & Vallance, 1975). The subject-based approach is embedded in the Finnish curriculum tradition and therefore moving from a subject-based curriculum to a competence-based curriculum would require profound changes throughout the whole education system, most notably to teacher education.

When writing a curriculum the result is always a compromise between subjects and pupil needs. The aim of the renewal of 2014 is to change the school culture, learning environments and pedagogy. The new core curriculum seeks to change the approach from *what to teach* to *how to teach*, aiming to change the school culture, learning environments and pedagogy. The *what to teach* approach emphasizes content whereas the *how to teach* approach highlights pedagogy, learning process and pupils' overall growth (Cantell, 2013, 196; Halinen et al., 2013; Vitikka & Hurmerinta, 2011). By emphasizing the latter approach, curriculum can function as a tool for teachers to develop their own pedagogical praxis. Therefore, the main goal of the latest curriculum renewal was pedagogical development.

REFERENCES

Basic Education Act (628/1998). Retrieved December 18, 2015, from http://www.finlex.fi/en/laki/kaannokset/1998/en19980628.pdf

Cantell, H. (2013). Opetussuunnitelmat ja tuntijakouudistus: arvopohdintaa ja välttämättömiä valintoja. *Kasvatus, 44*(2), 195–198.

Eisner, E. W., & Vallance, E. (1975). *Conflicting conceptions of curriculum*. Berkeley, CA: McCutchan.

Finnish National Board of Education. (2004). *Perusopetuksen opetussuunnitelman perusteet 2004 [National Core Curriculum of Basic Education 2004]*. Retrieved December 18, 2015, from http://www.oph.fi/download/139848_pops_web.pdf

Finnish National Board of Education. (2010, September 13–14). *Basic education in Finland – How to develop the top ranked education system?* Presentation at Building Blocks for Education: Whole System Reform- Conference, Toronto, Canada.

Finnish National Board of Education. (2014a). *Perusopetuksen opetussuunnitelman perusteet 2014 [National Core Curriculum of Basic Education 2014]*. Retrieved Decemeber 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Finnish National Board of Education. (2014b). *Website of the curriculum renewal*. Retrieved June 17, 2014, from www.oph.fi/ops2016

Finnish National Board of Education. (2015). *Website of the curriculum renewal*. Retrieved December 18, 2015, from www.oph.fi/ops2016

Halinen, I., Holappa, A.-S., & Jääskeläinen, L. (2013). Opetussuunnitelmatyö ja yleissivistävän koulutuksen uudistaminen. *Kasvatus, 44*(2), 187–194.

Halinen, I., & Järvinen, R. (2008, March). Towards inclusive education: The case of Finland. *Prospects 145*, *38*(1), 77–97. (UNESCO.)

Kansanen, P. (2004). *Opetuksen käsitemaailma*. Jyväskylä: PS-kustannus.

Lahtinen, M., & Lankinen, T. (2013). *Koulutuksen lainsäädäntö käytännössä*. Helsinki, Finland: Tietosanoma Oy.

McKernan, J. (2008). *Curriculum and imagination*: *Process theory, pedagogy and action research.* London: Routledge.

McNeil, J. D. (1985). *Curriculum: A comprehensive introduction* (3rd ed.). Boston, MA: Little, Brown and Company.

Pinar, W. F., Reynolds, W. M., Slattery, P., & Taubmann, P. M. (1995). *Understanding curriculum: An introduction to the study of historical and contemporary curriculum discourses*. New York, NY: Peter Lang Publishing, Inc.

Rikabi-Sukkari, L. (2014). *Arvokasta opetussuunnitelmakeskustelua [Valuable Discussion on the Curriculum]* (Master's Thesis). University of Helsinki, Helsinki, Finland.

Saylor, J. G., Alexander, W. M., & Lewis, A. M. (1981). *Curriculum planning for better teaching and learning*. Tokyo: Holt-Saunders Japan.

Schiro, M. S. (2008). *Curriculum theory. Conflicting visions and enduring concerns.* Los Angeles, CA: Sage Publications.

Vitikka, E., & Hurmerinta, E. (2011). *Kansainväliset opetussuunnitelmasuuntaukset [International Curricular Trends]*. Opetushallituksen raportit ja selvitykset 2011:4. Retrieved December 18, 2015, from http://www.oph.fi/download/131521_Kansainvaliset_opetussuunnitelmasuuntaukset.pdf

Young, M. (2010). Alternative educational futures for a knowledge society. *European Educational Research Journal*, *9*(1), 1–11.

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7. RESEARCH-ORIENTATION IN A TEACHER'S WORK

ABSTRACT

Finnish teacher education is research-based and all teachers are educated to the master's level. Every teacher also writes a Master's Thesis as part of his or her studies. During teacher education, we emphasize the importance of the teacher's pedagogical thinking, personal practical theory, reflection, and inquiry-orientation, and these are also practised in many ways during theoretical as well as practical studies. But how are the skills provided by this research-based teacher education realized in a teacher's work? What does inquiry-orientation mean in reality? What do the teachers do when they 'research their own work', or the community is committed to inquiry-orientation? We asked 135 teachers these questions. We wanted to know specifically what they understand by inquiry-orientation, how it is realized in an individual teacher's work, and how it is realized in the school community. The responses were very multifaceted, and it became clear that the teachers understood inquiry-orientation to be a complex phenomenon. It was seen, for example, as everyday work, where a teacher develops and educates him/herself. It also meant reflection, doing things in another (new) way, getting feedback, and using inquiry as a method of teaching.

Keywords: research orientation, teacher's work

INTRODUCTION

The aim of Finnish teacher education is to educate inquiry-oriented teachers; this is stated in many publications (e.g. Jakku-Sihvonen & Niemi, 2006, 2007). Research-based teacher education is based on the teacher's pedagogical thinking, that is, how a teacher thinks and makes decisions, and, particularly, how the teacher justifies these (Kansanen, 2006; Kansanen, Tirri, Meri, Krokfors, Husu, & Jyrhämä, 2000). The transformation took place at the time teacher education was made the responsibility of universities along with the change to a knowledge society – in other words the need to be able to find and apply information. Regarding teachers, these ideas produced the need to be able to 'read' the scientific literature. In every-day work this means that teachers should be capable of analysing and assessing their own work,

H. Niemi et al. (Eds.), Miracle of Education, 91–105.

and developing their work alone as well as with others. Especially reflection and the development of cognitive and metacognitive skills are important considerations for managing the changing demands, environments and surroundings of today's teacher's work.

Being an inquiry-oriented teacher is considered to mean that the teacher can integrate theoretical and practical knowledge, and based on this, form a continually developing personal practical theory. Thus research orientation needs to be understood as a way of working and thinking rather than merely producing research. "Research orientation" as well as "the academic nature of teacher education" are well known slogans for our graduates. But how are they understood concretely? What do these slogans mean to teacher educators or teachers?

TEACHING IN FINNISH SCHOOLS

Statistics of Schooling in Finland

School work is regulated by the laws of Finland. For example, the Basic Education Act (628/1998) states that first and foremost, pupils should attend the neighbourhood school that is the closest to their homes. The Basic Education Act also states the length of the school year, which is 190 days. The law (amendments) also determines the length of the school day for pupils; in kindergarten, first and second grades the school day may not be longer than five hours, and for the older pupils (grades 3–9), the school day may last up to seven hours. One hour means 45 minutes, but "hours" are grouped together to form longer teaching periods.

The teachers' working days are longer than the pupils'. The primary school teachers arrange divided group teaching, so that only half of the class is present at a certain time. Primary school teachers may also teach some subjects to other classes, especially if they are specialized in certain subject(s). Teachers' weekly teaching hours vary between teacher categories and subjects. These hours are determined in negotiations between the teachers union and the employer's representatives, and they are stated in the collective bargaining contract. The weekly teaching hours are shown in the following table (Table 1). Teachers do not have hours set aside for planning or evaluation, like in some other countries. The average working week in Finland for many occupations as well as professions is 38 hours. This is also what is considered an approximate total of weekly working hours for teachers, although, it is not determined specifically, neither is it monitored in any way.

The average classroom size (19.8 pupils) in Finland is a little bit smaller than the average size in the OECD countries (21.6 pupils). In the upper comprehensive school, the difference is even greater; in Finland there are 20.1 pupils per class, whereas the average for the OECD countries is 23.9 pupils per class (OECD, 2010).

Table 1. Finnish teachers' weekly teaching hours (OVTES, 2014–2016)

Teacher category	*Hours/week*
K–6 teachers (primary)	
Kindergarten teacher	23
Class teacher (primary teacher)	24
Special education teacher (K–12)	24
Special education class teacher	22
Subject teachers	
Mother tongue teacher (Finnish/Swedish)	18
Second official language teacher (Swedish/Finnish)	20
Mathematics, physics, chemistry, ICT, arts, music teacher	21
Religion, ethics, philosophy, history, social sciences, home economics, health education, biology, geography teacher	23
Crafts, physical education, student counselling teacher	24
Other	23

The Everyday Life of a Finnish Teacher

The fundamental task of a teacher naturally is teaching. The lessons, however, are only the visible part of a teacher's everyday life: prior to the contact hours, lessons are planned, and after classes, they are evaluated, followed by planning the next lessons. Teachers, especially in primary schools, are in close contact with parents, as well as cooperating intensively with other teachers and other school personnel. Besides those contacts, the teachers create relationships outside of school, depending on the surroundings and possibilities of that particular area.

The traditional idea of a teacher was that the teachers were "the heart of the village", the appreciated disseminators of knowledge to the entire community. From those times, society has changed to become much more complex. However, in Finland, what has remained from those times is an appreciation of teachers. This is shown clearly when appreciations of different professions are compared. It is very interesting to look at a survey conducted by one of the biggest Finnish periodicals, *Suomen Kuvalehti* (*The Finnish News Magazine*), on how various occupations are valued. These kinds of surveys have been carried out for several years.

It is quite clear that Finns appreciate occupations in the area of health care. Appreciation of the teaching professions is also evident in Table 2. Among the different kinds of teachers, special needs teachers, kindergarten teachers and speech therapists rank higher than class teachers and subject teachers. These highly

Table 2. The appreciation of certain occupations in Finnish society (Suomen Kuvalehti, 2004, 2007, 2010)

Profession	*2004*	*2007*	*2010*
Surgeon	1	1	1
Fireman	5	2	4
Nurse	9	6	10
Special needs teacher	23	21	22
Kindergarten teacher	34	22	31
Speech therapist (teacher)	27	28	37
Psychologist	31	33	26
Professor	33	41	39
Class (primary) teacher	46	40	42
Subject teacher	72	66	62
Salesman (door-to-door)	380	381	380
Ranked occupations total	380	381	380

appreciated variations of teaching are most likely associated with the same kinds of characteristics seen in health care or in the occupation of fireman. The common denominator might be helping other people and peaceful living in a safe society.

Teacher education provides the teachers with a very good theoretical basis, but it seems that the beginning of their careers is still very demanding. Especially in the early years, the challenges that the novice face are difficult. Most of the feelings that the novices have during the first year are negative (Blomberg, 2008). It is also a fact that in Finland, approximately 5–10% of new teachers leave the teaching profession during their first 2–5 years. Although new teachers are supported through peer mentoring, which offers the possibility to discuss work with teachers in the same phase of their teaching careers, still the support provided may not be enough.

Many changes have taken place in teachers' work during the last decades in Finland. More and more teachers have other duties besides teaching. They need to be able to differentiate between their skills even more, due to two facts. The first fact is the increasing number of pupils that need special education. The other is a new law that guides teachers very clearly in dealing with students who may have special needs. The law has a concrete effect towards more inclusive and integrated schooling. Children who have special needs attend neighbourhood schools, i.e., the ones closest to their homes, and they are, if possible, included in the regular classroom activities, but provided with a special learning plan, or an aid. This poses new challenges to teachers.

For a teacher's survival, personal characteristics play an important role, but besides them, interactive skills, a positive attitude, professional identity, creativity and self-reliance are important. The work organization can promote teachers' survival through communality, a clear and functioning culture of collaboration and induction for new teachers (Aho, 2011).

TOWARDS INQUIRY-ORIENTED TEACHING

As mentioned already, Finnish teachers are educated for inquiry-orientation. The aims are also for a high quality academic content knowledge as well as pedagogical content knowledge, besides meta-level knowledge, for example, of different learning theories.

Future teachers are also expected to internalize the rules of social and moral conduct. Furthermore, it is thought that the pedagogical skills as well as the ability to reflect act as bridges between academic and professional development (Niemi & Jakku-Sihvonen, 2006, 40–45).

During teacher education teaching practice is the course closest to the actual teacher's work. In these practicum periods the candidates, in fact, practice analyzing and examining the act of teaching. The connecting of school pedagogy and university pedagogy brings along both the academic, as well as professional, viewpoints of the work. Also the dialogic method of supervising the teaching practice together with peer students as well as mentors emphasizes its inquiry-orientation (see Jyrhämä, 2006).

The Teachers' Conceptions of Research-Orientation

We asked teachers to define what research-, or rather, inquiry-orientation means to them in their everyday work. We received answers from 135 teachers altogether in two phases. Firstly, we reached 31 teachers through a web-based survey, of which 16 were primary school teachers, and 15 were subject teachers in secondary schools. All of the teachers worked in university partnership schools and have acted as teaching practice mentors for student teachers. The teachers gave their opinions about inquiry-orientation in their work as well as in the community's service. Secondly we collected handwritten definitions of inquiry-orientation from 104 teachers, who participated in a mentor course. Of this group, 34 teachers were primary school teachers, and 70 were subject teachers in secondary schools or in adult education. We describe below what the Finnish teachers thought about inquiry-orientation in their work and the school community.

Inquiry-orientation in an Individual Teacher's Work

Based on the answers, teachers said that inquiry-orientation is part of an individual's everyday work; most of all, this means that the *teacher develops as a teacher, and*

tries to educate him/herself. They considered it to mean, for example, bringing new issues to the school life, being an active developer, or aiming to improve teaching. Later, they mentioned issues such as an interest in educational research, documenting work, changing operating procedures if needed, conducting sociograms of the classroom's social relationships, as well as educating one's self and reading the literature.

> Inquiry-orientation in a teacher's daily work is shown as an all around interest towards developing one's professionalism. It is necessary to learn new things and continuously develop one's teaching. An inquiry-oriented teacher is eager to investigate the subject matter from many viewpoints. (Home-economics teacher, female)

> An inquiry-oriented teacher wants to find out about things and is willing to professionally develop in his/her work. (Subject teacher, female)

They also considered *evaluating one's own action* as important, more specifically, analysing one's own failures, or reflecting on issues that need to be changed. They also mentioned thinking together with students about why something did not work. They stated that justifying one's action is part of an inquiry-orientation, as well as constructing a memo or a portfolio of one's experiences.

> An inquiry-oriented teacher is courageous enough to break routines. This includes the ability to analyse different classroom or learning situations, and develop them further, for example, based on the feedback from students (e.g. test results, the acquisition of information, learning of basic skills). (Home economics teacher, female)

> Boldness to change something that does not work with reflection on one's work as a basis. (Subject teacher, female)

> The teacher reflects on his/her own work continuously, and wonders how things could be done differently. The teacher discusses about teaching and class situations also with colleagues, and takes advantage of peer support. A teacher can also ask for feedback from students. She/he could think with the students, for example, if some method did not work as well as was hoped for. (Subject teacher, female)

A constructivist view of teaching was also one viewpoint of inquiry-orientation that they brought up. They thought that their responsibility was to guide students to the sources of knowledge, instead of giving them ready-made answers. According to the teachers, teachers need to teach their students how to look for information, as well as approach new topics with a questioning attitude. They also mentioned student centred teaching as belonging to the inquiry-orientation.

> Inquiry-orientation in my opinion is that issues are investigated with curiosity. Asking questions and seeing problems are an integral part of learning. Not so much just the answers. (Subject teacher, female)

The teachers also thought that *multiple methods* in teaching were part of inquiry-orientation. This did not only mean doing experiments or *inquiries in the classroom* (which was also one aspect of inquiry-orientation), but more general varieties of teaching methods and styles, for example, field trips.

> The teacher develops and thinks about different methods for teaching, so that the teaching would be suitable for each student, and appropriate for his/her level. The teacher needs to keep up with modern times. (Home economics teacher, female)

> Inquiry-orientation means that the teacher has the courage to act differently and change viewpoints, modify ways of working from the social arrangement of the classroom to the teaching materials, and everything in between. (Primary teacher, female)

Cooperation with colleagues was mentioned, this referred to sharing ideas and developing them further, as well as taking advantage of peer support and discussions in the staffroom about current issues. It also meant *cooperation with partners that are outside the school community.*

> It is realized in the teacher's reflection. One critically ponders on his/her ways of working, pedagogical thinking and action. An inquiry-oriented teacher discusses with his/her colleagues about, for instance, testing a new teaching method, etc. (Home economics teacher, female)

> Sharing, informal visits with each other, new ideas, time to improve old ones. (Subject teacher, female)

The teachers also mentioned an *active, societal and critical orientation* as a feature of research-orientation in their work. This meant both that the teacher her/himself is an active citizen and follows societal issues, but also that she/he brings those issues into the classroom as the content of teaching and seeking extra information and using it in teaching.

> Inquiry-orientation is shown in a continuous observation of the environment, comprehensively following different media, development of one's own know-how and thinking, not forgetting to encourage students to do the same, as well as pursuing inquiring and critical studying methods. (Subject teacher, female)

> One has to be interested in the changes and developments that take place around us all the time (i.e. keep up with the times). Teachers must have the

> ability to deliver this to the students in a complex manner as well as thinking and planning well. (Primary teacher, male)

They also stated that *relationships with students* in the classroom were important. This meant, for example, that the teacher should be sensitive to the classroom climate, and take different learning styles into account. Furthermore, the teachers thought that inquiry-orientation meant that a teacher should be interested in finding out how individuals learn, should be persistent, and able to tolerate chaotic and uncertain situations in the classroom.

> An inquiry-oriented teacher wants to try something new and take on new challenges. Is interested in other things besides his/her work – the world around us. She/he brings these influences to the classes and discusses issues with the students. (Primary teacher, female)

Collecting feedback from students and evaluating and changing one's own teaching based on these evaluations is part of the inquiry-orientation according to these teachers. Inquiry-orientation for an individual teacher also means that the teacher is *attentive to evaluation*, and by this, they mean that the teacher needs to be curious about how the student has thought about his/her answer (in a test). It also means that the teacher should conduct systematic follow-up of their students' learning.

> A teacher should be aware of the child. The teacher should know the child's background and her/his problems and strengths. She/he should support the child and provide him/her with different instruction styles. The teacher should want to find out about different learning styles and ways. (Primary teacher, female)

> The teacher should try different ways of working in his/her work open-mindedly. She/he also learns from her/his students. (Primary teacher, female)

These teachers mentioned that inquiry-orientation also involves teachers *mastering the subject contents* and the curriculum and they should be able to connect different issues and master larger entities.

> Everything starts from the planning of the lesson, making timetables of what and how the student studies the material, how the knowledge is dealt with and further developed. It is collecting materials, working on them and forming things with open eyes. (Subject teacher, female)

In conclusion, we can state that inquiry-orientation for an individual teacher's work is a very multifaceted phenomenon. There are many aspects to it, and many ways to understand it. In Table 3 we have summarized the main content classes. Here we will present the themes, since more specific reporting of the data will be done in a research paper that will be published later.

Table 3. Inquiry-orientation in an individual Finnish teacher's work

Content class
Develop and educate (oneself)
Evaluate one's own action
Constructivist view of teaching
Using multiple methods in teaching
Cooperation with teachers or other people in the school
Active, societal and critical orientation in teaching
Inquiry as a method in teaching
Relationships with students and the class
Collects feedback
Evaluation
Subject (content) knowledge

Inquiry-orientation in the Practice of the School Community

In school community practice, inquiry-orientation took a slightly different shape in the teachers' opinions (see Table 4). Mostly they thought that it meant *concrete solutions* and organizing things in the school, such as the sharing of materials, planning and teaching together or in teams. They also mentioned flexible teaching arrangements, and having resources for field trips.

> As a community, we can act so that we develop good new ways of working that help us to achieve the goals we have set. We also can give up old ways. (Home economics teacher, female)

Inquiry-orientation also meant *cooperation,* at many different levels. For example, the teachers mentioned cooperation in planning, in realization, as well as in brainstorming. They mentioned sharing ideas and suggestions with colleagues as well as concretely working together, for example, as a co-operative teacher.

> Inquiry-orientation is shown, in the best case, as cooperation with a colleague. (Subject teacher, female)

> Is seen in collaboration between teachers. (Subject teacher, female)

For them, inquiry-orientation also meant that the school is an *active operator in constructing a systematic follow-up and actively develops itself* based on these constructs. The teachers mentioned that there should be continuous development of different operational models, that the school should conduct systematic surveys concerning the work climate (for teachers), as well as surveys of students' skills in

their mother tongue and mathematics. The school also needs to survey the parents' opinions, and not forget the teachers' views of the school's operating procedures.

> Inquiry-orientation in a community is seen as consideration of others, and developing best practices for the entire school community. (Home economics teacher, female)

One important factor in the school community was *attitude,* which mostly meant an open, positive attitude towards change, development and further education. It also referred to (personal) commitment or the principal's attitude.

> In the practices of the school community, inquiry-orientation is found, for example, in encouragement towards self-development (i.e. in-service education) from the management, as well as organising well-working ICT, and a general atmosphere favourable towards inquiry-orientation. (Subject teacher, female)

Just as in the personal accounts of inquiry-orientation, the idea of using *inquiry and research as a teaching method* in the school community also surfaced in the classroom, as well as organizing field trips, or laying out a garden where the students could grow plants.

Other issues that the teachers mentioned included *justification of actions*, which means that the school community needs to be able to justify their actions pedagogically, be able to change their actions if needed, as well as being willing to question old habits or routines. The teachers also mentioned that the school should find out 'what works best' together.

> For the school community, inquiry-orientation is shown in the encouragement of students, especially towards being critical and question matters. Different school projects should be initiated by students and not given in a top-down manner. The school community should be able to evaluate itself, and not become stuck doing things "the way they have always been done". (Subject teacher, female)

One issue that the teachers mentioned was *collecting feedback* and sharing it with colleagues, as well as taking feedback into account when planning future action.

Another aspect of inquiry-orientation was *the conversational culture of the school.* They mentioned that discussion was important in the working community, as well as a positive climate and culture for discussion.

> Inquiry-orientation in a school: communal development, collaboration across subject disciplines. (Home economics teacher, female)

> There are different pedagogical discussions within the teaching community. Trying out, for example, cooperative teaching, and reflecting. Encouraging each other to read new research literature, giving literature hints. (Home economics teacher, female)

> The school community spends time together reflecting on progress and teaching success. Planning improvements together, where these are necessary. (Subject teacher, male)

Summing up the inquiry-orientation on a school community's level, we can state that it also has a very complex profile. There are issues that touch upon individual teachers but there are also others that the entire community can influence. The role of the principal was also mentioned in creating an inquiry-oriented school community.

Table 4. Inquiry-orientation in the school community's practice

Content class
Concrete solutions and organization
Cooperation
Operational follow-ups & development
Attitude, support, supporting structures, education
Inquiry as a teaching method & expert lectures & field trips
Justifications for action and preparedness for change
Collecting feedback
Conversational school culture

Teacher Educators' Views of the Research-based Approach

We have researched the conceptions concerning the research-based approach of teacher educators (Krokfors, Kynäslahti, Stenberg, Toom, Maaranen, Jyrhämä, Byman, & Kansanen, 2011). We wanted to critically inspect how teacher educators understand the research-based idea of teacher educators and how they appreciate it. The results showed that teacher educators appreciate the research-based approach to which the university is committed, although they were sceptical about how well this vision can transfer to the students. The main findings indicated that the teacher educators understood the research-based approach as firstly, *the organizing theme* of teacher education *(the concept),* as can be seen from the following citation:

> The inquiry-oriented teacher … has been a sort of mantra [in our department] for some twenty years now, coming from America, and I think it's a very important thing. (Interviewee 6)

Secondly, they understood it as *the context*, which refers to the academic environment and higher education:

> [by doing research] we take our place in the university, without research we wouldn't be here …, to be academic always means that there is research involved. (Interviewee 6)

Thirdly, the teacher educators thought that if teacher education is research-based, research needs to be incorporated in it *(the content).*

> How [the research-based approach] appears in the studies, it's the Master's thesis that the students do on their own, and the methodological studies … It's typically part of the thesis work for the student to familiarise himself or herself with the research literature, and courses on educational theory also help, as well as reading books. These all provide the student with a basic understanding of educational research and its wider context. (Interviewee 7)

Fourthly, the teacher educators understood the research-based approach as *the goal* of teacher education, in other words the teachers' pedagogical thinking:

> Given the numbers of pupils in the classroom, the teacher has to make several kinds of decisions at the same time and separately, dealing with pedagogy, aims, the curriculum … technical details, as well as philosophical-social-historical issues. (Interviewee 4)

The teacher educators also assessed the relevance of the research-based approach to the teacher's everyday work. According to them it was clearly relevant. For example:

> Speaking of self-development, a [inquiry-oriented] teacher is able to develop him- or herself in a better way than one who just has a set of familiar old tools – but what happens when something new comes up? (Interviewee 1)
>
> (For the full results, see Krokfors et al., 2011.)

Student Teachers' Views of Research-based Approach

We asked our student teachers for their perspectives on the research-based approach. What their attitudes towards the approach are and what kinds of experiences they have concerning the realization of the research-based approach in their studies. According to our results, the students appreciate the research-based approach as the main organizing theme of teacher education. They presume that this approach is detectable in every part of their studies, as was the case in most of the courses. There are some differences between courses dealing with various aspects of pedagogical content knowledge. The students saw a research-based approach as being less important in courses of the didactics of arts, music, craft and physical education than in more theoretical courses. Presumably, courses that deal with skills and 'doing' were considered practical and others theoretical. The means of the final practicum were also rather high. In the final practicum the students should be able to combine all the theoretical knowledge that they have gained during their teacher education studies with their practical performance in the classroom. As a whole, the relatively high means indicate that the students have, in principle,

accepted the idea of a research-based approach in their studies. The students expected a more research-based approach than the courses actually contained. The students appreciated the high level of the master's degree studies. In other words, they thought it valuable that teachers have rather long academic studies instead of a more practical teacher training and they felt that it was important that methodological courses started sufficiently early in the studies. It seems that the students have comprehended the basic idea of the curriculum of teacher education and this is very encouraging (Jyrhämä, Kynäslahti, Krokfors, Byman, Maaranen, Toom, & Kansanen, 2008).

WHAT DOES THIS MEAN?

Being an inquiry-oriented teacher in the international literature often refers to a teacher who conducts inquiries as part of his/her teaching, in other words, inquiry as a teaching method. As we can see from the thoughts and views of these Finnish teachers, their conceptions are much broader. They have mentioned inquiry as a teaching method, but being an inquiry-oriented teacher means much more to them. It is a stance, close to being a reflective teacher. According to Zeichner and Liston (1996, p. 6) a reflective teacher (1) examines, frames, and attempts to solve the dilemmas of classroom practice, (2) is aware of and questions the assumptions and values he or she brings to teaching, (3) is attentive to the institutional and cultural contexts in which he or she teaches, (4) takes part in curriculum development and is involved in school change efforts, and (5) takes responsibility for his or her own professional development. Based on the conceptions, it seems that the views of the teachers come close to Zeichner and Liston's (1996) definition.

Terms such as 'reflective inquiry, practitioner research and action research' (Lunenberg, Ponte, & Van De Ven 2007) have a close connection to certain aspects of reflection, and to some degree may be seen as synonymous to *reflective practice.* Based on Schön's (1987) work, Zeichner (1990) concludes that practitioners can be helped to use their own teaching as a form of research aimed at the improvement of practice, and that research-based teacher education involves efforts to encourage and support teachers' inquiries into their own practices.

It is noteworthy that no teacher specifically mentioned that part of inquiry-orientation is conducting research, whether as a teacher researcher, action researcher, or formal (i.e. doctoral) researcher. This is intriguing, since teacher research has been such a 'hot potato' in various countries including Finland for some decades, now.

Furthermore, it interesting that the teachers brought up various issues that are very close to what Castle (2006) discusses with regard to teacher research and autonomy: Castle (2006, p. 1096) states that teacher research gives teachers the knowledge and confidence to act as responsible professionals and that this is linked to autonomy in teaching. "Autonomy, the ability to make intellectual and moral decisions by considering various perspectives and deciding based on what is in the

best interest of all, enables teachers to exercise their professionalism. Autonomous teachers know why they do what they do and can communicate that understanding to others" (Castle 2006, p. 1096).

Based on our results, it seems that teachers' inquiry-orientation is first and foremost an attitude towards one's work. The focus is on the development of one's self, as well as the development of the school community, alternative ways of working, reflection, dialogue, feedback etc. These teachers are a group of very cognizant people, because some members of the group are teaching practice mentors, and other members will become mentors. Thus, they are interested in the school-university partnership. It also seems that the main organizing theme and ideology of the teacher education has been very well adopted in the field.

Furthermore, we encourage student teachers to conduct 'real' research on the practice of teaching in a so-called "research practicum", in which the main point is that a student combines collecting data for his/her research during the teaching practice period. Quite often this is in reality some sort of teaching intervention (see Jyrhämä, 2011; Jyrhämä & Maaranen, 2008). The teaching practice environment – both teacher training schools as well as field schools – support this inquiry-orientation due to their task as providers of the teaching practice experience. Many of the mentor teachers also become interested in further education in the form of doctoral studies (see e.g. Syrjäläinen & Jyrhämä, 2008).

We aim to enhance the collaboration between schools and the universities, because it seems to be an effective, refreshing element for both parties, and it is extremely important for the future dialogue between academics and practitioners.

REFERENCES

Aho, I. (2011). *Mikä tekee opettajasta selviytyjän?* [What makes a teacher a survivor?] (Acta Universitatis Tamperensis 1470). Tampere: Tampere University Press.

Basic Education Act. (1998). Retrieved from http://www.finlex.fi/en/laki/kaannokset/1998/en19980628.pdf

Blomberg, S. (2008). *Noviisiopettajana peruskoulussa. Aloittelevien opettajien autenttisia kokemuksia ensimmäisestä opettajavuodesta* [As a Novice Teacher at Comprehensive School. The authentic experiences of the beginning teachers during their first year of teaching]. Helsingin yliopisto. Käyttäytymistieteellinen tiedekunta. Soveltavan kasvatustieteen laitos. Tutkimuksia 291.

Castle, K. (2006). Autonomy through pedagogical research. *Teaching and Teacher Education, 22*(8), 1094–1103.

Jakku-Sihvonen, R., & Niemi, H. (Eds.). (2006). *Research-based teacher education in Finland – Reflections by Finnish teacher educators* (Research in Educational Sciences 25). Turku: Finnish Educational Research Association.

Jakku-Sihvonen, R., & Niemi, H. (Eds.). (2007). *Education as a societal contributor*. Frankfurt-am-Main: Peter Lang.

Jyrhämä, R. (2006). The function of practical studies in teacher education. In R. Jakku-Sihvonen (Ed.), *Research-based teacher education in Finland – Reflections by Finnish teacher educators* (pp. 51–69). Research in Educational Sciences 25. Turku: Finnish Educational Research Association.

Jyrhämä, R. (2011, April 7–12). *The theory-practice relationship in teaching practicums*. A paper presented in the American Educational Research Association annual congress "Inciting the Social Imagination: Education Research for the Public Good", New Orleans, LA.

Jyrhämä, R., & Maaranen, K. (2008). Tutkimuspraktikumi – maisteripraktikumin ja pro gradu –tutkielman integrointi [Research practicum – integrating master's practicum and master's thesis]. *Didacta Varia, 13*(2), 17–30.

Jyrhämä, R., Kynäslahti, H., Krokfors, L., Byman, R., Maaranen, K., Toom, A., & Kansanen, P. (2008). The appreciation and realization of research-based teacher education: Finnish students' experiences of teacher education. *European Journal of Teacher Education, 31*(1), 1–16.

Kansanen, P. (2006). Constructing a research-based program in teacher education. In F. K. Oser, F. Achtenhagen, & U. Renold (Eds.), *Competence oriented teacher training. Old research demands and new pathways* (pp. 11–22). Rotterdam & Taipei: Sense Publishers.

Kansanen, P., Tirri, K., Meri, M., Krokfors, L., Husu, J., & Jyrhämä, R. (2000). *Teachers´ pedagogical thinking. Theoretical landscapes, practical challenges.* New York, NY: Peter Lang.

Krokfors, L., Kynäslahti, H., Stenberg, K., Toom, A., Maaranen, K., Jyrhämä, R., Byman, R., & Kansanen, P. (2011). Investigating Finnish teacher educators' views on research-based teacher education. *Teaching Education, 22*(1), 1–13.

Luneberg, M., Ponte, P., & Van De Vev, P-H. (2007). Why shouldn't teachers and teacher educators conduct research on their own practices? An epistemological exploration. *European Educational Research Journal, 6*(1), 13–24.

Niemi, H., & Jakku-Sihvonen, R. (2006). Research-based teacher education in Finland. In R. Jakku-Sihvonen & H. Niemi (Eds.), *Research-based teacher education in Finland: Reflections by Finnish teacher educator*s (pp. 31–51). Turku: Finnish Educational Research Association.

OECD. (2010). *Education at a glance 2010: OECD Indicators*. Paris: OECD Publishing. doi:10.1787/eag-2010-en

OPM. (2005). *Opetusministeriön selvitys koulun työajoista*. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Koulutus/yleissivistaevae_koulutus/perusopetus/perusopetus/opetusministerioen_selvitys_koulun_tyoeajoista/tyoaika23052005.pdf

OVTES. (2014–2016). [Local Government employers]. Retrieved January 16, 2015, from http://www.kuntatyonantajat.fi/en/Pages/default.aspx

Schön, D. (1987). *Educating the reflective practitioner.* San Francisco, CA: Jossey-Bass.

Suomen Kuvalehti. (2004, 2007, 2010). [The Finnish News Magazine]

Syrjäläinen, E., & Jyrhämä, R. (2008). The network of teaching practice schools. A partnership for teachers' professional development and lifelong learning. *LLinE Lifelong learning in Europe, XIII* (3), 208–215.

Zeichner, K. (1990). Changing directions in the practicum: Looking ahead to the 1990s. *Journal of Education for Teaching, 16*(2), 105–132.

Zeichner, K. M., & Liston, D. P. (1996). *Reflective teaching: An introduction*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

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PART III

TEACHING AND LEARNING FOR LIFE: ACADEMIC SUBJECTS

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8. PROMOTING MATHEMATICAL THINKING IN FINNISH MATHEMATICS EDUCATION

ABSTRACT

In this chapter, we outline some of the main characteristics of the mathematics education in the Finnish educational context. In Finland, at both primary and secondary school levels teachers are educated to be autonomous and reflective academic experts. This policy means there is a strong emphasis on teachers' independence and autonomous responsibility and it also has many consequences for teaching mathematics. We start by discussing the main features of Finnish mathematics education through the outline stated in the National Core Curriculum and reflecting on the features of teacher education, which prepares academic, pedagogically thinking teachers for school work. In Finland, mathematics education is highly dependent on teachers and their understanding of teaching and learning mathematics. Secondly, we elaborate the practical and environmental aspects influencing schooling and the way mathematics is taught in Finnish comprehensive schools. The central aspects characterising Finnish mathematics education, such as the distribution of lesson hours, the availability of pedagogically well-structured learning materials and the principles of school assessment, are discussed. To conclude, Finnish teachers responsible for teaching mathematics play a significant role in maintaining and developing the quality of school mathematics education.

Keywords: mathematics education, comprehensive school, curriculum, teacher education

INTRODUCTION

In Finland, basic education in mathematics is carried out by primary school teachers, responsible for the first six years of schooling, i.e., grades 1–6 when pupils are 7 to 12 years old, and by specialised subject teachers, who teach mathematics at the secondary school level in grades 7–9 when pupils are 13 to 16 years old. In practice, Finnish primary school teachers teach more than two thirds of mathematics lessons in comprehensive school. The achievements of Finnish pupils are, at least to some extent, based on the high-level academic teacher education implemented in Finland (see more in Chapter 2). Obviously, the number of initial teacher education courses, which are intended to give student teachers expertise in teaching and

H. Niemi et al. (Eds.), Miracle of Education, 109–123.

learning mathematics, as well as those for student teachers with a special interest in mathematics education, differ for teachers at different school levels. Especially, primary teacher education programmes have always been popular; only about 10 per cent of the gifted and talented applicants are accepted. Even though becoming a mathematics teacher at the secondary school level is less popular, there is no lack of qualified subject teachers in mathematics in Finland. Teachers in Finnish comprehensive schools are not only well educated academic experts with university master's degrees, but they are also motivated, autonomous professionals, who are strongly committed to their work (Simola & Hakala, 2001; Simola, 2002).

The outcomes of Finnish mathematics education have proven to be excellent according to PISA testing (OECD, 2004; OECD, 2010; see more in Chapter 1). This success is actually not surprising considering the development of mathematics education during the past thirty years. Starting in the late 1980s, serious efforts have been made to develop mathematics teaching and learning in schools. At that time, an informal voluntarily established committee, "Mathematics teaching in the 1990s", was formed by experts in mathematics teaching at different levels, including publishers, researchers and administrators. Teachers had an essential role on the committee, which discussed the future and the need for reforms in mathematics education. After two years of continuous informal meetings, a booklet about the main outcomes and recommendations for the further development of Finnish mathematics education, including, for example, some practical ideas and examples of exercises, was published (Halinen et al., 1991). The committee was successful in sketching upcoming and current developmental trends in mathematics education. The booklet became an important trailblazer for future reforms – among others the curriculum reform in 1994.

There has been a clear trend to improve Finnish mathematics and science education in general. In 1995, the National Board of Education launched a national development project, the LUMA –project (LU refers to science and MA to mathematics) that lasted from 1996 until 2000 (Heinonen, 1996). The aim was to strengthen knowledge and skills in mathematics and science education at all levels of schooling, while providing special attention to the significance of learning the respective subjects. There have not been dramatic changes in Finnish education in the 21st century; although the spirit of developmental work and special attention to mathematics and science education is still there. The national LUMA Resource Centre coordinated by the University of Helsinki has continued the developmental work as an organisation that oversees cooperation between schools, universities and industry. The aim of the activities is to promote and improve education in natural science, mathematics, computer science and technology at all levels. However, some critical voices can be heard when discussing the quality and competence of the students entering mathematical programmes in higher education institutions. According to the responsible providers of education, the computational skills and mathematical routines of students starting at their institutions do not meet all their expectations, and therefore the challenge still remains of how to achieve the

learning aims set by the respective study programmes. The Ministry of Education and Culture has launched a national development project for the years 2014–2019 in order to develop the teaching of natural sciences and mathematics in pre- and basic education. The project is administered by Luma Suomi network.

In this chapter, we outline the characteristics of Finnish mathematics education by discussing the teaching and learning of school mathematics, the core idea of mathematics education described in the national curriculum and the school environment influencing the implementation of school mathematics. We elaborate on Finnish mathematics education especially from the perspective of the teachers, who can be seen as autonomous professionals, meaning that they are responsible for the planning, implementation, and assessment of teaching and learning mathematics. As a result of the autonomous role of the teachers, the nature of teaching mathematics in Finnish classrooms is highly dependent on individual teachers.

THE STARTING POINT OF FINNISH MATHEMATICS EDUCATION

There are two essential aspects which have an impact on the way mathematics education is carried out in Finland: the outline of mathematics education described in the National School Curriculum, by which teachers are bound when teaching mathematics in their classrooms, and teacher education organised by the universities. Teachers, both at the primary and secondary school levels, have an essential role in implementing the core ideas of mathematics education.

The Core Idea of Mathematics Education According to the National Curriculum

The previous national core curriculum, the Framework Curriculum for the Comprehensive School (FCCS, 1994) published in 1994 by the National Board of Education was an important basis for successful mathematics education in Finland. Before that, in the 1980s, the National School Curriculum was a more detailed document setting the aims for and describing the contents of various school subjects. The main change took place when the curriculum was written giving special emphasis to the spirit of constructivism. The 1994 FCCS was much more flexible, less centralised and detailed than its predecessors (see more in Chapter 6). All Finnish teachers truly became involved in curriculum planning and writing, although not all the teachers were responsible for mathematics.

Problem solving – both as a method and as content – was set as an underlying principle along with mathematical-logical requirements. In addition, teaching geometry, statistics and number concepts as well as proper basic counting skills were widely discussed. Stress was laid on pupils' thinking and understanding mathematics, and co-operative learning methods were emphasized. In addition, it was clarified in the curriculum that: 'pupils of all ages and all levels should be allowed to build and make models with their hands in order to form correct mental pictures and concepts' (ibid. 83). Various, easily-produced, non-expensive and self-made manipulatives

and a range of exercises were introduced in the support material. In practice, the ethos and practical examples provided in the documents were consistent with the tasks used in PISA testing.

The latest educational and psychological research on learning mathematics was taken seriously into consideration in the 1994 FCCS and consequently, the main changes in mathematics education took place almost 30 years ago. However, it was found to be difficult to put the main ideas of Finnish school education into practice as described in the broad outline, even if additional materials were provided to support understanding (Opetushallitus, 1995) and to practically implement the new ideas of mathematics education. The current core curriculum (Finnish National Board of Education, 2014) differs from the 1990s curriculum in some ways, even if neither the spirit of Finnish comprehensive school in general, nor the underlying ideas of constructivist mathematics education have changed. The current curriculum takes more control over the contents of teaching and learning, and consequently, the overall outline of education is described in more detail. Mathematics education is considered as the basis for developing mathematical and logical thinking, which are seen to be potentially important for societal activities in the future. Since learning mathematics is seen to be abstract and challenging for children to understand, the need to use didactical models and concrete materials such as manipulatives should be addressed in good mathematics teaching. In addition to transforming mathematics into something more visible and concrete, applying mathematical thinking in practice and emphasising the importance of reasoning are also at the focus of the learning goals. Students should learn how to think logically and communicate mathematical processes with other learners. The importance of problem solving skills is stressed. The essential aim of learning mathematics is to acquire a thorough understanding of mathematical concepts and based on that, learn how to apply the acquired knowledge in different situations. In addition, the recent core curriculum raises the importance of improving pupils' self-confidence and positive attitudes towards mathematics. To conclude, the current national curriculum still outlines only the main principles of teaching mathematics in Finnish schools without going into detail. The details are elaborated in the local level curricula.

Teacher Education and the Main Principles of Good Mathematics Education

Finnish teachers have a comparatively autonomous role in teaching mathematics in their classrooms, and therefore, teachers' beliefs, skills and knowledge of mathematics education and their potential to put the ideas into practice matter (Krzywacki, 2009). Teachers face challenges at many levels when they teach mathematics. However, Finnish teachers are committed to addressing these demands and they do so in their own individual ways. This, in turn, puts weight on the quality of teacher education, and how well the initial education of teachers manages to provide a starting-point for expertise in teaching mathematics. Since

each Finnish university is allowed to design its teacher education programmes a bit differently, there are minor differences between the implementation, number, and contents of mathematics education courses (Laine & Kaasila 2007; see more about teacher education in Chapter 2). Here, we will use teacher education at the University of Helsinki as an example.

In the initial primary school teacher education, mathematics education is a special focus among the multidisciplinary courses providing readiness for teaching all school subjects at the primary school level. In practice, the number of credits of the mathematics education course at the University of Helsinki is seven credit points (cp) out of the total 300 credit points comprising the overall programme. In addition to the basic compulsory course, all student teachers teach mathematics during their teaching practice periods, which provides actively mentored and supervised teaching experience (20 cp). Only some of the student teachers specialize in teaching mathematics through extended studies. Some 10 to 15 percent of the primary school student teachers complete 25 credit points of advanced mathematics education courses, comprised of mathematical courses and the courses dealing with teaching and learning mathematics, such as special needs in mathematics education. It is also possible to complete a minor (60 credit points) specialising in teaching mathematics at lower secondary school. Only 5 percent of the students complete these studies comprised mostly of the mathematical courses provided at the Department of Mathematics and Statistics.

In secondary school teacher education, at the University of Helsinki as well as other Finnish universities, a major in university mathematics is the main component of the degree that takes approximately five or six years to complete (see more about teacher education in Chapter 2). The programme is grounded on building up strong mathematical content knowledge, i.e., the programme consists of university mathematics as a major (150 cp), another school subject such as chemistry or physics (60 cp), and one year of pedagogical studies (60 cp) that includes supervised teaching practice modules (20 cp). Pedagogical issues are discussed in general educational courses (20 cp), as well as special features of teaching and learning mathematics in the special courses of mathematics education (20 cp). The production of a small-scale pedagogical dissertation in mathematics education is also part of the studies.

Here, we introduce four themes characterising the spirit of mathematics education that are mediated in pre-service teacher education at Finnish universities. Even if the structure of the teacher education programmes are varied, a common foundation is laid for quality mathematics teaching and learning. First, affective aspects are considered important to studying and learning mathematics. Traditionally, both in Finland and internationally, the outline of mathematics education has been established through describing cognitive aspects and the aims of learning outcomes regarding mathematical skills and knowledge. However, Finnish educators have started to underline the importance of views and attitudes towards mathematics (Hannula, 2004; Pietilä, 2002). The need for improving positive attitudes towards and

interest in mathematics is also mentioned in the current national curriculum (Finnish National Board of Education, 2014). When affective aspects are also considered in outlining educational aims there is a broadening of the traditional learning aims in mathematics education.

Second, the use of concrete materials and didactical models for improving the understanding of mathematical concepts is also seen as an underlying theme of Finnish mathematics education. This is discussed during the teacher education courses, for example, in group activities and when piloting the use of concrete materials in teaching practice. In the teacher education programme at University of Helsinki, the main idea behind number systems is elaborated with the help of concrete materials, which help students to understand the main mathematical concepts and consider how to take this special viewpoint into consideration in their teaching, especially through identifying the difficulties that learners might face when learning the ten-base system.

Third, problem solving and the significance of reasoning and thinking processes are also addressed in the pre-service teacher education. Traditionally, the process of teaching and learning mathematics, whether in Finnish schools or internationally, has not underlined the importance of oral communication and co-operative methods in mathematical processes. However, since interaction with peers enhances the need for communicating about the processes and the reasons underpinning them, co-operative learning and working in pairs or in small groups are regarded as workable methods for promoting skills in problem-solving (Good, Mulryan, & McCaslin, 1992). The emphasis is on learning to process complex mathematical situations in a flexible and creative manner. When working together with others, learners are in a situation where they have to speak about mathematical problems and the phases of the solution process. It is natural to speak about processes and give reasons for making decisions on how to carry out procedures when sharing one's understanding with others.

The fourth theme is related to understanding and supporting students who have special needs and difficulty learning mathematics. Teachers in comprehensive schools, especially those teaching the first grades of primary school, should have a basic knowledge about learning difficulties and dyscalculia, and based on that, be able to recognise learners who might need some extra support in learning mathematics. Often the question is not about serious learning problems but recognising some common misconceptions and mini-theories, i.e., rules and misconceptions developed by the pupils themselves that are common in mathematics (Claxton, 1993). In addition to recognising pupils with challenges in learning mathematics and providing extra support in problematic situations, it is essential to possibly prevent difficulties in learning through taking into consideration the most common mini-theories related to different mathematical content, for example, through using manipulatives in teaching and learning fractions and providing parallel tasks, which help learners in the conceptual changes associated with understanding the characteristics of rational numbers (Merenluoto & Lehtinen, 2004).

IMPLEMENTATION OF MATHEMATICS EDUCATION IN FINNISH COMPREHENSIVE SCHOOLS

In the following, we outline some environmental and practical features that influence the way mathematics is taught and studied in Finnish comprehensive schools.

Distribution of Lesson Hours in Mathematics

In the OECD countries, the total number of hours devoted to mathematics teaching in Finnish schools is greater only than that of the Netherlands (Välijärvi et al., 2002, 262), i.e., 32 hours of lesson hours a week are allocated for teaching and learning mathematics during the nine years of comprehensive school. Time is not wasted on mathematics education in Finnish comprehensive schools, although the number of mathematic lesson hours is higher than that given to most other school subjects. In fact, only mother tongue studies have more lesson hours than mathematics. The Council of State made its latest decision on the distribution of lesson hours in 2012 (The new distribution of lesson hours in basic education).

According to the Council's decision, mathematics must be taught for at least 6 lesson hours a week (i.e. 18 times 45 minutes) during the first two years at the primary level of comprehensive school, at least 15 hours a week during grades 3–6 and at least for 11 hours a week during the three years (grades 7–9) at the upper level of comprehensive school. This means approximately 3 to 4 hours a week at the primary school level as well as at the lower secondary level. In a similar way, the minimum number of hours per week was set for all school subjects as well as the maximum number of hours pupils were allowed to work at school. However, no hourly maximum limits were set for any school subject. In addition, the local curriculum level must be set so that pupils are eligible to continue their studies at the next school level even if they had studied the minimum amount of mathematics set by the decision of the Council of State. Within these constraints, the schools are responsible to make their own decisions about the distribution of lesson hours.

Learning Materials as a Resource for Teaching and Learning

Learning materials, especially pupils' textbooks, have an important role in Finnish mathematics education. Finnish primary school teachers are especially loyal to their mathematics textbooks – as are teachers all over the world. In Finland, primary school teachers have always been very satisfied with the mathematics textbooks and teacher's support materials. According to a study by Niemi (2004), 53% of teachers in the sixth grade found that textbooks are a better base for planning mathematics teaching than the school's own curriculum. This is in conflict with the underlying principle of local level curriculum work. Secondary school teachers have a slightly different attitude towards ready-made learning materials. They rely on their expertise in mathematical content knowledge and specialisation in teaching and

learning mathematics, and therefore, the need for support materials and ready-made pedagogical ideas is different at the primary and secondary school levels. This can be seen also in the supply of support materials.

In Finland, learning materials are produced by ordinary teachers who are interested in mathematics education and currently working at schools. Therefore, they are very familiar with the conditions in schools. Currently, there are several parallel textbooks from different publishers, i.e., 5 or 6 textbooks at the primary level and 4 to 6 at the secondary school level. Even if the textbooks differ slightly from each other, all the learning materials and textbooks are generally rather similar. All textbooks provide various materials for problem solving and statistics, ideas for group work and projects. They also provide a good supply of basic exercises as well as more complicated tasks for all the pupils. There are also collections of challenging tasks for those pupils who are more advanced or/and interested in mathematics. It is the teachers' responsibility to choose the textbooks and other materials for their pupils as well as the teaching methods. It is noteworthy that the quality of the learning materials is not directly equivalent to the quality of teaching, as the teacher can use all kinds of materials either appropriately or otherwise. They can also choose to teach without textbooks if they want to, although this alternative is seldom used.

Teachers' conceptions of teaching and learning materials in mathematics reveal something about Finnish mathematics education. In a case study (Pehkonen, 2004b), nine primary teachers were interviewed about what constitutes good and stable elements in school mathematics teaching and learning. The mathematics textbooks were seen as important tools for teachers in maintaining their teaching at an appropriate level and providing ideas for new ways to teach. This justification was revealed by the teachers speaking appreciatively about the textbooks and their use in mathematics education and about positive accounts of using textbooks. Teachers claim that the textbooks guarantee a stable quality of teaching, since they are considered to be logical and explicit. They contain the essential facts and the tasks are connected to everyday life. In addition, the use of textbooks was seen as a means for teachers to keep their teaching logical and coherent. Mathematics textbooks help teachers with their workloads, because the books provide ready and sensible structures for lessons and enough exercises for the pupils.

Mathematics textbooks were considered to have been written for pupils and their learning processes. Moreover, textbooks were seen to be a source of motivation; they are colourful and the exercises are varied. The pupils' keen interest was seen as evidence of their high quality. Teachers of the youngest children claimed that children love their mathematics books. As nowadays most schoolwork is organised in small groups, teachers find that pupils love those peaceful moments when they are allowed to work alone and proceed at their own pace. The shared belief is that, with the help of textbooks, children can study the facts they are expected to learn.

Nowadays, other kinds of learning materials and computer-aided resources are increasingly used in Finnish schools. Teachers can choose what they use and how

to use these modern facilities in ways that suit their personal teaching styles. Even if Finnish schools are rather well equipped (Eurydice, 2004; Eurydice, 2011), the challenge lies in using these resources in meaningful ways from the perspective of learning mathematics. The technological materials are often related in a complementary way to existing learning materials, such as book series. In accordance with the underlying idea of using concrete materials and didactical models in teaching and learning mathematics, textbooks also include some print versions of manipulatives, for example, materials for illustrating the ten-base system and basic calculations during the first grades in primary school. There are also additional materials attached in teacher guidebooks, for example, geometrical obstacles to be used by teachers in teaching and learning geometry.

In Finland, teacher guidebooks are structured to support teachers in their everyday teaching work. The main idea of the guidebooks is to provide help in designing mathematics lessons and give ideas for implementing the main underlying ideas of mathematics education in Finland. In practice, the pedagogical ideas provided in the teacher guidebooks are presented in parallel with a learner's page view and structured in accordance with traditional parts included in mathematics lessons (see Figure 1: Best practice example).

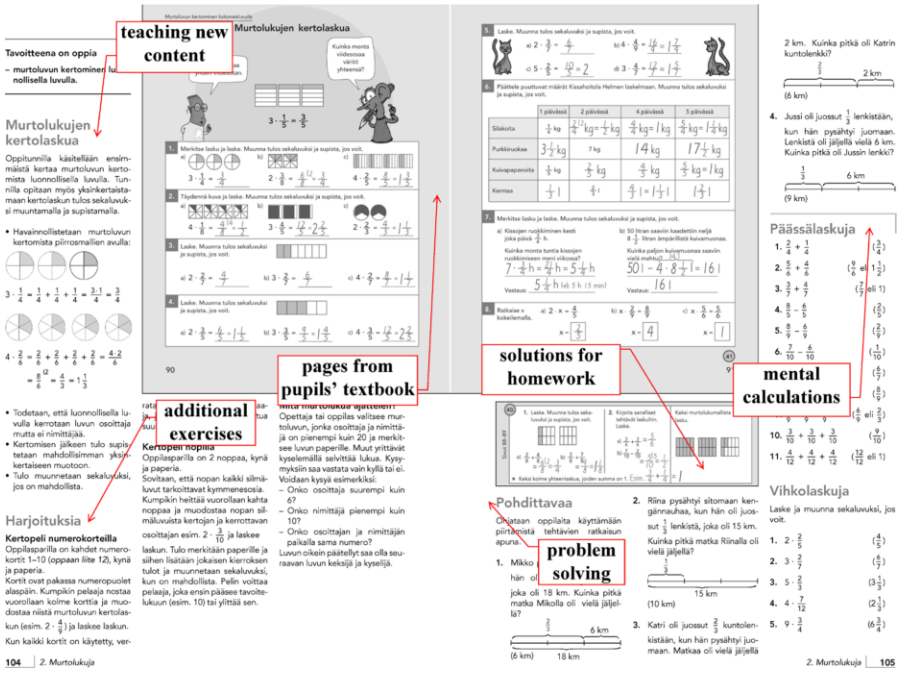

Figure 1. Best practice example: A mathematics lesson in a teacher's guidebook (Lilli et al., 2010)

Teaching Mathematics in Finnish Classrooms

We cannot claim that Finnish mathematics education uses very innovative teaching approaches. The fact is that in teaching in general, especially in mathematics teaching, practices are rather traditional in Finnish classrooms (Andrews et al., 2014; Norris et al., 1996). In mathematics, teaching is mainly teacher-centred frontal teaching of the whole group of pupils but nevertheless the frequency of pupil activity and involvement are high. Although there is a good deal of conservatism in the teaching methods, focusing on this alone does not provide the whole truth. Finnish teachers avoid being too hasty and want to guarantee learning opportunities for their pupils. They try to avoid 'educational entertainment' (Pehkonen, 2007). However, teachers do adopt new ideas and methods that they find meaningful and useful. For example, some teachers have a special mathematics lesson with problem solving or project work once a week. According to Niemi (2004), more than 60% of primary school teachers state that they use a lot or quite a lot of various co-operative teaching methods in their mathematics lessons.

It seems that Finnish teachers have found successful ways to combine traditional teaching methods with some innovative approaches. Some traditions and routines have proved to be very fruitful and the structure of an average mathematics lesson is rather consistent. It has been a tradition for decades that a short time, about a 5-minute session at the beginning of a mathematics lesson, is devoted to mental calculations or some other orientation activity. All teachers' support materials provide a collection of mental exercises for every lesson to help the teachers. Even if the time used for this kind of practice is short, it is repeated from lesson to lesson from one year to the next.

Usually, what follows is checking the homework that was given after each mathematics lesson in order to repeat the main points of the previous lesson. However, even if Finnish pupils use less time on their regular mathematics homework than their peers in most OECD countries (Välijärvi et al., 2002, 262), homework has a special role in Finnish mathematics classrooms. Most teachers make a quick round of the classroom and make sure that all the pupils have completed their homework. Usually, difficult or complicated tasks are explained by selected pupils to the rest the class. Consequently, the pupils are regularly given plenty of feedback about their homework. Negative feedback is not given if pupils are unable to complete their homework but their parents are informed if they do not do their homework.

The lesson continues with the teacher introducing and teaching new topics, which is followed by individual work through tasks that help the learners study and acquire the knowledge set in the lesson aims. The guidebook highlights some essential pedagogical ideas that a teacher should take into consideration when discussing a topic. A large proportion of mathematics lessons are devoted to silent, individual work. The pupils can practise at their own pace and teachers help those who need support. Individual work is very consistent with the ideas of constructivism, although

it is not a new and modern way of working. Homework is usually given to the pupils at the end of the lesson to promote the learning process.

Assessment Policy

As Finnish teachers have a considerable amount of decision-making authority in schools they can, among other things, determine quite a lot of their course contents and pupil assessment policies. Finnish pupils are not assessed by national tests or examinations, which emphasise the importance of teacher-conducted assessment practice. On the national level, the outcomes of the Finnish comprehensive school are followed only by sample-based surveys at the end of the sixth and ninth grade of comprehensive school. The results are published only at the system level, while the results of individual schools are delivered exclusively to the schools concerned.

In the 1990s, the principles of pupil evaluation were reformed in conjunction with the curriculum reform. The main principle was no longer to find differences between pupils – as it had been earlier – but to improve pupils' learning. The main goal was to determine how to help pupils better understand mathematics. Various methods in pupil assessment were introduced, for example, how to evaluate pupils' mathematical processes and how to evaluate products. At that time, pupil self-assessment was a totally new idea in Finnish education, but very soon it was adopted at all school levels. Assessment is seen as a natural part of the learning process and informs both the teacher and students about teaching and learning mathematics.

All Finnish teachers are taught to design and implement assessments in mathematics during their pre-service teacher education. Primary school teachers are capable of designing their own tests and assessment tools. All primary school mathematics textbooks provide collections of ready-made tests, and teachers can use them if they want as an additional resource. Naturally, the use of these tests is one method to reach some uniformity in assessment. Regardless of their use of these assessments, as all teachers are involved in the process of planning the school curriculum the fact is that Finnish primary teachers are very well aware of the curricular goals for mathematics. In addition, they know what contents and to which level children are expected to learn mathematics.

Talent Development for All Students

The Basic Education Act (1998/628) regulates the compulsory education of all Finnish children. The central point of the Basic Education Act is that education and teaching must be arranged so that they take into account the pupils' ages and capabilities. The present law puts great emphasis on equity and uniformity in basic education throughout the country. These principles can also be seen in the Development Plan in Education and Research published by the Ministry of Education for the years 2011–2016. This document states that

> ‘The child’s right to safe and high-standard instruction in a neightbourhood school will be guaranteed’ and ‘Basic education will be developed as uniform instruction catering to the whole age group and securing equal prerequisites for all’. (ibid., pp. 24–25)

One of the leading principles in the Finnish education policy has been to provide all pupils with equal and high-quality educational opportunities and to remove obstacles to learning especially among the least successful pupils. Help is given most during the first school years. This has been the Finnish educational mission for decades. It can be seen as an ideological standpoint, but it has its pragmatic perspective as well. Educational equality has been seen as an investment in human capital. Small nations, like Finland, cannot afford to waste any reserve of talent. In the light of PISA findings, we seem to have managed very well in these aims (e.g., OECD, 2004, 144–145; OECD, 2010).

According to the Basic Education Act, schools must cooperate with parents/caregivers. These principles create the opportunities for education of all pupils’ with different capacities and talents. Good co-operation between school, caregivers and pupils is a requisite in providing adequate support in learning and school-going. The sooner special needs as a learner are recognised, the better schoolteachers can provide support in the learning process and possibly avoid difficulties in the future. The law defines the support as three-step model from part-time to enhanced and further to special-needs support.

Gifted pupils are not mentioned as a special group in any law or official document regulating Finnish school education. Gifted education pedagogy as such is not typical to the Finnish school system, meaning that it is not taken into consideration significantly in everyday schooling. However, it can be said that opportunities are provided for developing the talents of all pupils in accordance with their needs (Pehkonen, 2004a). However, much is dependent on a teacher’s interests and talents. The size of teaching groups varies, and furthermore, there are different kinds of learners integrated in heterogeneous classes. Especially at the primary school level, it might be difficult for primary school teachers who have not specialized in mathematics to provide academic challenges for any of their pupils who are exceptionally gifted in mathematics.

To conclude, the Finnish view on education and giftedness is to concentrate more on talent development than on gifted education. This does not mean leaving the most able and capable pupils without special nurturing, but the main concern is to develop the talents of all the pupils and take special care of those with learning difficulties. The full use of all talent reserves is a challenge to Finnish education and an investment for the future. Educational equality is promoted by providing special needs education in mathematics as part of mainstream schooling. The idea is to support students with different talent profiles individually in mixed classes, not by grouping the pupils based on their mathematical talents but dealing with their individual needs through special lessons and exercises designed in cooperation with special needs education teachers.

CONCLUDING REMARKS

Finnish pupils seem to like mathematics especially at the primary school level based on studies that have found pupils' attitudes towards mathematics to be quite positive. According to Kupari (1999), mathematics was one of the five most popular subjects among 4th and 6th graders. The attitudes are most positive during the first school years. However, over time attitudes seem to turn less positive. Niemi (2008) has found that sixth-graders still had mildly positive or neutral attitudes (scale from -2 to +2; M = 0.5) and in 2004 he reported that one-third of sixth graders claimed that mathematics was their favourite school subject. It is noteworthy that expressing strong emotions or feelings is not typical in Finnish culture, and consequently, learning mathematics is not considered in an emotional manner either. Finnish pupils have mostly very sensible and neutral attitudes towards schooling and mathematics is seen as an important and useful school subject rather than something to be emotional about (Niemi, 2004, 151–152).

We have presented the outlines of teaching and learning mathematics in Finnish comprehensive schools in order to describe the facilities influential to functional mathematics education in Finland. One of the features characterising mathematics education in the Finnish education system is the independent role of the teacher. Although primary school teachers are not usually experts in mathematics, they are professionals in teaching and education. All teachers have a solid knowledge base in education and appropriate skills for self-development in work. At the secondary school level, specialised subject teachers are responsible for teaching mathematics. They are experts in their respective subject, and most of them are deeply interested in developing their methods of teaching mathematics and promoting learners' interest in mathematics learning. Teachers know how to develop skills, nurture talent and take care of the overall wellbeing of a child. Even if mathematics teaching seems to be quite traditional in Finnish classrooms (Andrews et al., 2014; Norris et al., 1996), the teaching and learning process is guided by professionals who are aware of the learning objectives within the core curricula. It is one of the teachers' responsibilities to choose appropriate activities and materials to implement these objectives. Using teacher-conducted assessments instead of national tests and examinations especially gives teachers enough scope to independently plan and teach mathematics. Teaching and learning mathematics at the primary school level seem to provide a good and sound basis for studies at the upper secondary level. Finnish teachers have shown that there are many ways to teach mathematics well.

REFERENCES

Andrews, P., Ryve, A., Hemmi, K., & Sayers, J. (2014). PISA; TIMSS and Finnish mathematics teaching: An enigma in search of an explanation. *Educational Studies in Mathematics*, *87*(1), 7–26. doi:10.1007/s10649-014-9545-3

Basic Education Act [Perusopetuslaki] 21.8. 1998/628. Retrieved from http://www.finlex.fi/en/laki/kaannokset/1998/en19980628.pdf

Claxton, G. (1993). Minitheories: A preliminary model for learning science. In P. J. Black & A. M. Lucas (Eds.), *Children's informal ideas in science* (pp. 45–61). London: Routledge.

Eurydice. (2004). *Key data on information and communication technology in schools in Europe* (2004 ed.). The information network on education in Europe. Retrieved from http://eacea.ec.europa.eu/education/eurydice

Eurydice. (2011). *Key data on learning and innovation through ICT at school in Europe*. Retrieved from http://eacea.ec.europa.eu/education/eurydice

FCCS. (1994). *Framework curriculum for the comprehensive school 1994* (In Finland). Helsinki: State Printing Press and National Board of Education.

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014 [National Core Curriculum of Basic Education 2014]*. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Good, T. L., Mulryan, C., & McCaslin, M. (1992). Grouping for instruction in mathematics: A call for pragrammatics research on small-group process. In D. Grouws (Ed.), *Handbook for research on mathematics teaching and learning* (pp. 165–196). New York, NY: MacMillan.

Halinen, I., Hänninen, L., Joki, J., Leino, J., Näätänen, M., Pehkonen, E., et al. (1991). *Peruskoulun Matematiikan Opetuksen Kehittämissuunnasta 1990-luvulla* [About the Developing Trends in Mathematics Education in the Comprehensive School in 1990's]. Opetus ja kasvatus. Helsinki: VAPK-kustannus.

Hannula, M. S. (2004). Attitude towards mathematics: Emotions, expectations and values. *Educational Studies in Mathematics*, *49*(1), 25–46.

Heinonen, O.-P. (1996). *Suomalaisten matematiikan Ja Luonnontieteiden Osaaminen Vuonna 2002: Kansalliset Kehittämistalkoot* [Finnish Knowhow in Mathematics and Natural Sciences in 2002: Joint National Action]. Koulutus- ja tiedepolitiikan linjan julkaisusarja; 38. Helsinki: Opetusministeriö.

Krzywacki, H. (2009). *Becoming a teacher: Emerging teacher identity in mathematics teacher education* (Research Report 308). Department of Applied Sciences of Education, University of Helsinki. Retrieved from http://urn.fi/URN:ISBN:978-952-10-5757-1

Kupari, P. (1999). *Laskutaitoharjoittelusta Ongelmanratkaisuun. Matematiikan Opettajien Matematiikkauskomukset Opetuksen Muovaajina* [From Practising Computational Skills to Problem Solving. Mathematics Teachers' Mathematical Beliefs and the Construction of their Teaching]. Jyväskylän yliopisto: Koulutuksen tutkimuslaitos, tutkimuksia 7.

Laine, A., & Kaasila, R. (2007). Mathematics education in primary teacher program. In E. Pehkonen, M. Ahtee, & J. Lavonen (Eds.), *How finns learn mathematics and science* (pp. 133–141). Rotterdam: Sense Publishers.

Lilli, M., Ranta, P., Hänninen, L., & Laine, A. (2010). *Matikkamatka 5 syksy. Opettajan Opas*. Helsinki: Osakeyhtiö Tammi.

Merenluoto, K., & Lehtinen, E. (2004). Number concept and conceptual change. Towards systemic model of the processes of change. *Learning and Instruction*, *14*(5), 519–534.

Ministry of Education. (2007). *Education and research 2007–2012. Development plan*. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2008/liitteet/opm11.pdf?lang=fi

Ministry of Education. (2012). *Education and research 2011–2016. A development plan*. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2012/liitteet/okm03.pdf?lang=fi

Niemi, E. (2004). *Perusopetuksen Oppimistulosten Kansallinen Arviointi ja Tulosten Hyödyntäminen Koulutuspoliittisessa Kontekstissa. Perusopetuksen Matematiikan Oppimistulosten Kansallinen Arviointi 6. Vuosiluokalla Vuonna 2000* [The National Evaluation and Exploitation in Education Policy of Learning Results in Primary Education. The National Evaluation of the Education Outcomes in Mathematics in the Sixth Grade of primary Education in the Year 2000]. Turku: Turun yliopiston julkaisuja C 216.

Niemi, E. (2008). Matematiikan oppimistulosten kansallinen arviointi 6. vuosiluokalla vuonna 2007. Oppimistulosten arviointi 1/2008. Opetushallitus.

Norris, N., Aspland, R., MacDonald, B., Schostak, J., & Zamorski, B. (1996). *An independent evaluation of comprehensive curriculum reform in Finland*. Helsinki: National Board of Education.

OECD. (2004). *Problem solving for tomorrow's world: First measures of cross-curricular competencies from PISA 2003*. Paris: Organisation for Economic Co-operation and Development. Retrieved from http://www.oecd.org/document/54/0,2340,en_32252351_32236173_34002550_1_1_1_1,00.html

OECD. (2010). *PISA 2009 results: What students know and can do—student performance in reading, mathematics and science* (Vol. I). Retrieved from http://dx.doi.org/10.1787/9789264091450-en

Opetushallitus. (1995). *Toimi, Laske ja Ajattele* [Act, Count and Reflect]. Helsinki: Opetushallitus [National Board of Education].

Pehkonen, L. (2004a). How Finnish education meets the needs of the gifted? In J. Touron (Ed.), *Proceedings of the 9th Conference of the European Council for High Ability*. Pamplona, Spain: University of Navarra.

Pehkonen, L. (2004b). The magic circle of the textbook – An option or obstacle for teachers change. In M. J. Høines & A. B. Fuglestad (Eds.), *Proceedings of the 28th Conference of the International Group for the Psychology of Mathematics Education* (Vol. 3, pp. 513–520). Bergen, Norway: Bergen University College.

Pehkonen, L. (2007). To change or not to change: How primary school teachers speak about stability and change. *Nordic Studies in Mathematics Education*, *12*(2), 57–76.

Pietilä, A. (2002). The role of mathematics experiences in forming pre-service elementary teachers' views of mathematics. In A. Cockburn & E. Nardi (Eds.), *Proceedings of the PME* (Vol. *26*(4), pp. 57–64). Norwich: University of East Anglia.

Simola, H. (2002). Finnish teachers talking about their changing work. In K. Klette, I. Carlgren, J. Rasmussen, & H. Simola (Eds.), *Restructuring Nordic teachers: Analysis of interviews with Danish, Finnish, Swedish and Norwegian Teachers* (pp. 49–70). Oslo: University of Oslo, Institute for Educational Research. Report 3.

Simola, H., & Hakala, K. (2001). School professionals talk about educational change: Interviews with Finnish school level actors on educational governance and social inclusion/exclusion. In S. Lindblad & T. Popkewitz (Eds.), *Listening to education actors on governance and social integration and exclusion* (pp. 103–132). Uppsala: University of Uppsala, Department of Education, Uppsala reports on Education 37.

The new distribution of lesson hours in basic education. (pdf, in Finnish). Retrieved from http://www.oph.fi/english/curricula_and_qualifications/basic_education

Välijärvi, J., Linnakylä, P., Kupari, P., Reinikainen, P., & Arffman, I. (2002). *The Finnish success in PISA – and some reasons behind it: PISA 2000*. Jyväskylä: University of Jyväskylä, Institute for Educational Research.

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9. SCIENCE AT FINNISH COMPULSORY SCHOOL

ABSTRACT

This chapter describes the implementation of the national level science education policy through national and local level curriculum and teacher education. We highlight: (1) the science curriculum for compulsory schools and the Finnish approach to implement it through local level curriculum, (2) the science teacher education programme, and (3) science teaching and learning at the school level and assessment. Finnish national level science curriculum has emphasised similar competencies as described in the PISA science 2006 framework. Further, we would like to emphasise that Finnish science teachers are academic professionals, who are competent at implementing ambitious curriculum autonomously in the classroom. Finnish science teachers are masters in their subjects with intermediate level studies in education.

Keywords: PISA Scientific Literacy Assessment, science education policy, science curriculum, science teaching and learning, science teacher

INTRODUCTION

Finnish students have obtained the highest score in the PISA 2003, 2006 and 2009 Scientific Literacy Assessment among the students in OECD countries In the year 2000 Scientific Literacy Assessment, the Finnish students were third in the ranking. The average science score of the students has varied between 538 and 563 in the PISA scale (in the PISA scale the mean of all students in OECD countries is 500 and the standard deviation is 100). In 2006 science was the main topic in the PISA assessment. Therefore, there is specific information available in the PISA 2006 assessment data on students' performance in science, attitudes and opinions about science education. For example, the percentage of students in the lower proficiency level (low achieving students) in Finland was 4.1% while it was 19.3% on average in OECD countries. At the two highest proficiency levels the percentage of Finnish students was 20.9% while it was 9% on average in OECD countries. Finland had the lowest standard deviation (SD = 81.4 score points) between students in well performing OECD countries. The science mean score was 562 for males and 565 for females in Finland. Although the girls' score was higher, the difference is not statistically significant (Lavonen, 2008). However, when the PISA 2012 results were released Finnish policymakers, researchers and teachers met a new situation. Kupari,

H. Niemi et al. (Eds.), Miracle of Education, 125–144.

Välijärvi, Andersson, Arffman, Nissinen, Puhakka, and Vettenranta (2013) reported about the declining of proficiency of Finnish youth in their PISA 2012 performance. Performance in mathematics, reading and science literacy deteriorated markedly.

After PISA 2006, Finnish science education scholars put forward several explanations for Finnish students' success. Pehkonen, Ahtee and Lavonen (2007) state that no clear single explanation exists, but a combination of several factors might explain Finnish students' PISA results. The following reasons have been proposed in Finland:

- A national level core curriculum and implementation process at the municipality level
- Science teaching is subject-oriented in the primary and lower secondary levels. Further, teaching aims to transmit essential aspects of each science subject including the nature of science
- Teachers as autonomous and reflective academic experts
- There is general trust of teachers' professionalism and "traditional" roles of teachers and students.

  (Kupari, Reinikainen, & Törnroos, 2007; Pehkonen, Ahtee, & Lavonen, 2007; Kim, Lavonen, & Ogawa, 2009; Krzywacki, Lavonen, & Juuti, 2015; Simola, 2005).

The Finnish educational system is characterised by the decentralization of decision making power concerning curriculum and assessment policy to the local level for ordinary teachers. Within the framework of the National Core Curriculum (Finnish National Board of Education, 2004, 2014) each municipality – or even one school – plans a local curriculum and collects assessment data for evaluating education. The design of the local curriculum is meaningful primarily because of the emphasis on the design process rather than the end product of the curriculum document. The local curriculum design process engages teachers in the development of schooling.

The outcomes of the 2013 TALIS study demonstrated several weaknesses in the operations of schools and science teachers. Teachers' participation in ongoing training that supports professional development seems to be fading. In particular, demand for continuing education that is long-lasting and develops professional competence widely is decreasing. Moreover, organising orientation for new teachers in their induction phase is low in Finland. Teachers feel that the initial teacher education does not prepare them enough for a science teacher job (Taajamo, Puhakka, & Välijärvi, 2014).

Although the Finnish students have performed rather well in PISA Science, there has been some discussion about the failure of science education to promote students' engagement in science learning and the learning of the 21st century competences. For this reason, the Minister of Education Krista Kiuru launched a project to plan the "Future primary and secondary (science) education" in spring 2014 (Press release, 2014).[1] She invited researchers, teacher educators, school principals and teachers for the planning process. The main aims of the project were to assess the current

situation, examine the reasons for the drop in learning outcomes in the PISA survey and find ways to make students feel more motivated and enjoy school. The project was completed in March 2015.

As an outcome of the "*Future primary and secondary education"* project, recommendations for developing primary, secondary and teacher education were introduced. In the publication, the following measures were proposed related to science education (Ouakrim-Soivio, Rinkinen, & Karjalainen, 2015):

- *Development of learning and pedagogy*. The publication highlights the need to find new pedagogical solutions that would support both team and individual learning and, moreover, students' engagement in science learning.
- *Developing teacher education.* Research-based teacher education should be developed further in cooperation with universities and municipalities to form a continuum of initial education and professional development of teachers.
- *Supporting teachers' lifelong professional development.* Systematic continuing education activities are a precondition for developing the professional competence of teachers.
- *Developing teachers' working time models.* An effort will be made to continue and expand various experiments concerning teachers' working time models.

After finalising the previous list of challenges, several development or school improvement projects were promised to be launched in 2015. These projects were published in the program of the Finland government.[2] This program introduces education related measures which aim to solve the challenges in the National evaluation documents, in the PISA and TALIS.

In what follows, we focus on the science curriculum, science teachers and science teaching in the Finnish science classroom as well as science teacher education to get an overview of science education in Finland.

In this chapter, we use the following terms connected with the curriculum. Goals are the overall purpose of a school subject or a course within a national level curriculum. Aims and objectives break down goals into measurable behaviours. A syllabus is a description of the topics or main content of a subject or a course. Standards are statements of what students are expected to know and be able to do or have attained by the end of a course or compulsory school.

SCIENCE IN THE NATIONAL LEVEL CURRICULUM

In order to meet the challenges of (science) education, described above, a new national Framework Curriculum was launched in 2014 (Finnish National Board of Education, 2014). Especially, there was a discussion about the competences needed in the 21st century while planning the framework curriculum. According to this 21st century movement, individuals need both critical and creative thinking and should be able to use a wide range of tools, like socio-cultural (language) and technological tools (ICT) for interacting effectively with the environment; to engage and interact

in a heterogeneous group; to take responsibility for managing their own lives and acting autonomously. Consequently, the national level curriculum process during the years 2013–2014 has been one of the key issues in developing the educational sector in Finland for the 21st century challenges (Vahtivuori-Hänninen, Halinen, Niemi, Lavonen, Lipponen, & Multisilta, 2014).

In several countries, such as the UK, USA and Sweden, science is commonly taught in grades 7 to 9 as an integrated subject by science teachers who have typically not studied all science subjects. In Finland, science is divided in lower secondary school and previously partly even in primary school into the separate subjects of physics, chemistry, geography, biology and health education. In Finland, geography is included as a science subject, because the subject has its roots in physical geography. In this volume, cultural geography is introduced together with history and social science. Allocation of science-related subjects to grades in the Finnish curriculum is illustrated in Table 1.

The general description of the needs for the 21st century competences were included in the new science curriculum. The science curriculum emphasises acquiring relevant competences through familiarizing students with core scientific knowledge and science and engineering practices. These descriptions emphasise inquiry and problem-solving orientation in science learning and the learning of critical and creative thinking skills.

Learning, in general, is defined in the new framework curriculum (Finnish National Board of Education, 2014) as a goal-oriented behaviour based on the student's prior knowledge, skills, feelings and experiences. The student is an active player (*or agent*) who learns how to set goals and solve problems both independently and with others. In addition to learning, the student learns to reflect on the learning processes, experiences and emotions and at the same time develops new knowledge

Table 1. Time allocation of science subjects to grades in comprehensive school

Grade	1	2	3	4	5	6	7	8	9
Students' age	7	8	9	10	11	12	13	14	15
Level	Primary teaches						Secondary teaches		
	Compulsory school, Basic education								
Science subjects	*Integrated* environmental studies is an integrated subject comprising biology, geography, physics, chemistry, and health education. *2.33 lesson hours/week/year (hwy)*						Separate: Biology 1.2 hwy Geography 1.2 hwy Physics 1.2 hwy Chemistry 1.2 hwy Health education 1 hwy		

Note: Time allocation unit is lesson hour/week/year (hwy). Time allocation of 1 hwy means one 45 minute lesson per week during one academic year

and skills. At its best, learning awakens positive emotional experiences and the joy of learning, and is seen as a creative activity that will inspire the development of their own expertise. Learning is an integral part of an individual's comprehensive life-long growth as a person and building material for a good life.

The curriculum describes in detail science learning as follows (Finnish National Board of Education, 2004, 2014):

> The starting points for physics and chemistry instruction are the students' prior knowledge, skills, and experiences, and their observations and investigations of objects, substances, and phenomena. From these, the instruction progresses towards the laws and fundamental principles of physics and chemistry.
>
> In biology instruction the pupil is guided in focusing attention on the interactive relationships between people and the rest of nature, and human responsibility for protecting natural diversity receives emphasis. The instruction will develop the pupils' knowledge of nature and guide them in understanding basic natural phenomena. (FNBE, 2004)
>
> These descriptions include both the physical (hands-on) and mental activity (mind-on) of the student, emphasising empirical meanings of the concepts (see, for example, Lavonen et al*.,* 2004). The role of a teacher is important in this process.

The main goals of science education are:

> …to help the students both (i) to perceive the nature of science and (ii) to learn new scientific concepts, principles, and models; (iii) to develop skills in experimental work and (iv) cooperation; and (v) to stimulate the students to study physics and chemistry (interest). (FNBE, 2004)

Descriptions of "learning outcomes" in a national level curriculum are increasingly used in national level curriculum documents to enhance the transparency and accountability of learning outcomes, and to increase the quality of learning (Spady, 2003). However, pre-defined learning outcomes and national level assessment are not the only ways to assure quality of teaching and learning at the national level, and it is noteworthy that the quality assurance of education can be approached from different perspectives (Hargreaves, Earl, Shawn, & Manning, 2001; Sahlberg, 2004). In Finland, learning outcomes have not been used to express the aims or knowledge and skills students should learn. In the Finnish National Core Curriculum (FNBE, 2004), the general goals and subject specific aims as well as core contents of each school subject (syllabus) are described on a general level.

In the Finnish National Core Curriculum specific aims and contents are not allocated to a certain grade but to a range of grades, for example, for grades 7–9 (Finnish National Board of Education, 2004). In the Finnish curriculum the aims for science education are the most important part in the framework curriculum.

They are compared to legislation and teachers should follow the aims while they are planning science lessons, teaching and assessing. The list of contents, the syllabus, and descriptions of good performance are described in the framework curriculum to help teachers in their work. Altogether, the extent of science in the national level document is about 30 pages.

In the Appendix, a comparison of Finnish National Core Curriculum aims with PISA 2006 is presented. In the presentation the aims for science education are classified into the categories typically found in the science education literature (e.g. Hodson, 1996; Millar, Le Maréchal, & Tiberghien, 1999: 42–47): (1) science subject matter, (2) scientific methods, (3) nature of science, (4) the pupils' interest in studying science subjects, (5) the pupils becoming familiar with society and decision making, and (6) cooperative skills.

According to the PISA 2006 framework (OECD, 2006), the PISA assessment emphasises science competencies, defined in terms of an individual's scientific knowledge and use of that knowledge to identify scientific issues, explain scientific phenomena and draw evidence-based conclusions. In addition, the framework emphasises understanding of the characteristic features of science as a form of human knowledge and enquiry and the awareness of how science and technology shape our material, intellectual and cultural environments. The Finnish national level curriculum highlights the aims considering the learning of scientific method as described in the Appendix. However, instead of using the PISA wording "identify scientific issues", the following expressions are used in the National Core Curriculum: to recognise, to observe, to formulate a question, acquiring of knowledge, and looking for information. Further, instead of using "explain scientific phenomena" the following expressions are used: to interpret, to apply that knowledge, to test a hypothesis, and to use various graphs and algebraic models in explaining. Finally, instead of using "draw evidence-based conclusions" the following expressions are used: to make conclusions, to formulate simple models, to make generalisations and to provide capabilities for making everyday choices (Lavonen, 2008).

Another important area in the National Core Curriculum (Finnish National Board of Education, 2004) from the point of view of PISA Scientific Literacy Assessment is content areas presented in the curriculum. In PISA 2006 (OECD, 2006), scientific literacy encompasses both knowledge of science (knowledge of the different scientific disciplines and the natural world) and knowledge about science as a form of human enquiry. The former includes understanding fundamental scientific concepts and theories; the latter includes understanding the nature of science. Lavonen (2008) has compared the description of knowledge in the PISA 2006 Framework to the content areas presented in the National Core Curriculum for Basic Education 2004 (FNBE, 2004). The contents of biology, chemistry, physics and physical geography, described in the *National Core Curriculum for Basic Education 2004* (FNBE, 2004) belongs especially to the *physical systems*, *living systems,* earth and space systems and *technology systems* of the PISA 2006 content areas. In particular, the structure

and properties of matter and chemical reactions; waves, electricity, motion and forces, energy and its transformation, basics of astronomy; humans, populations and ecosystems; Earth's history, space and change in Earth systems and issues concerning how biology, chemistry and physics knowledge are applied in technology and health care, in solving environmental issues and in everyday life, all mentioned in the PISA 2006 content area list are all core content of Finnish school biology, chemistry, physics and physical geography.

Moreover, in the *National Core Curriculum for Basic Education 2004* there are several expressions, which give guidelines of how to increase students' knowledge about science. The PISA framework identifies two categories of knowledge about science: "Scientific enquiry" and "Scientific explanations". In the list of Finnish aims, there are several examples of aims for both categories. In particular, the asking of scientific questions, models and modelling, taking measurements, observations and investigations belongs to the first category; whereas, presentation of types of scientific explanations (hypothesis, scientific law, model, and theory), formation of knowledge and outcomes of research (new knowledge, new methods, new technologies, new investigations), belong to the second category.

To summarise, the, aims for science education and contents described in the *National Core Curriculum for Basic Education 2004* (Finnish National Board of Education 2004) are very compatible with the competencies described in the PISA 2006 framework (OECD, 2006). The Finnish science curriculum seems to emphasise inquiry activities where the students can identify, recognise or observe scientific issues, design experiments, gather empirical data or use written sources of information, explain or interpret data or scientific phenomena, and draw conclusions based on the evidence or formulate simple models or generalisations. The curriculum guides teachers to organise activities where the students make observations or collect data and present the data as a graph and then give a scientific explanation.

SCIENCE TEACHERS

Primary (class) teachers (grades 1–6 in primary school) and secondary (subject) teachers in lower and upper secondary schools (grades 7–12) are educated in master's level programmes at universities. Primary teachers are qualified to teach all 12 school subjects in primary school, whereas secondary teachers typically teach two subjects in lower and upper secondary school. Primary school teachers are masters of education having about 15 ECTS studies in science education (University of Helsinki, less elsewhere). Even though the science education courses in the primary school teacher education programme emphasise pedagogy, some subject knowledge is integrated in teacher education. However, there is very limited time for subject knowledge in the primary teacher curriculum. Lower secondary school teachers are masters of science. The following description focuses on the lower secondary school teacher education programme. It is common in the Finnish teacher education

programmes that about 5–9 credit points are allocated for learning the pedagogy of science. The programme does not emphasise subject matter knowledge but more general teaching, planning, assessment and academic skills.

Biology, chemistry, physics and geography teacher education is organised in co-operation with the Faculty of Science/Bioscience and the Faculty of Behavioural Sciences (Faculty of Education). Studies are divided into two parts: the subject is studied at the department of the particular subject (e.g. physics) and the pedagogical studies at the department of teacher education. In the secondary teacher education programme students take a major and a minor in the subjects they intend to teach at school as well as a minor in education (for more detail see Lavonen, Krzywacki-Vainio, Aksela, Krokfors, Oikkonen, & Saarikko, 2007).

During the subject studies the students participate in university level undergraduate courses in the subject department. These courses aim to help students develop a deep understanding of subject matter knowledge and concepts as part of a conceptual framework of the subject. The advanced study courses introduce the students, for example, to the central notions of science, epistemology and methodology, the interaction between science and technology, conceptual and process structures of the main areas of school physics and chemistry, methods for planning and carrying out experiments and demonstrations in the physics and chemistry classroom, the history and philosophy of science, and the relationships among science, society and technology (Lavonen, Jauhiainen, Koponen, & Kurki-Suonio, 2004).

Along with the master's level studies in science subjects, the pedagogical studies provide the teacher qualification. Pedagogical studies have three main components: (1) basic studies in education (social, philosophical, psychological, sociological, and historical basis of education), (2) science education studies including small scale research, i.e. science teaching methods and issues considering learning, attitudes, motivation and interest, and (3) teaching practice in university training schools and/or in field schools. Cross-sectional themes emphasize that future teachers should be able to reflect broadly on their own personal pedagogical "theory" or assumptions made in their own work, and have the readiness for lifelong professional development by being able to critically read the educational research literature.

According to PISA 2006 School Questionnaire data, 97.2% of the schools reported that there was no serious lack of physics, chemistry, or biology teachers (OECD 81.9%). Newly graduated geography teachers even had difficulty finding jobs. On average 10% of the full-time teachers in the schools that participated in the PISA 2006 survey, did not have an appropriate qualification. Consequently, in most of the schools there were highly educated and qualified teachers with deep subject matter and pedagogical knowledge. The reason for this very satisfactory level of qualified teachers in the field might be that the teaching profession in Finland has had great public respect and appreciation (Simola, 2005). Teachers have independence in selecting the most appropriate pedagogical methods. Finnish teachers' levels of education have significantly increased during the last 30 years. Teachers have master's degrees, therefore they are educated to be autonomous and reflective academic experts and

consequently the need for inspectors, national evaluation of learning materials or national assessment vanished. There have been no inspectors since the 1980s, no national evaluation of learning materials since the 1990s and no national assessment. Teachers have a lot of responsibility for pupils' learning (Lavonen, 2008). At the same time the teaching profession, especially at the primary level, is also very popular and teacher-education departments can select from among the nation's best students and highest scorers in university entrance examinations (Jakku-Sihvonen & Niemi, 2006). Science teacher studies are not as popular as primary teacher education studies. Science teacher students and future scientists typically study the same courses in the subject departments for the first three years. Still, enough science teachers have graduated to meet the demand for science teachers.

The PISA 2006 school questionnaire results support the argument that Finnish teachers have more professional autonomy than the average in OECD countries. The participating Finnish schools reported that school principals together with teachers are heavily responsible for disciplinary and assessment policy at the school level such as selecting the textbooks (100%, OECD average 83.5%), determining the course content (70.1%, OECD average 65.9%), and deciding which courses will be offered (90.1%, OECD average 69.9%) (Lavonen & Laaksonen, 2009). In Finland, assessment is concentrated at the school level and primarily implemented by teachers. It is plausible that this 'decentralisation' allows teachers to reflect on teaching and learning in their classrooms: they can choose how to use different forms of assessment suitable for each situation, such as students' self-evaluation, formative assessment of students' experimental work as well as summative assessment. In general, teachers are valued as experts in curriculum development, teaching, and assessment at all school levels (Krzywacki et al., 2015).

SCIENCE TEACHING AND LEARNING AT SCHOOL

The national curriculum (Finnish National Board of Education, 2004, 2014) requires that students should learn science process skills. Therefore, in Finland practical work and demonstrations have long been accepted as an integral part of teaching and learning science subjects. Instead of notions of 'investigation' or 'inquiry', the terms 'practical work' and 'demonstration' are used.

The concept "*teaching method*" is used in Finland as a synonym for a learning or instructional method/model/strategy, pupil activity, or classroom practice designed to help pupils acquire concepts, ways of thinking, skills and values. Teaching methods are goal oriented and emphasise social interaction between pupils and teachers and between pupils (Leach & Scott, 2000, p. 54).

Juuti, Lavonen, Uitto, Byman, and Meisalo (2010) reported survey results of how students perceived the frequencies of certain science teaching methods. The data gathering followed a similar procedure as PISA 2003. In all, 3626 9th grade level pupils (aged 15–16) answered the questionnaire. According to students' perceptions, science lessons seem to be rather traditional. Direct teaching, solving basic problems,

reading textbooks, and conducting practical work are often used. Classes seldom visit industrial sites and almost never visit museums. Because of the nature of biology and geography as disciplines, it is plausible that in biology and geography field studies and other out-of-school learning are more frequent than visits in chemistry and physics. One unexpected finding, especially as they are rather easy to organize, is that there are no visits made by experts to the science classroom. The results of our survey are consistent with science lesson observations and principal interviews in 50 lower and upper secondary schools by Norris, Asplund, MacDonald, Schostak and Zamorski (1996). They concluded that (a) Finnish physics and chemistry teachers are pedagogically conservative and (b) teaching and learning is traditional, mainly involving direct teaching of whole groups of students.

According to the survey reported by Juuti et al. (2010), students did not desire major changes in teaching methods. However, the majority of students desired more small-group discussions and also more debates, which are understood to increase interaction among students. The findings of the survey indicate that there is a need for a larger variety of science teaching methods in Finland.

The students participating in the PISA 2006 Scientific Literacy Assessment were asked in the Student Questionnaire: "When learning school science topics at school, how often do the following activities occur?" The description of activities and communication in the questionnaire were written according to what is known to support learning processes in general and what type of descriptions are easy for students to understand the activity or communication in their science classroom. Students answered by ticking the appropriate box on a four-point Likert scale, the extreme categories being *In all lessons* and *Never or hardly ever* (OECD, 2005b).

In the questionnaire, there were eight items altogether measuring the frequency of different types of communication, such as student discussion or the teacher explaining how different science ideas are applied to different phenomena; and nine items measuring the frequency of different types of science activities, such as students doing experiments or the teacher giving a demonstration. In order to reduce the number of items Lavonen and Laaksonen (2009) constructed sum-variables as described in Table 2. However, some of the variables consist of one variable, like "*Student discussion*" and "*Demonstration*". For example, the sum-variable *Student ideas and opinions are listened to* is calculated based on the original PISA items "*ST34Q01 Students are given opportunities to explain their ideas*" and "*ST34Q05 The lessons involve students' opinions about the topics*". Both items measure student opinions about their opportunities to express their ideas and how these ideas are listened to. The sum-variable "Practical work" is calculated based on items "*ST34Q02 Students spend time in the laboratory doing practical experiments*" and "*ST34Q14 Students do experiments by following the instructions of the teacher*". In Finland the most typical student activity is a practical experiment where they follow the instructions of the teacher or a laboratory guide prepared or selected by a teacher. To evaluate the internal consistency of the sum-variables, Cronbach's Alpha

Table 2. Sum-variables measuring students' opinions about type of communication and science activities in Finnish science classrooms

	Finland		*OECD*		*d*)*
	Mean	*S.D.*	*Mean*	*S.D.*	
Communication (scale: 0 = Never or hardly ever, 100 = In all lessons,					
Student ideas and opinions are listened to (α = 0.82)	55.9	24.7	54.6	26.4	0.05 [A]
Teacher explains (teach) (α = 0.81)	43.2	19.0	46.9	22.5	–0.18 [A]
Student discussion	41.9	27.3	45.2	29.5	–0.12 [A]
Student debate	26.2	24.2	40.8	28.7	–0.55 [C]
Science activities (scale: 0 = Never or hardly ever, 100 = In all lessons)					
Students draw conclusions	52.2	27.1	50.5	29.6	0.06 [A]
Practical work (α = 0.82)	41.6	20.9	38.7	23.4	0.13 [A]
Demonstration	33.7	24.8	40.1	27.7	–0.24 [B]
Students applying and modelling	36.3	23.8	36.1	28.2	–0.01 [A]
Science inquiry (α = 0.82)	18.2	16.3	26.1	21.1	–0.42 [B]

**) [A] no effect (d < 0.2), [B] small effect (0.2 ≤ d < 0.5), [C] moderate effect (0.5 ≤ d < 0.8), [D] large effect (d ≥ 0.8)*

(α) for each variable was calculated. The Alphas were between 0.81 and 0.82, thus confirming that the sum-variables were internally consistent.

Finnish students think that they frequently perform experiments and practical work by following the instructions of a teacher (or a workbook). Both teachers and workbooks guide students to make conclusions from experiments they have conducted. These activities happen on average more frequently in Finland than in OECD countries. Teachers also actively present demonstrations, and students are seldom, in fact almost never, allowed to design their own experiments or do investigations to test their own ideas. Students in other OECD countries report these kinds of activities more frequently than Finnish students do.

Finnish students think that in most lessons they are given opportunities to explain their ideas and express their opinions about topics. In the classroom, a class debate or discussion occurs in some lessons. Finnish students seem to value the interaction with the teacher more than that in small groups or independent activities. Teachers frequently explain how science ideas can be applied to a number of different phenomena and for understanding the world at large. Students also encountered the relevance of "broad science" concepts to their lives through explanations by their classroom teachers.

In Finland attempts have been made to avoid transforming science education aims into the form of intended learning outcomes in order to raise the quality of

teaching and learning. In accordance with this, it is stated in the NCCBE that "*The assessment is to address the pupil's learning and progress in the different areas of learning*" (FNBE, 2004). Consequently, a teacher is responsible for assessment and student grading. In addition to this type of school-based assessment, local authorities need assessment data for distributing educational resources and especially, for allocating more support for low achieving schools. For this purpose, they need to monitor learning outcomes through sample-based testing as a basis for decision-making. On a national level, the authorities have organized infrequent monitoring of learning outcomes in mathematics and Finnish language at the compulsory education level based on a representative sample, in order to evaluate educational policy and to improve schooling in general. However, in practice, Finnish teachers and schools are not controlled by external evaluation. The education authorities and national-level education policy-makers trust teachers and their professionalism: teachers are allowed to decide how to provide good education to all kinds of children and adolescents. Furthermore, mutual trust also exists between teachers and parents.

DISCUSSION

According to the PISA 2000, 2003, 2006 and 2009 data, it could be argued that Finnish students have performed extremely well in the PISA Scientific Literacy assessment; the number of low achieving students is the smallest and the number of high achieving students the greatest in OECD countries and the variation between students and schools is the smallest (Lavonen & Laaksonen, 2009). However, the situation in 2012 and 2015 is not so clear.

After the first PISA 2000 assessment, the PISA researchers explained the Finnish students' success in PISA through comprehensive school pedagogy, students' own interests and leisure activities, the structure of the education system, teacher education, school practices, and Finnish culture, or in short – pedagogical philosophy and practice (Välijärvi, Linnakylä, Kupari, Reinikainen, & Arffman, 2002). The same arguments were given after the second PISA 2003 assessment results. Furthermore, the same reasons for success also appear to be the explanations for success in the 2006 and 2009 Scientific Literacy Assessment. In the 2006 assessment some new data were acquired concerning students' activities and communication in the science classroom. In this discussion the reflections are mainly based on the PISA 2006 data.

Based on the PISA Student Questionnaire data (Table 2) the role of the teacher in a Finnish science class is rather similar to that in OECD countries except in organising a smaller number of science inquiry activities than in other OECD countries. Finnish "old fashioned" science teaching has led to excellent performance in the PISA tasks. One possible interpretation for this is that pupils face experts in science knowledge. New concepts are introduced by a teacher, an expert, who first presents new information and then demonstrates how this information is used for solving problems or performing tasks. Teaching is perhaps conceptually intensive.

Nevertheless, this does not mean that only teachers speak in class, as there are also teacher-led discussions in science classes. Apparently, it is important that explanations of the discovered phenomena are presented and that conclusions are formulated, as well as their relevance to everyday life being shown built on the concepts, under the guidance of an expert (Bransford & Donovan, 2005). This works if the teacher has a central role in the classroom, which is also accepted by the majority of the students. There is evidence at least at the primary school level that traditional teacher-centred instruction seems to result in higher academic performance than student-directed learning (Chall, 2000). Socio-cultural ideas of learning have too often focused on pupil – pupil interaction without paying attention to the fact that a teacher has a crucial role in acculturating pupils to the scientific way of thinking (Scott, 1998). This dialogical teacher – pupils interaction requires the teacher to have high subject knowledge (Scott, 1998).

In general, Finnish teachers have been named as an important reason for Finnish students' success in PISA. Recently, Auguste, Kihn and Miller (2010) analysed teacher education in the top-performing PISA countries—Singapore, Finland, and South Korea. They explained that the success of the teacher education was due to successful recruitment procedures and programmes. The studies support the student teachers' process of becoming a teacher and building the knowledge base they need to act as autonomous actors in the teaching profession. They are able to plan, implement and assess learning outcomes independently.

There are similarities between the aims for physics, chemistry and biology education in the national level guidelines, the *National Core Curriculum for Basic Education* (Finnish National Board of Education, 2004), and the competencies described in the PISA 2006 framework (OECD, 2006; Lavonen, 2008; Lavonen & Laaksonen, 2009). The current National Core Curriculum for Basic Education (Finnish National Board of Education, 2014) has a similar emphasis on 21st century competencies. The curriculum emphasises activities, where the students can identify scientific phenomena, explain and interpret data related to scientific phenomena, as well as draw conclusions based on evidence. In Finland, practical work and demonstrations are an integral part of teaching and learning science subjects. However, the basic decisions about the national level guidance were decided some ten years before the first PISA framework.

As Table 1 illustrated, in Finland there is altogether, on average, six lesson hours per week allocated for science – taught by a teacher with a master's degree in the respective subject, such as in physics, chemistry or biology. This number of weekly lesson hours is relatively high when compared internationally (Waddington, Nentwig, & Schaze, 2007).

The science textbooks are designed based on the national core curriculum and are, therefore, also very compatible with the competencies and contents described in the PISA 2006 framework (Lavonen, 2008). The workbooks guide students to draw evidence-based conclusions and explain scientific phenomena. Nevertheless, these kinds of similarities certainly exist in several other countries as well. Consequently,

teachers as implementers of the national level guidance and users of textbooks have a great deal of freedom in decision making. The teachers can concentrate on the issues they know well or feel are important to emphasise. This is possible due to the absence of inspectors and national level testing.

According to PISA Student Questionnaire data (Table 2) and previous research, practical work is often performed in Finnish science classes. However, especially in Finland, students are not allowed to design their own experiments or choose their own investigations. Using terminology introduced by Gengarelly and Abrams (2009), practical work in Finnish science classrooms can be described as guided or structured inquiry. Based on the PISA data, it is therefore to be concluded that students, guided by a teacher, learn important competencies as evidenced by PISA, such as to *identify scientific issues*, *explain scientific phenomena,* and *draw evidence-based conclusions*.

Finnish students have succeeded very well in the cognitive items of the PISA 2000, 2003, 2006 and 2009 Scientific Literacy Assessment and, therefore, it is appropriate to continue with a similar science education policy and its implementation (Schleicher, 2006). In particular, there were no gender differences in the PISA score and low achieving students were achieving much higher PISA scores than similar students in other OECD countries. Furthermore, Finnish education policymakers should be very proud of the very low variation in PISA scores, especially in the variation between schools.

Finnish students' decreasing performance in PISA (2012), and the outcomes of the 2013 TALIS study, demonstrated several weaknesses in the operations of schools and teachers. Teachers' participation in ongoing training that supports professional development seems to be fading. In particular, demand for continuing education that is long-lasting and develops professional competence widely is decreasing. Moreover, organising orientation for new teachers in their induction phase is low in Finland. Teachers feel that the initial teacher education does not prepare new teachers enough for a teaching job. Because of students' decreasing learning outcomes and weaknesses in teachers' competencies and organisation of professional development projects, the Minister of Education, Krista Kiuru, launched a project to plan the "Future primary and secondary education" in spring 2014. As an outcome of this project, recommendations for developing primary, secondary and teacher education were created.

During the years 2013 and 2014, a new national framework curriculum for basic education has been prepared in a collaborative project. The local level curricula should be designed before August 2016. A broad range of experts from different fields were invited to join the curriculum reform process. Before the curriculum process, political decisions were made on the basic objectives for Finnish education and the allocation of lesson hours, which where decided a year before the implementation of the curriculum reform started. The new curriculum will underlie the 21st century competencies and border-crossing broad-range expertise.

A future challenge is the students' lack of personal relevance to science. A large majority of secondary school students participating in the PISA 2006 Scientific Literacy Assessment survey considered science to be important for understanding the natural world and to improve people's living conditions. However, only half of them considered science to be especially relevant to them personally, and even fewer would like a career involving science. Perhaps, it would be important at the policy level to emphasise increasing students' interest towards school science and science in general – even though the Finnish PISA score might decrease.

NOTES

[1] Press release (2014). Kiuru: Broad-based project to develop future primary and secondary education. Ministry of Education. http://www.minedu.fi/OPM/Tiedotteet/2014/02/perusopetus.html?lang=en

[2] Finland government programme. http://valtioneuvosto.fi/documents/10184/1427398/Ratkaisujen+Suomi_EN_YHDISTETTY_netti.pdf/8d2e1a66-e24a-4073-8303-ee3127fbfcac

REFERENCES

Auguste, B., Kihn, P., & Miller, M. (2010). *Closing the talent gap: Attracting and retaining top third graduates to a career in teaching: An International and market research-based perspective*. Washington, DC: McKinsley & Company.

Black, P., & William, D. (2003). In praise of educational research: Formative assessment. *British Educational Research Journal, 29*(5), 623–637.

Bransford, J. D., & Donovan, S. M. (2005). *How students learn science in the classroom*. Washington, DC: National Academies Press.

Chall, J. S. (2000). *The academic achievement challenge: What really works in the classroom?* New York, NY: Guilford Press.

Finnish National Board of Education. (2004). *National core curriculum for basic education, 2004*. Helsinki: National Board of Education. Retrieved from http://www.minedu.fi/minedu/education/translations/basicedu_act.pdf

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014* [National Core Curriculum of Basic Education 2014]. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf-

Gengarelly, L., & Abrams, E. (2009). Closing the gap: Inquiry in research and the secondary science classroom. *Journal of Science Education and Technology, 18*(1), 74–84.

Hargreaves, A., Earl, L., Shawn, M., & Manning, S. (2001). *Learning to change. Teaching beyond subjects and standards*. San Francisco, CA: Jossey-Bass.

Hodson, D. (1996). Laboratory work as scientific method: Three decades of confusion and distortion. *Journal of Curriculum Studies, 28*, 115–135.

Jakku-Sihvonen, R., & Niemi, H. (Eds.). (2006). *Research-based teacher education in Finland – Reflections by Finnish teacher educators* (Research in Educational Sciences 25). Turku: Finnish Educational Research Association.

Juuti, K., Lavonen, J., Uitto, A., Byman, R., & Meisalo, V. (2009). Science teaching methods preferred by grade 9 students in Finland. *International Journal of Science and Mathematics Education*. Advance online publication. doi:10.1007/s10763-009-9177-8

Juuti, K., Lavonen, J., Uitto, A., Byman, R., & Meisalo, V. (2010). Science teaching methods preferred by grade 9 students in Finland. *International Journal of Science and Mathematics Education*, *8*(4), 611–632. doi:10.1007/s10763-009-9177-8

Kim, M., Lavonen, J., & Ogawa, M. (2009). Experts' opinion on the high achievement of scientific literacy in PISA 2003: A comparative study in Finland and Korea. *Eurasia Journal of Mathematics, Science & Technology Education, 5*(4), 379–393.

Krzywacki, H., Lavonen, J., & Juuti, K. (2015). There are no effective teachers in Finland – Only effective system and professional teachers. In O.-S. Tan & W.-C. Liu (Eds.), *Teacher effectiveness: Capacity building in a complex learning era* (pp. 79–103). Andover: Cengage learning.

Kupari, P., Reinikainen, P., & Törnroos, J. (2007). Finnish students' mathematics and science results in recent international assessment studies: PISA and TIMSS. In E. Pehkonen, M. Ahtee, & J. Lavonen (Eds.), *How Finns learn mathematics and science?* (pp. 11–34). Rotterdam: SensePublishers.

Kupari, P., Välijärvi, J., Andersson, L., Arffman, I., Nissinen, K., Puhakka, E., & Vettenranta, J. (2013). *PISA12 ensituloksia* (Opetus- ja kulttuuriministeriön julkaisuja 2013:20). Helsinki, Finland: Ministry of Education and Culture.

Lavonen, J. (2008). Finland in PISA 2006 scientific literacy assessment. In J. Hautamäki, E. Harjunen, A. Hautamäki, T. Karjalainen, S. Kupiainen, J. Lavonen, E. Pehkonen, P. Rantanen, & P. Scheinin (Eds.), *PISA 2006: Analysis, reflections, explanations* (pp. 65–113). Helsinki: Ministry of Education Publications 2008:44. Retrieved Feburary 27, 2009, from http://www.minedu.fi/OPM/Julkaisut/2008/PISA06._Analyses_Reflections_and_Explanations?lang=en

Lavonen, J., & Laaksonen, S. (2009). Context of teaching and learning school science in Finland: Reflections on PISA 2006 results. *Journal of Research in Science Teaching, 46*(8), 922–944.

Lavonen, J., Jauhiainen, J., Koponen, I., & Kurki-Suonio, K. (2004). Effect of a long term in-service training program on teachers' beliefs about the role of experiments in physics education. *International Journal of Science Education, 26*(3), 309–328.

Lavonen, J., Krzywacki-Vainio, H., Aksela, M., Krokfors, L., Oikkonen, J., & Saarikko. H. (2007). Pre-service teacher education in chemistry, mathematics and physics. In E. Pehkonen, M. Ahtee, & J. Lavonen (Eds.), *How Finns learn mathematics and science*. Rotterdam: Sense Publishers.

Leach, J., & Scott, P. (2000). Children's thinking, learning, teaching and constructivism. In M. Monk & J. Osborne (Eds.), *Good practice in science teaching: What research has to say* (pp. 41–54). Buckingham: Open University Press.

Millar, R., Le Maréchal, J.-F., & Tiberghien, A. (1999). 'Mapping' the domain: Varieties of practical work. In J. Leach & A. C. Paulsen (Eds.), *Practical work in science education* (pp. 33–59). Roskilde: Roskilde University Press.

Norris, N., Asplund, R., MacDonald, B., Schostak, J., & Zamorski, B. (1996). *An independent evaluation of comprehensive curriculum reform in Finland*. Helsinki: National Board of Education.

OECD. (2005a). *School questionnaire for PISA 2006: Main study*. Paris: OECD.

OECD. (2005b). *Student questionnaire for PISA 2006*: *Main study*. Paris: OECD.

OECD. (2006). *Assessing scientific, reading and mathematical literacy: A framework for PISA 2006*. Paris: OECD.

OECD. (2007a). *PISA 2006: Science competencies for tomorrow's world, Volume 1: Analysis*. Paris: OECD.

OECD. (2007b). *PISA 2006: Volume 2: Data*. Paris: OECD.

Ouakrim-Soivio, N., Rinkinen, A., & Karjalainen, T. (toim.). (2015). *Tulevaisuuden peruskoulu. Opetus- ja kulttuuriministeriön julkaisuja 8:2015*. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2015/liitteet/okm8.pdf?lang=fi

Pehkonen, E., Ahtee, M., & Lavonen, J. (2007). *How Finns learn mathematics and science?* Rotterdam: Sense Publishers.

Sahlberg, P. (2004). Teaching and globalization. *Managing Global Transitions, 2*(1), 65–83.

Schleicher, A. (2006). *The economics of knowledge: Why education is key for Europe's success*. Brussels: Lisbon Council Policy Brief.

Scott, P. (1998). Teacher talk and meaning making in science classrooms: A Vygotskian analysis and review. *Studies in Science Education, 32*, 45–80.

Simola, H. (2005). The Finnish miracle of PISA: Historical and sociological remarks on teaching and teacher education. *Comparative Education, 41*(4), 455–470.

Spady, W. G. (2003). Outcome based education. In J. W. Guthrie (Ed.), *Encyclopedia of education* (2nd ed., pp. 1827–1831). New York, NY: Macmillan Reference.

Taajamo, M., Puhakka, E., & Välijärvi, J. (2014). *Opetuksen ja oppimisen kansainvälinen tutkimus TALIS 2013. Yläkoulun ensituloksia*. Opetus- ja kulttuuriministeriön julkaisuja 2014:15.

Vahtivuori-Hänninen, S. H., Halinen, I., Niemi, H., Lavonen, J. M. J., Lipponen, L., & Multisilta, J. (2014). A new Finnish national core curriculum for basic education (2014) and technology as an integrated tool for learning. In H. Niemi, J. Multisilta, L. Lipponen, & M. Vivitsou (Eds.), *Finnish innovations & technologies in schools: A guide towards new ecosystems of learning* (pp. 33–44). Rotterdam: Sense Publishers.

Välijärvi, J., Linnakylä, P., Kupari, P., Reinikainen, P., & Arffman, I. (2002). *The Finnish success in PISA – and some reasons behind it*. Jyväskylä: Kirjapaino Oma Oy.

Välijärvi, J., Kupari, P., Linnakylä, P., Reinikainen, P., Sulkunen, S., Törnroos, J., & Arffman, I. (2007). *The Finnish success in PISA – and some reasons behind it 2*. Jyväskylä: Institute for Educational Research.

Wellington, J. (1998). Practical work in science. In J. Wellington (Ed.), *Practical work in school science: Which way now?* (pp. 3–15). London: Routledge.

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APPENDIX

Comparison of Finnish National Core Curriculum aims with PISA framework. Content related to the Pisa 2006 framework are highlighted with a bold typeface.

Examples of aims for learning *science subject matter*:

- In grades 5 – 6 progress is made towards the *basic concepts and principles* of biology, chemistry, physics and physical geography.
- The tasks of chemistry instruction in the seventh through ninth grades is to guide the pupil in ***applying that knowledge*** *in different life situations*.
- In grades 7 – 9 the pupils will learn in physics *to use appropriate concepts, quantities, and units in describing physical phenomena and technological questions*.
- *learn to use concepts* and methods of information acquisition and research that are characteristic of biology.

Examples of aims for learning *scientific methods*:
The pupils will learn in physics and chemistry in grades 5 – 6

- scientific skills, such as the **formulation of questions** and … ,
- to make, compare, and classify **observations**, measurements, and **conclusions**;
- to **present and test a hypothesis,**

- to process, present and **interpret** results,
- to **formulate simple models**, to use them in **explaining** phenomena,
- to **make conclusions** about their **observations** and measurements and **recognise** the causal relationships associated with the properties of natural phenomena and objects,
- to carry out simple scientific experiments clarifying the properties of phenomena.

The pupils will learn in biology and physical geography in grades 5 – 6

- to ***observe*** and investigate nature outdoors
- ***identification*** of the main flora and fauna in nearby areas,
- to *make, compare, and classify* ***observations***, measurements, and conclusions;
- learn to use and interpret physical and thematic maps and to use other sources of geographic information, such as diagrams, statistics, literature, news sources, electronic messages, and photographs, including aerial and satellite photograph
- to understand the effects of planetary events on the earth
- to *carry out simple scientific experiments* clarifying the properties of phenomena, organisms, substances, and objects, as well as the correlations among them.

The core task of physics instruction in grades 7 – 9 is to strengthen pupils' skills in the experimental acquisition of information. In addition to the aims already presented above for grades 5 – 6, the pupils will learn in physics in grades 7 – 9

- to present and interpret results,
- to plan and carry out a scientific investigation in which variables affecting natural phenomena are held constant and varied and correlations among the variables are found out,
- to evaluate the reliability of the research process and results,
- to use various graphs and algebraic models in explaining natural phenomena, making predictions, and solving problems.

The instruction in chemistry for grades 7 – 9 relies on an experimental approach in which the starting point is the observation and investigation of substances and phenomena associated with the living environment. The pupil progresses from that point to the **interpretation**, **explanation**, and **description** of phenomena, and to **modelling both the structure of matter and chemical reactions** with the symbolic language of chemistry. In addition to the aims already presented above for grades 5 – 6, the pupils will learn in chemistry at grades 7 – 9

- to **acquire knowledge** in different life situations,
- to **interpret** and present the results,
- to use research methods typical from the standpoint of **acquiring scientific knowledge**,
- to carry out scientific investigation,
- to evaluate the reliability of the research process and results.

Biology instruction in grades 7 – 9 must be inquiry-based learning and it is to develop pupils' thinking in the natural sciences. The objective of the instruction is to give pupils the ability to observe and investigate nature. In addition to the aims already presented above for grades 5 – 6, the pupils will learn in biology in grades 7 – 9

- to know the basic concepts and processes of human biology and genetics,
- structure of ecosystem and examples of ecosystems
- to **identify** the main species of plants, fungi, and animals in the pupils' home region as well as biodiversity,
- to **recognise** environmental changes in the pupils' home region.

In geography instruction in grades 7 – 9 the world and its various regions and regional phenomena come under investigation. The instruction is to develop the pupil's geographical conception of the world, and the regional foundation of that conception. The objective of instruction in geography is to develop the pupil's ability to examine the natural, built, and social environments, and the interaction between people and the environment, from the local to the global level. The pupils will learn in geography in grades 7 – 9

- to use and interpret physical and thematic maps and to use other sources of geographic information, such as diagrams, statistics, literature, news sources, electronic messages, and photographs, including aerial and satellite photographs

Examples of aims for learning the nature of science:

- In grades 7 – 9 the core task of physics instruction in the seventh through ninth grades is to *broaden the pupils' conception of the nature of physics*. The instruction guides the pupil in thinking in a manner characteristic of science, in acquiring and using knowledge, and in evaluating the reliability and importance of knowledge in different life situations. The purpose of the experimental orientation is to help the pupils to perceive the nature of science.
- Biology instruction must be inquiry-based learning and it is to develop the pupil's thinking in the natural sciences.

Examples of aims for stimulating the pupils' interest to study science subjects:

- In grades 5 – 6 the instruction must *stimulate the pupils to study science*.
- In grades 7 – 9 the purpose of the experimental orientation is to *stimulate the pupils to study physics and chemistry*.

Examples of aims for stimulating the pupils to become familiar with society and decision making:

- In grades 5 – 6 the instruction must stimulate the pupils *to take care of their environment and act responsibly* in it.
- In grades 7 – 9 the instruction in physics helps pupils' understand the importance of physics and technology in everyday life, the living environment, and society.

It also **provides capabilities for making everyday choices**, especially in matters related to environmental protection and the use of energy resources.

Examples of aims for cooperative skills development:

- In grades 7 – 9 the purpose of the experimental orientation is to **help pupils to learn cooperation skills**. The pupils will learn in physics to work and investigate natural phenomena safely, together with others.

LIISA TAINIO AND SATU GRÜNTHAL

10. LANGUAGE AND LITERATURE EDUCATION

Principles and Reflections on Mother Tongue and Literature

ABSTRACT

Mother tongue and literature is taught at every stage of Finnish education, from preschool to universities, and, according to international assessments, with success. This chapter focuses on teaching and learning mother tongue and literature in basic education. The core of the subject is the interrelation between language and literature studies which opens up a diversity of thematic fields. This fact is elaborated with the help of an example, a fictional story by a Finnish writer, accompanied with school exercises typical for this subject. For background information, we first introduce the linguistic situation in Finland with a growing number of pupils and students learning Finnish as a second language. After elaborating on the principles and aims of the subject, we finish by reflecting on the training of teachers of mother tongue and literature, as well as pointing out the significance of high quality teaching materials and in-service training organized by the association for mother tongue teachers.

Keywords: language, mother tongue, comperehensive shcool

INTRODUCTION

The aim of our chapter is to give an overview of the subject mother tongue and literature, and to elaborate on its basic principles and aims.[1] In the following, we first describe the core curriculum of the subject mother tongue and literature (Finnish), showing the diversity of thematic fields in, and the significance of this subject for all learning skills in comprehensive school. One of our main points is to describe the intimate interrelation between language and literature studies that form the core of the subject. This is, to our mind, one of the reasons for Finnish pupils' continuously high success in literacy skills in international assessments such as PISA (see Hautamäki et al., 2008) and PIRLS.[2] Second, we describe concretely the variety and the innovative practices that are available for teachers of this subject. With the help of a short story written by a prominent contemporary author Hannele Huovi, we show how teachers in Finnish classrooms are able to create pedagogy that combines the development of their pupils' skills for reading, writing, and expressing themselves verbally, with the development of skills for analysing different texts and literature from the perspectives of literary analysis, linguistics and drama. Third, we

H. Niemi et al. (Eds.), Miracle of Education, 145–156.

finish our chapter by describing how teachers of this subject have rich possibilities for developing their professional skills, for example, through in-service training and the activities organized by the associations of mother tongue teachers.

THE LINGUISTIC SITUATION IN FINLAND

Finland has two national languages, Finnish (89.3% of the population) and Swedish (5.3%). In addition, Saami languages (0.04% of the population)[3] hold a special status ensured by law in certain Northern Finnish communes. In the framework of basic education, there are also two other mother tongues, Romany and Finnish sign language, that have a similar position in the National Curriculum. This means that the first part of the subject called mother tongue and literature may actually mean a choice of different mother tongues: Finnish, Swedish, Saami, Romany or Finnish sign language[4] (see Finnish National Board of Education, 2014). This is in line with the New Language Law launched in 2004 (see Nuolijärvi, 2005; Mantila & Sulkala, 2010).

Finnish is spoken in all parts of Finland, and the speakers of Swedish live mostly on the western and southern coasts. As stated above, Saami is spoken in Northern Finland, and it has its own minority language law.[5] This ensures, for example, that Saami speakers have a right to get their basic education in Saami in certain regions of Lapland. Speakers of Saami also have the right to use their mother tongue in, e.g., health care and in legal and official matters.

In addition to the above-mentioned languages that hold a special legal position, there are about 60 other languages in Finland that have more than 100 native speakers. The biggest language groups are Russian (approx. 66 400 speakers), Estonian (approx. 43 000), Somali (approx. 16 000), English (approx. 16 000) and Arabic (approx. 13 000).[6] Linguistic research has quite straightforwardly shown that the key factors for the successful learning of a second or foreign language rely on the skills and knowledge of a learner's own mother tongue (e.g. Cummins, 1976, 1978; Klein, 1986; Doughty & Long, 2003). This means that the better you know your own language, the better are your chances to learn another language. In basic education, each pupil has the right to get instruction in his or her own mother tongue (Finnish National Board of Education, 2004, 95). For pupils whose mother tongue is not Finnish or Swedish, learning their own language is voluntary. However, they should also learn either Finnish or Swedish as a second language (Finnish National Board of Education, 2004, 42). All the other subjects in comprehensive school are taught in Finnish or Swedish, and this language choice depends on the official language of the school. If and when the pupils' language skills in Finnish or Swedish are good enough, they may also choose to learn Finnish or Swedish as their mother tongue.

Understandably, the great majority of pupils in Finland learn Finnish as their mother tongue. In this chapter, we focus on describing the subject mother tongue and literature from the point of view of Finnish as the mother tongue. It should be

noted that the pedagogy and didactics in the frameworks of other mother tongues are designed along the same lines.

MOTHER TONGUE AND LITERATURE

Mother tongue and literature is one of the basic subjects of comprehensive school in Finland: its main aim is to teach pupils those significant skills that are fundamental for all learning in school, namely literacy skills, including, first of all, the technical skills for reading and writing. Mother tongue and literature is one of the prominent subjects in comprehensive schools, as well as in secondary schools, also in terms of the time devoted to it. The division of teaching hours devoted to different subjects is described in the National Curriculum, and mother tongue and literature is studied in every grade, having a minimum for total weekly lessons per year of 42 hours (Finnish National Board of Education, 2014). This means that mother tongue and literature has more lessons than any other individual subject in comprehensive school. It is also the only compulsory subject in the national matriculation examination at the end of upper secondary school.[7]

The main task for mother tongue and literature is to get pupils interested in language, literature and interaction – mother tongue is both an object and a tool for learning. Literacy skills are approached from the social cultural perspective: the objective is that the pupil becomes an active and ethically responsible communicator and reader who gets involved in culture and participates in and influences society (Finnish National Board of Education, 2014). The subject of mother tongue and literature is based on the fields of linguistics, the study of literature and drama, and communication and media studies. Because mother tongue and literature is described as an informational, artistic and skill subject whose aim is to help the pupils to build up their identity and self-esteem, a lot of effort is directed towards developing the pupils' analytical and artistic imagination through examining texts (both traditional and multimodal) from various points of view and using multiple pedagogical methods. In the new Curriculum from 2014, the concepts of multiliteracy, reading strategies, and phenomenal learning are strongly emphasized.

In the National Curriculum, the core contents of mother tongue and literature are categorized in the grades 7 – 9 under four dimensions: interaction skills, text interpretation, text production, and understanding of language, literature and culture (Finnish National Board of Education, 2014). The pupils should, for example, develop the courage and confidence to communicate and express themselves in various multimodal contexts both orally and in writing. They should also develop skills to understand and critically read different kinds of multimodal texts while paying attention to the genres, styles, textual structures, and linguistic choices as well as the informational contents that are shaped by the sources of information and the media of publication. The pupils should also have basic knowledge of the history, structure, and variations of the Finnish language, and of the language situation both in and

outside Finland. In addition, the pupils should also have knowledge of the history and variations of Finnish literature as well as skills to analyse the structures, genres, and meanings of fictional texts in their contexts (see more in Finnish National Board of Education, 2014). The underlying idea is that through learning these contents and skills, the pupil becomes an optimistic and self-confident individual and a member of society who values human rights and democracy. In addition to this, she wants to take an active role in developing her society, and, above all, enjoys and appreciates her mother tongue, literature, and culture.

In the subject of mother tongue and literature, special education is already emphasized from the first class. Pupils with particular problems and learning difficulties get extra lessons from the special education teacher and individual help from a special-needs assistant. In this way, the specific needs of pupils are taken into account in the whole teaching and learning process.

The interrelation between language and literature studies in Finnish mother tongue education is due to the fact that both the history of written Finnish and the history of education were promoted at first by the same actors not very many centuries ago. The first book in Finnish was published in 1543; it was an ABC-book, written by the developer of written Finnish, the Lutheran bishop, Mikael Agricola. The educational projects in Finland were quite successful. Already in the middle of the 18th century 30–50% of the Finnish population were able to read, and in 1880 already 98% of the population were literate (Kauppinen, 1986, 23; Hakulinen et al., 2009, 17). This high percentage was due to the Lutheran church since it demanded that before individuals could get married they had to be able to read (Markkola, 2007). In the 19th century, the school system was developed independently, apart from the Lutheran church. Because of the political history of Finland – this region had either been part of the Swedish Kingdom or the Russian Empire, becoming independent in 1917 – learning Finnish in school was not self evident at first. Finnish was allowed to be taught at schools as a foreign language in 1841 and as a mother tongue since 1856 (Hakulinen et al., 2009).

At the beginning of the 20th century, new ideas in pedagogical thinking affected school curricula (Kauppinen, 1986). The methods and the materials of mother tongue instruction were designed to take into account the life and the natural interests of children to motivate them more in learning activities. Even today, these guidelines are valued. In their comparative analysis on Finnish and German national curricula from the reading literacy perspective, Tainio and Winkler summarize that in Finnish learning materials the pupil is seen as "a child who is interested in learning, who is able to gain information both visually from the illustration and by reading the texts, whose prior knowledge is valuable and important, and who is an active and independent member of the literacy culture" (Tainio & Winkler, 2014, 21). The two main aspects of the subject were and are to learn Finnish grammar and to gain knowledge of Finnish literature. This combination of linguistics and the study of literature has been the basis of the didactics of the subject mother tongue and

literature; and this characteristic was emphasized when its name was changed in 1997 from mother tongue to mother tongue and literature.

ELABORATION ON SOME BASIC PRINCIPLES OF THE SUBJECT: CHAMELEON

The didactics of mother tongue and literature is designed to simultaneously serve the development of several skills in the framework of linguistics and literature studies. For example, a fictional short story can be a starting point for various exercises and pedagogies. Different kinds of reading strategies can be practised while examining a short story; it can be a starting point for exercises on writing (creative and analytical writing); it can be analysed both from the linguistics point of view (grammar, sociolinguistics, genre pedagogy) and the point of view of literature studies (as a representative of a literary genre; as a poetic text making use of tropes; as a text combining different narrative strategies, etc.); and, as a source of drama and oral presentations; or as a source for creating texts in the social media. Also, reading fiction can promote emotional skills and the understanding of minorities and otherness (e.g., Bal & Veltkamp, 2013). With various exercises the pupils' abilities to learn, think and express themselves creatively and independently in their own social contexts develop and increase.

Next, we turn to one concrete example of such a text. We take one contemporary short story, *Chameleon* by Hannele Huovi, (originally published in 2003), and give examples of tasks that could be given to pupils about it. Through this example, we aim to elaborate our argument about the tight bonds between instruction in linguistic and literary skills, and we also incorporate tasks making use of drama. We hope to demonstrate how these skills can be simultaneously practised. We present first the text itself and then a list of various possible exercises from it that cover the range of fields and starting points referred to above. The exercises here are basically meant for grades 7 to 9 (13 to 16 year old pupils). They are built along the lines that are used in lessons and exercises presented in text books and in other teaching materials for these grades, and thus, they depict the actual practices of mother tongue and literature education in classrooms.

CHAMELEON

A new Director had come to the office.

'Time for a makeover,' the Director said and smiled broadly.

The chameleon smiled back. He was just running down the corridor and was exactly the same grey as the corridor wall's concrete. The Director did see the smile, however.

'This office is now in for a new development,' the Director said and smiled.

'Yes, overdue,' the chameleon said, and his skin began to show stripes in line with the director's pin-stripe suit. 'The times require new measures.'

‘Work demands commitment,’ the Director said.

He looked energetic and his slimline leather briefcase efficiently sliced the air. The chameleon’s skin began to mimic the briefcase’s metallic colours, and the Director gave the chameleon an approving look.

‘Commitment, that’s it,’ the Director said and continued on his way without a glance back.

The chameleon stood in the corridor and sniffed the air. From the Fly Office’s kitchen a smell of coffee was wafting into the corridor. He decided he’d have a cup before hastening off to his desk.

The lizards were sitting in the kitchen having coffee and looked dissatisfied. They were discussing the new situation, but the talk stopped when the chameleon opened the door. There was a piece of snake tail on the cake dish, and an iguana passed it to the chameleon.

‘Thank you, but I only eat invertebrates,’ the chameleon said, not even glancing at the snake tail. Gradually he began turning orange like the tablecloth.

‘Everything’s going to pot,’ said a horned lizard and gave the newcomer a look. ‘Before long nothing we do will do.’

One of the chameleon’s eyes was looking east, the other west. The divergent gaze was confusing and began to disturb the horned lizard.

‘Do you agree?’ the lizard asked, checking up.

‘Oh definitely! We need no reorganisation here,’ the chameleon said, looking as angry and worried as the other lizards. He had a glow as orange as the tablecloth.

‘Time for a revolt,’ the horned lizard said.

Then, with one of his eyes, the chameleon saw the Director coming toward the kitchen. He concentrated himself and immediately his skin paled to a shade of grey. When the Director opened the door, he’d already developed a couple of pinstripes on his skin.

‘Down to work,’ the Director said, looking severe.

‘I was just off,’ the chameleon said smoothly.

He slipped off into the corridor while the others remained listening to the Director’s announcement of the new coffee and meal times, commitment, the new corporate spirit, and the Fly Office’s objectives for the year.

The chameleon settled down at his desk to lie in wait for insects. He immediately began toning in with the office colours; his thin skin started glowing green and brown and some orange spots formed on him. He got down to work, took up a correct posture on his office chair, grabbed the chair back with his tail and took tight hold of the chair legs with his forked toes. On one side of the desk sat a severe old iguana, and on the other a young trainee lizard. This little miss had dolled herself up nicely, and the chameleon absorbed some of the colour of her dress into his flank and gave her the glad eye. Both of the other two already had a pile of trapped insects in front of them. They’d been toiling at their desks all morning.

The chameleon's eyes wandered to both sides. Then he saw a fly. He concentrated both his eyes on the victim and began to sway to and fro. He studied his prey from each side and now and then his eyes rested on the glass window that showed the Director's office. Just as the Director came though his door the chameleon struck.

'Splendid,' the Director said. 'Excellent shot.'

The chameleon showed him the fly he'd nabbed on his tongue.

'Model yourself on this gentleman,' the Director said. 'Then things'll go well.'

The chameleon smiled contentedly and in an instant turned as silver-grey as the Director's tie. The old iguana looked cross, and the trainee missie was astonished the Director had taken no notice of the pile of flies she'd caught.

In the course of the day the chameleon did his best to fire off his tongue whenever the Director was walking by. He was praised for this several times, even though his whole catch was not particularly great. At the end of the day the insects were weighed and packed and sent for sale. The new Director was pleased.

The chameleon had had to change colour many times during the day, sometimes to suit the Director, sometimes his colleagues. He'd reproduced the office wall and the corridor; in the Fly Office Shop he'd turned as multicoloured as the shelves of canned food; and, working-out in the gym in the evening, he'd tried to make his skin shine like the skins of those sweating around him.

He arrived home absolutely fagged out. He felt as if he'd never manage to be a chameleon for one more day. Changing colour wore you out.

But when he woke the following morning, a sunray fell on the tip of his tail, and it turned as yellow as a sunlit branch. The chameleon couldn't give up.

The Secret of Mutability is Flexibility

(Translated by Herbert Lomas, in Books from Finland 2/2004.)
Exercises:

1. The story represents a literary genre called the fable, dating back to the antiquity. Find out facts about the genre and bring to mind other fables you might know. What is typical for them and how well does the short story Chameleon fit the genre?
2. Write the short story anew from a different perspective, changing the narrator into the Chameleon himself or one of the other characters (the Director, one of the iguanas, or the young trainee lizard).
3. Explore the style of the short story.

a. Select finite verbs used in the text, and replace them with their synonyms. What happens to the story and the characters?
b. Select the nouns, and add adjectives to noun phrases. What happens to the milieu and the characters?

c. Combine the clauses in the paragraphs with several clauses into one sentence. What kind of observations can you make of the rhythm of the new text and the atmosphere in it?

4. Read carefully the original short story in Finnish and compare it to the translation in English. In the English version, the sex/gender of the characters is openly revealed (with the choice of the personal pronouns he/she). In the Finnish version, due to the genderless character of the personal pronoun system in Finnish, the sex/gender of the characters is revealed more implicitly. Analyse the linguistic ways in which the characters get their sex/gender in Finnish. Is the sex/gender of the Director unambiguous?
5. The short story ends in a motto. How do you understand it? Write short mottos for different characters in the story (Chameleon, Director, old iguana, young trainee lizard), describing their principles and values of life.

a. How would you describe your own motto for life? Write your mottos on the board and discuss them.
b. Compare the way of life in the short story and in your community, at school or your network of friends. What is different, what is similar? Can you formulate mottos for basic principles in these different surroundings?

6. Summarize the happenings of the story into a poem (a haiku or a tanka, for example).
7. Imagine that you are the Chameleon and write the following tasks in this role.

a. Make a Facebook profile for the Chameleon. What kind of groups does he belong to? Who are his friends? What kind of music, etc., does he like?
b. Describe the happenings of the day by writing 5 – 10 updates of it on your Facebook profile. You can also add comments on them written by the Chameleon's friends.
c. Write a blog text about your day.

8. Write an interview about the Chameleon (or the Director) in the staff magazine of the company where they work.
9. A volunteer takes the role of one character in the story and sits on a chair in front of the class. Others ask him/her questions about his/her feelings, decisions, and actions in the story and, if they want, also before/after it. The volunteer answers the questions.
10. The class is divided into groups of 4 to 5 pupils. In each group, one pupil is the Chameleon, and the others act as "inner voices" inside his head: the Chameleon remains silent and the inner voices speak out his thoughts in three different situations:

a. when Chameleon first meets the new Director
b. at the coffee table with the colleagues
c. at home in the evening

11. The class is divided into groups of 4 to 5 pupils. Each group picks up three situations from the short story and presents them as "statues", silent pictures.
12. The class is divided into groups of 4 to 5 pupils. Each group makes a short (maximum) 5 minute play about a situation, when a "real-life-Chameleon" comes to a new class and meets his/her classmates and the school headmaster for the first time.

Each exercise is followed by a group discussion about the results of the task and the feelings and opinions of the pupils. During these discussions the teacher sheds light on the aims of the exercises in the larger pedagogical framework.

TRAINING TEACHERS OF MOTHER TONGUE AND LITERATURE

The Finnish teacher education system is described elsewhere in this book, and therefore we will only briefly specify some characteristics of teacher education and in-service education in the field of Finnish language and literature. Usually, in grades 1 to 6 mother tongue and literature is taught by a class teacher, and in grades 7 to 9, where our focus lies in this chapter, by a subject teacher.

In our view, the very essence of a teacher's profession in Finland is independent expertise. Subject teachers of mother tongue and literature are treated as experts in their own profession, pedagogy, and subject didactics, not only by educational and administrative authorities but also by pupils, colleagues, and parents. All their teaching activities and collaboration with their teacher colleagues and their pupils' parents are based on this fact. This also means that teachers are free to choose the pedagogical methods and the teaching materials for their pupils by themselves, as long as they follow the guidelines described in the National Core Curriculum for Basic Education (Finnish National Board of Education, 2004). Finnish teachers are independent professionals and pedagogical authorities in their work (Harjunen, 2009).

All around Finland, there are local associations for teachers of mother tongue and literature. These associations organize seminars, lectures and meetings for their members. Their head organization, Äidinkielenopettajain Liitto (ÄOL; National Association of Mother Tongue Teachers; see http://www.aidinkielenopettajainliitto.fi/index.html) is also a highly effective forum, which publishes a membership journal and other professional material, both in paper and electronic form, and offers professional help in different matters. Twice a year the association organizes a big 2 – 3 day seminar with distinguished guest lecturers, a large number of workshops and interesting cultural programmes in the evenings. For a large number of – probably most – teachers of mother tongue and literature, these activities (local and national in-service education and participation in different activities, i.e. discussion templates offered by the ÄOL) form an essential part of their teacher identity and professional growth. Recent research also shows that pupils who have competent

teachers attain better results in national reading and writing assessment (Harjunen & Rautopuro, 2015).

In the field of mother tongue and literature education, there is a vast amount of excellent teaching material available, published by all the prominent publishing houses in Finland. The percentage of electronic material is presently increasing and the topic is being vividly discussed among all publishers and textbook writer groups. There are also Internet platforms and Facebook groups where teachers share their teaching materials and pedagogical ideas free of charge.

All textbooks come with a separate book and/or electronic material for the teacher, including additional background information, elaboration ideas, theory, and teaching suggestions. Basically, teachers are free to choose those textbook series that please them most, but actually the economic situation of the school and the opinions of teacher colleagues may set certain restrictions on that freedom (it is, for example, not always possible to use several textbook series for different classes in the same grade). What must be stressed, however, is that there is no local or national authority that could decide or command the teachers to use certain materials or textbook series.

Teachers of mother tongue and literature use textbooks in alternative ways and degrees. The role of a textbook is seen as a manual where the pupils and teachers are given basic facts in a compact form. However, other learning materials, such as classical literature, contemporary prose and poetry, media texts, various kinds of multimodal texts and other kinds of up-to-date texts are brought to classrooms and used for pedagogic purposes. Reading of different kinds of texts and talking about them in classrooms has shown to effect positively on the literacy skills of young people (Harjunen & Rautopuro, 2015; Kauppinen, 2011).

As is clear in many chapters in this book, the teaching profession in Finland has a strong academic basis, and teacher education relies on tight co-operation and interrelation between Departments of Teacher Education, subject departments and faculties, and teacher training schools as well as the national associations of teachers and the National Board of Education. Several times a year university staff and training school teachers meet in order to discuss courses and curricula, give feedback and envision further collaboration. In contrast to some other countries, university staff hold no authoritative or upper position to teachers working in the schools. On the national level, new curricula are launched approximately every 10 years, and all of these above mentioned parties are invited to take part in the development process of new curricula by the National Board of Education. Hence, this is an example that shows how close is the collaboration between different parties interested in and responsible for the development of mother tongue and literature studies in Finland. Through the national assessments (e.g. Harjunen et al., 2011; Harjunen & Rautopuro, 2015) and educational research and through the voices of acting teachers and teacher educators the voices of school pupils are also valued and taken into account.

NOTES

[1] In this chapter, we use the term mother tongue, because it is the direct translation of the name of the subject and used also in the national curricula (Finnish National Board of Education, 2014). In linguistic research, the term has been challenged and replaced, for example, by the concept of first language (e.g. Kecskes & Papp, 2000).

[2] See http://timssandpirls.bc.edu/pirls2011/downloads/P11_IR_Executive%20Summary.pdf. (Accessed 9.12.2015)

[3] The statistics given here show the situation at the end of 2013, when the total population of Finland was 5.4 million. See Statistics Finland, http://www.stat.fi/index_en.html and http://www.stat.fi/tup/suoluk/suoluk_vaesto.html. (Accessed 9.12.2015)

[4] If a student's choice of mother tongue and literature is Saami or Romany, she also has to study Finnish or Swedish, and if the choice is Finnish sign language, she has to study Finnish/Swedish for users of sign language.

[5] To be exact, Saami is not only one language but consists of 10 – 11 Saami languages that are spoken in Northern Scandinavia and the Kola Peninsula. The biggest and most widely spread language in the group is North Saami, which is also the mother tongue of most native Saami speakers in Finland, where two other Saami languages are also spoken. For further information, see The Saami – a Cultural Encyclopedia, http://bar-enc.didaktekon.se/Editor/Examples/Ex-Enc-Saami-1.pdf. (Accessed 29.5.2011)

[6] The data dates from the end of 2013. For further details and exact numbers of speakers, see http://www.suomi.fi/suomifi/suomi/valtio_ja_kunnat/perustietoa_suomesta/vaesto/index.html and http://www.suomi.fi/suomifi/english/index.html. (Accessed 9.12.2015)

[7] For information about the matriculation examination, see http://www.ylioppilastutkinto.fi/en/index.html

REFERENCES

Bal, M. P., & Veltkamp, P. (2013). How does fiction reading influence empathy? An experimental investigation on the role of emotional transportation. *PLOS/one*, *8*(1), e55341. doi:10.1371/journal.pone.0055341. Retrieved December 9, 2015, from http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0055341

Cummins, J. (1976). The influence of bilingualism on cognitive growth: A synthesis of research findings and explanatory hypotheses. *Working Papers on Bilingualism, 9*, 1–43.

Cummins, J. (1978). Bilingualism and the development of metalinguistic awareness. *Journal of Cross-Cultural Psychology, 9*, 131–149.

Doughty, C., & Long, M. (2003). *Handbook of second language acquisition*. Oxford: Blackwell.

Finnish National Board of Education. (2004). *Perusopetuksen opetussuunnitelman perusteet 2004* [National Core Curriculum of Basic Education 2004]. Retrieved December 18, 2015, from http://www.oph.fi/download/139848_pops_web.pdf

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014* [National Core Curriculum of Basic Education 2014]. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Hakulinen, A., Kalliokoski, J., Kankaanpää, S., Kanner, A., Koskenniemi, K., Laitinen, L., Maamies, S., & Nuolijärvi, P. (2009). *Suomen kielen tulevaisuus. Kielipoliittinen toimintaohjelma* [The future of Finnish. An operational program for language policy]. Helsinki: Research Institute for the Languages of Finland. Retrieved December 9, 2015, from http://scripta.kotus.fi/www/verkkojulkaisut/julk7/suomen_kielen_tulevaisuus_kotus_verkkojulkaisuja_7.pdf

Harjunen, E. (2009). How do teachers view their own pedagogical authority? *Teachers and Teaching, 15*(1), 109–129.

Harjunen, E., & Rautopuro, J. (2015). *Kielenkäytön ajattelua ja ajattelun kielentämistä. Äidinkielen ja kirjallisuuden oppimistulokset perusopetuksen päättövaiheessa 2014: keskiössä kielentuntemus ja kirjoittaminen* [Thinking about language use and languaging. Evaluation of mother tongue

and literature in the end of lower secondary education 2014]. Helsinki: Kansallinen koulutuksen arviointikeskus.
Harjunen, E., Juvonen, R., Kuusela, J., Silén, B., Sääskilahti, M., & Örnmark, M. (Eds.). (2011). *Miten peruskoululaiset kirjoittavat?* [How do students of comprehensive school write?] Retrieved December 9, 2015, from http://www.oph.fi/download/132345_Miten_peruskoululaiset_kirjoittavat.pdf
Hautamäki, J., Harjunen, E., Hautamäki, A., Karjalainen, T., Kupiainen, S., Laaksonen, S., Lavonen, J., Pehkonen, E., Rantanen, P., & Scheinin, P. (2008). *PISA 06. Analyses, reflections, and explanations*. Helsinki: Ministry of Education Publications 2008: 44. Retrieved April 27, 2011, from http://www.minedu.fi/OPM/Julkaisut/2008/PISA06._Analyses_Reflections_and_Explanations?lang=en
Huovi, H. (2004). Chameleon. Translated by Herbert Lomas. In: *Books from Finland* 2. Originally published 2003 in *Gepardi katsoo peiliin. Faabeleita.* Helsinki: Tammi.
Klein, W. (1986). *Second language acquisition*. Cambridge: Cambridge University Press.
Kauppinen, S. (1986). Äidinkielen didaktiikka [Didactics of mother tongue]. Helsinki: Otava.
Kauppinen, A., Lehti-Eklund, H., Makkonen-Craig, H., & Juvonen, R. (Eds.). (2011). *Lukiolaisten äidinkieli: suomen- ja ruotsinkielisten lukioiden opiskelijoiden tekstimaisemat ja kirjoitustaitojen arviointi*. Helsinki: Suomalaisen Kirjallisuuden Seura.
Kecskes, I., & Papp, T. (2000). *Foreign language and mother tongue*. Mahwah, NJ: Lawrence Erlbaum Associates.
Mantila, H., & Sulkala, H. (Eds.). (2010). *Planning a new standard language. Finnic minority languages meet the new millennium.* Helsinki: Finnish Literature Society.
Markkola, P. (2007). Oma kieli ja kinkerikansan lapset [Your own language and Christian education]. *Historiallinen aikakauskirja, 4/2007*, 397–399.
Nuolijärvi, P. (2005). Suomen kielet ja kielelliset oikeudet. In M. Johansson & R. Pyykkö (Eds.), *Monikielinen Eurooppa. Kielipolitiikkaa ja käytäntöä* [Multilingual Europe. Language policy and practice]. Helsinki: Gaudeamus.
Tainio, L., & Winkler, I. (2014). The construction of ideal reader in German and Finnish textbooks for literacy education. *L1 – Educational Studies in Language and Literature, 14*, 1–25. Retrieved from http://dx.doi.org/10.17239/L1ESLL-2014.01.05

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11. LANGUAGE EDUCATION – TOWARDS TRANSVERSAL INTERCULTURAL LANGUAGE PROFICIENCY

ABSTRACT

This chapter focuses on describing the issues considered to form the basis for the current quality of foreign language teaching in basic education in Finland. This basis has its cornerstones in research-based teacher education and active networking between the different stakeholders in the field. We introduce the main aims and core contents of language education as well as the latest trends in pedagogical approaches, methods and the role of assessment. We present descriptions of projects and networks set up to support the application of both the latest results of research on language education and the implementation of the national core curriculum at the local school level. The chapter concludes with a discussion of the challenges for future quality work in the field of language education in Finnish comprehensive schools. It is not enough only to maintain the current quality level; there needs to be an upgrading of quality.

Keywords: language education, language proficiency, foreign language teaching and learning, language teacher, basic education, curriculum reform

THE CORNERSTONES OF LANGUAGE EDUCATION

Introduction to the Current Situation

The number of people who speak the Finnish national languages, Finnish and Swedish, is very modest compared to, e.g., bigger European nations and their languages. Finnish people as a nation need proficiency in a range of languages to be able to communicate and cooperate with people from different linguistic and cultural backgrounds both for business and pleasure. Even Swedish is in practice a foreign language in most of the country, because the Swedish-speaking minority (ca. 5%) is heavily concentrated on the western coast and in southern Finland. Owing to this background, it is easy to understand that we are, and we have to be, committed to investing in language education in Finland. Foreign languages and the need for foreign language proficiency and intercultural communication skills have become, in one way or another, part of every Finn's everyday life – both in interpersonal

H. Niemi et al. (Eds.), Miracle of Education, 157–177.

situations and through extended use of traditional and social media. For example, as a rule TV programmes in Finland are not dubbed, which gives us the benefit of everyday exposure to foreign languages while watching the television.

Since the 1970s, language proficiency, communicative competence, intercultural communication competence, multilingualism, and multiculturalism have become a joint European concern. For example, the Council of Europe is concerned to improve the quality of communication among the Europeans of different language and cultural backgrounds (CEFR, 2001, xi, 3–6). In Finland, different stakeholders of language education have actively participated in developing the field of language learning and teaching at the European level (e.g. use of the CEFR and ELP). Simultaneously with internationalization and globalization, the concept of language proficiency and the objectives of language education have been profoundly modified. Currently, language learning is seen as an individual, lifelong, in and out of school effort, which is to be encouraged and supported at all levels of education (CEFR, 2001).

Since the 1970s when the 9-year comprehensive-type basic school system was launched in Finland, the right and obligation to study foreign languages have concerned everybody from the very beginning of the school path. Currently, language studies (minimally comprising of a mother tongue, one of the two national languages, and at least one foreign language) are compulsory at each level of the Finnish school system. Foreign language studies are to start in basic education at the latest in the 3rd grade at the age of 9. The most often offered and studied first foreign language is English. In 2012, 90.5% of the 3rd graders, the age group being almost 58 000 children, started English as their first compulsory foreign language, while 5.3% started Finnish and 1% Swedish. The proportion of pupils who began with German (1.2%) or French (0.9%) was about 1% in each language, while Russian (0.3%) and other languages attracted even fewer pupils (Kumpulainen, 2014).

The compulsory minimum of languages to be studied in comprehensive school is three languages: a mother tongue from the 1st grade on, the first foreign language at the latest from the 3rd grade on and another national language, which for most of the (Finnish-speaking) pupils is Swedish, at the latest from the 7th grade on. From the autumn of 2016, the second national language will be started one year earlier, in the 6th grade (Valtioneuvoston asetus 422/2012). In addition, there is an opportunity to choose an optional language from the 5th and/or 8th grade on, even though this option is not always available in all municipalities due to practical and economic reasons. All in all, in addition to Finnish and Swedish, pupils have an opportunity to study a maximum of three foreign languages in basic education. However, the proportion of pupils who make full use of this opportunity has been declining during the last few years. In 2012, foreign language studies were started before the 3rd grade by not more than 6.9% of 1st graders and 12.5% of 2nd graders. In 2012, approximately every fourth (26.6%) 5th grader studied two foreign languages of advanced syllabus (A languages) and less than one fifth (17.2%) of 8/9 graders had studied an optional language according to a short syllabus (B language) starting from the 8th grade at the age of 14 (see e.g. Kumpulainen, 2014). The most common

set of languages studied by comprehensive school pupils is Finnish, Swedish and English.

Referring to the title of this paper, foreign language teaching is, not only in Finland but internationally as well, in the process of a paradigm shift towards foreign language education (focusing on education) that integrates experiential, sociocultural and ecological theories of learning (see e.g., Kohonen, 2009). Language education emphasizes meaningful learning that is based on personal experience, social interaction and reflection. It aims at all-around human growth. This kind of approach inevitably poses new challenges for teachers' professional competencies and teacher education to enable a new kind of interactive and collaborative learning culture in schools (Kohonen, 2009, 16–26). In addition to linguistic communication, the latest curriculum reform of basic education in Finland (Finnish National Board of Education, 2014) recognizes the need for language education that is wider in perspective than mere linguistic skills. This view intertwines linguistic skills with a larger framework of multilingualism and multiliteracy, emphasising individual's functional language proficiency in everyday situations and cultural encounters.

RESEARCH-BASED TEACHER EDUCATION AND FL TEACHING

A Brief History of Foreign Language Teaching in Finland

In the following, we will give a brief overview of the focal contents and highlights of language education as stated in the normative documents through the decades of general compulsory education. We will also describe how the core curricula were implemented across the local settings over time by prioritizing whatever methodical options were popular at the time for teaching and learning foreign languages and assessing the learning outcomes.

Before the onset of comprehensive education, compulsory and equal for all citizens, the educational system of Finland was characterized by parallel paths, strongly diversified in nature in terms of the future qualifications they provided to the students. Prior to 1970, only the students attending a form of schooling targeted to more academic professions (lower and upper secondary schools) were provided opportunities to study foreign languages. The methodology was largely borrowed from the studies of classic languages favouring grammar, translation and the written mode, in the teaching of even modern languages. Although the superiority of form over function is something of an unresolved issue still today, the ethos of language teaching and learning has undergone a profound change since those days. Since the mid-1970s, the language syllabi launched for the comprehensive school were inspired by the notional-functional models proposed to promote European mobility. Until the 1980s, these language syllabi also presented detailed lists of structures and situations intended to be followed by teachers. Such lists may be viewed as a top-down power distribution, downplaying teacher autonomy and continuing the

behaviourist tradition of teaching and learning. However, the way for communicative competence as a goal for foreign language teaching and learning was paved for further elaboration. The communicative turn was manifested in new teaching materials including texts striving to convey everyday language use and promote speaking skills. The role of oral language proficiency grew in importance during the 1980s and 1990s along with an increased concern for autonomy issues, in regard to both teachers and students. Local curricula were derived from the national core content allowing teachers to find their own methodological priorities that fit local settings of learning. More attention was paid to pupils´ diversity and differing needs. Humanistic conceptions of learning eased the atmosphere of school learning and merged with the constructivist mainstream that first materialized in the 1994 core curriculum (POPS, 1994).

This core curriculum only stated the broad frame for teaching and learning and allowed teachers a large amount of freedom of local interpretation and pedagogical choice. At the national level, both positive and negative consequences of the curricular freedom expressed in 1994 were detected. In some municipalities, the local curricula were of high quality and schools had profiled themselves to reflect and consolidate local collaboration, but a great variation was discovered. Furthermore, teachers wanted more normative guidance for their work.

The cycle of curricular design at the dawn of the millennium (2004) sought to respond to a number of international, societal and pedagogical challenges. The need for removing obstacles to international mobility between countries was well noted in Finland, and Finnish language experts actively participated in and benefited from the Council of Europe activities. These long-term enterprises culminated in publishing effective tools for making language education more systematic, comprehensive and transparent. The Common European Framework of Reference for languages (CEFR, 2001) and the European Language Portfolio (ELP) along with the national versions (EVK, 2003; Kohonen, 2005) are among the most prominent and incorporated the yield of several decades of development work within the Council of Europe modern language project. The major reform in the 2004 core curricula was probably the adaptation of the CEFR proficiency level system (A1–C2) to illustrate progress of language ability in different syllabuses (Hildén & Takala, 2007).

Main Aims Set in the Language Core Curricula

Language education in Finnish comprehensive schools is based on the National Core Curriculum for Basic Education, the latest being from the years 1994, 2004, 2014. The latest National Core Curriculum for Basic Education (Finnish National Board of Education, 2014) is a normative guideline for teaching and educational work specifying the education providers, local municipalities and schools not only the objectives and main content for various subjects, but also a wider framework and guidelines for organising basic education, e.g. the basic values to be followed,

working culture, and its development (See Finnish National Board of Education, 2014).

The process of curriculum reform (see Finnish National Board of Education, 2014; Halinen, 2015) relies heavily on the latest academic research. Expert groups of teachers, teacher educators and researchers participated in drafting the structure and content for the new curriculum. As regards language education, the National Board of Education also invested in carrying out a sample-based evaluation of the outcomes of the most studied foreign languages at the end of basic education in 2013 (see Finnish Education Evaluation Centre & Finnish National Board of Education, 2015). Results of the evaluation provided information on the key development objectives in language education and helped in formulating the guidelines for language education in the new curriculum. Additionally, parallel to the curriculum reform process, the National Board of Education has published research-based article collections for the benefit of language education providers and teachers at the local level. Well-established experts in the field, as well as scholars and practitioners of younger generations, were invited to share their experiences by writing articles to support the pedagogical and didactical processes for implementing the spirit and ideas of the new curriculum in practice (see e.g. Hildén & Härmälä, 2015; Mustaparta, 2015). These resources are all publicly available on the Internet.

Also, a principle of openness was applied in that drafts of the core curriculum were publicly available on a specific website for commenting during the curriculum reform process. A broad range of stakeholders was consulted for the preparation of the earlier curricular cycles as well, but the latest curriculum reform process was more open than ever. Concerning language education, the major agents involved have been teacher associations, researchers, employer associations and diverse cultural groups. On this round, any individual person – parent, pupil or anyone interested – also had an opportunity to influence the process (OPS, 2016).

In foreign language education, a language has been seen not only as a skill subject and means of communication but also as a cultural subject. The latest curriculum reform process shows a commitment to developing language education. For the first time, the concept of language education (in Finnish "kielikasvatus"), is included in the syllabi of all languages, mother tongue included (National Core Curriculum for Basic Education, 2014). In addition, language education is embedded in all education signaling that language education at the practical level in basic education requires cooperation between different subjects. This, of course, means cooperation between teachers of different subjects. In other words, regardless of his or her subject, each teacher is also a language teacher of said subject. In the spirit of the new curriculum (e.g. Finnish National Board of Education, 2014, pp. 28, 325, 348) language is seen as a prerequisite for all learning and thinking. As a curiosity, the latest National Core Curriculum for Basic Education also explicitly states that in language learning, there is room for joy, playfulness and creativity in all grades (Finnish National Board of Education, 2014, pp. 197, 348).

In the light of the latest core curriculum, pluri-/multilingualism and pluri-/multiculturalism, language awareness and cultural diversity penetrate the whole basic education. Starting from the basic values of the core curriculum, linguistic and cultural diversity are seen as richness (Finnish National Board of Education, 2014, 16). The background for all this stems from the European policies and cooperation implemented by European institutional bodies (see e.g. CEFR, 2001; ECML). The latest National Core Curriculum for Basic Education (Finnish National Board of Education, 2014, p. 18), to be implemented starting from August 2016, aims at developing schools as learning communities, emphasizes the joy of learning and collaborative atmosphere, as well as promoting student autonomy in studying and in school life. Basic education forms the cornerstone for the whole educational system and is simultaneously a part of the lifelong education path starting from the preprimary education.

The latest core curriculum emphasizes transversal competencies, i.e., an entity comprising of knowledge, skills, values, attitudes and motivation, and the ability to put them to use appropriately in a situation (Finnish National Board of Education, 2014). The learning goals of transversal competencies are described as seven competence areas (L1–L7) encompassing Thinking and learning to learn (L1), Cultural competence, interaction and self-expression (L2), Taking care of oneself and others, managing daily life (L3), Multiliteracy (L4), Competence in information and communication technology (L5), Working life competence and entrepreneurship (L6), and Participation, involvement and building a sustainable future (L7). As regards language education, cultural competence and multiliteracy are the learning goals most obviously addressed in the core content, although all the other goals are integrated in the process of language teaching and studying, too. This is a new way of incorporating competence-based and subject-based teaching and learning (Finnish National Board of Education, 2014).

A novel emphasis set on collaborative classroom practices will also be brought about in multi-disciplinary, phenomenon- and project-based studies where several teachers may work with any given number of students simultaneously. Language teachers are consequently invited to establish ongoing cooperation not only in their own circle, but across disciplines and even more broadly with colleagues abroad. The cornerstones for lifelong language learning are laid in the basic education where the repertoire of objectives covers not only linguistic competencies but also strategic competencies, both communication and learning strategies, and cultural skills as well. Objectives and core contents of foreign languages are presented separately for grades 1–2, grades 3–6 and grades 7–9. The aims and core contents for grades 3–6 and 7–9 are more specific than for grades 1–2. The core curricula also stress the fundamental alignment between objectives, learning process and assessment.

The goals of language teaching at each stage of grades encompass five main components: Growth towards cultural diversity and linguistic awareness, language study skills, developing/in-progress interactive language proficiency, developing/

in-progress receptive language proficiency, and developing/in-progress productive language proficiency. These are complemented with goals of transversal competencies and pedagogical instructions regarding teaching and assessment practices. As for interactive, receptive and productive language proficiency, the objectives of language teaching entail encouraging pupils to actively participate in discussions, providing them rich linguistic input of a variety of texts, and guiding them in producing spoken and written texts for meaningful purposes (Finnish National Board of Education, 2014, p. 349).

Approaches and Methods in Finnish Language Classrooms

By tradition, the Finnish core curricula express norms concerning aims, focal content and guidelines of assessment (in terms of objects and reporting), but no straightforward rules are given on how to implement these regulations. The pedagogical freedom left to teachers is therefore exceptional compared to the situation in many other countries. Today, the fundamental aim is that children (or any language learner/user) from the very beginning of their lifelong FL learning path have motivation, skills and confidence in facing all new language experiences in school and out of school to develop their linguistic repertory (For more specific points, see CEFR, 2001, pp. 1–5; EVK, 2003, pp. 19–25). If foreign language teaching is started in grades 1–2, it is to be functional and playful in nature, implying e.g. physical activities, games, songs and nursery rhymes. The emphasis is (to be) on listening, understanding and speaking skills whereas writing is introduced gradually and used to support oral practice. The core contents are related to the pupils' everyday lives, i.e. home and school. Also, pupils are introduced to the cultures and regions where the target language is used (Finnish National Board of Education, 2014).

Regarding pedagogical principles and practices, a number of approaches from various methodological origins merge in language classrooms. Communicative language teaching with modifications is the most common approach, mixed with traditional form-focused study of grammar. The need for form-focused study of grammar seems to be reinforced by the written matriculation examination at the end of upper secondary school. More recent foci are learner autonomy, oral proficiency, study of culture and socio-culturally oriented learning environments supported by ICT and most recently, by social media. The overall tendency of development during recent years has shifted from studying the (structure of) language towards studying the use of languages for real life purposes. There has been a shift from written to oral language, from grammar to language proficiency for real life needs, from translation to the communicative use of language, from teacher-centeredness to learner autonomy, from linguistic skills to intercultural communication competence and cultural sensitivity promoted by authentic intercultural encounters (e.g. Kohonen, Jaatinen, Kaikkonen, & Lehtovaara, 2001; EVK, 2003; Takala, 2009; Kohonen, 2009). In the 2010s, the immense progress of technologic facilities, parallel

environments supported by them and applications of artificial intelligence provide unforeseen prospects and opportunities of trying out multimedia and communicative resources including language ability. Language learners can become members of multiple virtual communities, acquire knowledge and enact their motivations and skills far beyond regular curricular studies. This option is legitimised in the latest curriculum documents (Finnish National Board of Education, 2014, 354).

Because of the freedom of choice concerning teaching and learning techniques, no standardized templates for language lessons are advisable. There are, however, a set of broadly agreed upon basic guidelines for structuring a language lesson that are introduced to student teachers as a preliminary blueprint to start their work in a language classroom. They are drawn on several sources: e.g. principles of activity theory (Engeström, 1982) and cognitive theories of language learning (Kristiansen, 1998), sociocultural theories (Vygotsky, 1982; Lantolf & Thorne, 2006), and most recently on ecological theories of learning (van Lier, 2009) and a holistic understanding of language acquisition as multi-sited and multimodal process leading to greater capacity and empowerment of individuals (Ortega, 2009). Disregarding the recognized aims at a high conceptual level, the current set of beliefs about effective classroom teaching seems to boil down to varieties of task-based language teaching and learning, more specifically to a weak version called task-supported language teaching (Ellis, 2003; Skehan, 1998; van den Branden, Bygate, & Norris, 2009). In this version a piece of meaningful real-life activity is modified to serve language learning by choosing chains of actions that incorporate language elements (asking student to explain how they bake a cake instead of simply baking it in silence). Subsequently, the linguistic data naturally present in the situation is analysed by steering the students´ attention to relevant forms and their use (focus on form) (Willis, 1996). The forms may also be practiced in additional contexts.

It is considered important to make a distinction between a task and an exercise in language teaching and learning. Tasks aim at using language for meaningful open-ended human communication with a genuine focus on the function and content of the message rather than on its form, and they provide opportunities for interaction, problem-solving and pedagogical intervention by the teacher and even enable scaffolding from peers. Exercises, on the other hand, rely heavily on a demand for formal accuracy and expected one-to-one responses. It goes without saying that tasks are the mode of work favoured in language teacher education and among leading language-teaching professionals (Hildén, 2009). A task is, by definition, a set of differentiated, sequenceable, problem-posing activities that involve learners and teachers jointly selecting from a range of varied cognitive and communicative procedures to be applied to existing and new knowledge in collective exploration (modified from Candlin, 2009, pp. 27–29). The key features of a task and student centred implementation is strongly voiced in mainstream Finnish language teacher education. The implementation of task-supported instruction is customarily cyclic

(Willis, 1996; Willis & Willis, 2009) starting from planning and proceeding through execution to feedback that foster new insight and launch a new cycle.

First, linguistic content is usually introduced to the pupils by referring to e.g. the usefulness of the functions or vocabulary in real-life situations, pupils´ previous experiences of related situations to motivate the pupils to learn the intended structure or vocabulary. In the following phase, pupils typically listen to a text or watch a video clip for input. They are provided opportunities to seek clarification from peers and the teacher to make sure that they understand what is being taught. Pupils are instructed in pronunciation and intonation patterns and generally asked to read aloud the text in pairs or individually. This done, the pupils discuss the content of the text guided by question prompts or pictorial cues like mind-maps. They help each other on the way and provide feedback to their peers. Oral training tends to be prioritized in the classroom, whereas written tasks are commonly assigned as homework. Even grammar is treated in the same way proceeding from oral practice to written production. Creative use of the content in focus is encouraged from the very beginning resulting in improvised pair discussions, small-scale dramas and ad hoc narratives based on the vocabulary presented in the textbook or other channels of linguistic input. The third main phase of the pedagogical process consists of putting the linguistic content into proper use in a novel context relevant to the language-learning pupil. Most instances of such "externalization" are homework assignments to write a story using the vocabulary or the grammatical item in focus or oral homework, for instance, recording a video-clip dealing with the thematic content of the previous classes. These items of work are presented in the next lesson to peers and the teacher, not exclusively in all-class but preferably in small groups to be commented on by peers.

In accordance with the socio-cultural views on language teaching and learning, the task is rather seen as a work plan or a blueprint than a stand-alone and ready-made entity (Breen, 2009). This view is mirrored in the outcomes section by acknowledging various interpretations of the task script and allowing and encouraging student initiative at any stage of the task cycle. Students are also given opportunities to choose settings and actions, and the borderline between in-school and out-of-school learning is blurred by modern technologies and access to multicultural encounters in domestic environments. Also, the distinction between learning and acquisition has decreased for the same reasons, and language studies at school can incorporate uses of the language in spare time. In practice, though, the ideal of global learning and flexible alignment of students' everyday life at school and outside has not materialised quite as desired by teacher educators. For some reason, language teachers have not felt too confident with incorporating the options offered by information and communication technologies into their teaching (Pöyhönen & Luukka, 2007). According to even more recent research findings, Finnish language classes portray themselves in a relatively traditional fashion: written production

and textbook exercises are highly favoured at the cost of modern technologies and authentic materials and encounters. Speaking in pairs, on the other hand, has fought its way through as a mainstream practice of communicative language use in class (Härmälä, Huhtanen, & Puukko, 2014; Hildén & Rautopuro, 2014a).

Assessment of Learning Outcomes

According to the Basic Education Act (628/1998), pupil assessment in basic comprehensive education primarily aims at guiding studying and, consequently, promoting learning and pupils´ self-assessment skills. The starting point for all assessment is the objectives of the curriculum that include subject specific progress, working and learning skills, and behaviour. It is important to note the distinction between the purposes of assessment which are the starting points for relevant assessment procedures and the arguments that can be presented concerning the validity of the assessment outcomes. In basic education curricula (Finnish National Board of Education, 2014), two types of assessment are acknowledged: assessment during the course of studies, and assessment at the end of courses, school years, and finally at the end of the entire basic education.

The modes of assessment and the quality requirements of assessment vary accordingly. For formative purposes during the course of education, criterion-referenced measures supported by on-going feedback and verbal records may be most appropriate, perhaps even as the only techniques applied in grades 1–7. From these grades onwards at the latest, pupils are to be given numerical grades, which however are not the only way of giving feedback on pupil progress. It is noteworthy that the grades are always assigned on the basis of the objectives in the curriculum, not by normative grounds of comparing pupils of a single class to each other. The grade must be based on varied sources of information; in a language subject this implies that both written and oral language performance should be considered. In addition, the grade in a foreign language includes the effort put into the studies as well as related strategic and cultural skills. Tools for enhancing pupils´ self-assessment and peer-assessment as well (e.g. the European Language Portfolio, ELP) offer an excellent, but yet rarely implemented option to widen the view on the multifaceted assessment of language proficiency.

The National Core Curriculum for Basic Education 2014 also sets particular emphasis on formative assessment and its major function as a part of the learning process. Formative assessment is closely intertwined with the development of self-regulation skills and pupils´ capacity to gradually assume responsibility for their own actions to promote learning. This aim is consistently supported by providing teaching materials such as the electronic version of the European Language Portfolio, which, however, is not implemented as widely as intended (Finnish Education Evaluation Centre & Finnish National Board of Education, 2015; Härmälä, Huhtanen, & Puukko, 2014; Hildén & Rautopuro, 2014a). The Finnish versions of the European language portfolio, ELP, have been developed in a national project funded by the National

Board of Education. Three different ELP versions (for grades 1–3, 4–6, and 7–9), background information about the Finnish versions of ELP (in Finnish, Swedish and English), as well as supporting materials for teachers are publicly available on the Internet (see Eurooppalainen kielisalkku, 2015).

Towards the end of the basic level of education, the demand for comparability of grades across the country becomes stronger, because the grades provide a selection ground for further studies at the secondary level. To ensure equity and national comparability, two junction points (at the end of the 6th grade and the 9th grade) are singled out and the criteria of a "good" performance (grade 8 on a 4–10 scale) are provided. The description of good performance is meant to equalize teacher assessments across schools and regions. Research indicates, however, that a single description does not suffice to ensure a nation-wide correspondence between final school grades. Instead, there are significant differences between school grades assigned by different teachers and schools, and the evidenced mastery of subject content (Hildén & Rautopuro, 2014b; Hildén & Rautopuro, 2014c).

The materials used for assessment can be designed by teachers themselves or, even more commonly, are tests that teachers are free to modify for their local needs (such as testing materials published by textbook writers in conjunction with their books, or tests produced annually by teacher associations in their respective languages). In Finland, the pedagogical freedom of a language teacher broadly covers the choice of assessment tools. Only on the occasion of national assessment of learning outcomes, and for science, reading in L1 and mathematics under the OECD PISA-framework, are the sampled schools and teachers obliged to administrate an external test, written by a team of independent experts. The reports of these national assessment surveys are published by the Finnish Education Evaluation Centre and available on their website (FINEEC). The national evaluations are implemented approximately once in ten years for foreign languages, and as in all subjects, the results are used entirely for informative and pedagogical purposes and treated with a great level of confidence in regard to schools and individual pupils and teachers. Administrators at municipal and school levels receive the scores of their own sample in relation to the nation-wide scores to enable conclusions and adequate measures to be taken locally. At the national level, the forthcoming results of the evaluations carried out in 2013 were considered in preparing and designing of the latest language curricula.

According to the 2013 evaluation, the objectives of language education were generally attained well or even excellently. In English language, pupils' achievement turned out to be the most favourable: the majority of ninth grades exceeding the levels of good mastery with one or two level steps. The picture of the second national language, Swedish, was also a positive one, while the outcomes in other languages varied by skill and syllabus. On average, pupils in Swedish speaking schools achieved higher than those in schools with Finnish language of instruction; girls tended to outperform boys; and children of more highly educated parents succeeded better than their age-mates (Finnish Education Evaluation Centre & Finnish National Board of Education, 2015).

LANGUAGE TEACHER EDUCATION

As mentioned earlier, the Finnish National Core Curriculum for Basic Education (Finnish National Board of Education, 2004) allows a lot of pedagogical freedom to individual language teachers and teacher teams to apply and elaborate the national goals for local circumstances. They are, in fact, required to do so when writing the local school-related curricula drawing on the national core documents. The same continues with the latest core curriculum (Finnish National Board of Education, 2014). Finnish language teachers are educated to cope with the task to translate the statements of the normative documents into everyday work to promote students' learning. In the course of this work, the interaction of theory and practice introduced during the pre-service teacher education is revisited and supported by professional networks. A foreign language teacher's career from graduation to retirement spans an average of 40 years – so the in-service training and development projects are valuable to support the teachers to maintain and develop their professional competence and practices.

According to the Basic Education Decree (852/1998), children in grades 1–6 are taught primarily by class teachers and in grades 7–9 by subject teachers. In spite of this, the national Federation of Foreign Language Teachers in Finland (SUKOL), has recommended since the end of the 1990s that foreign languages should be taught by subject teachers in grades 1–6, too. This recommendation has been actively repeated because of the fact that according to the latest Government Decree on the General National Objectives and Distribution of Lesson Hours in Basic Education (Valtioneuvoston asetus 422/2012), starting from August 2016, studies of the second national language (most often Swedish) will be started in the 6th grade instead of 7th grade. According to our understanding, the teachers with double qualification, class teacher qualification and subject teacher qualification demanded for teaching FL in grades 7–9, might in principle have the most suitable professional competence for teaching languages in primary education (grades 1–6). With this kind of professional education, they both have the needed proficiency in the foreign language they teach (at least 60 ECTS of university studies) and know how to teach young learners.

In Finland, both the class teacher's and subject teacher's qualifications are based on a Master's degree (300 ECTS). While class teachers are professionals in teaching young learners in general, they do not necessarily have enough knowledge and skills in any foreign language themselves and/or how to teach especially foreign languages to young learners. On the other hand, subject teachers in foreign languages have proficiency in foreign languages but not necessarily adequate education or experience in teaching young learners, i.e., younger than teenagers. The Universities training subject teachers in foreign languages have the freedom to offer various minor studies to be included in the degree of subject teacher and/or primary school teacher for students who are interested in early language education. These minor studies would offer knowledge and skills needed in the working life for teaching languages at the

primary school level, for example, language proficiency, pedagogical knowledge, teaching skills, and multicultural competencies. Such study programmes provide a good basis for early language teaching and learning, e.g. JULIET studies (25 +10 ECTS) in the University of Jyväskylä, Teaching Foreign Languages to Young Learners, TeFoLa, studies (25 ECTS) in the University of Eastern Finland, Joensuu (JULIET, 2015; TeFoLa, 2015).

Cooperation concerning in-service training for language teachers is customarily established by the initiative of the Finnish National Board of Education, national teacher associations or, most recently, by international endeavours (projects and networks supported by the Council of Europe) or by nationally based research and development initiatives mentored by university staff. In-service training events arranged by the National Board of Education focus on current challenges of teachers´ daily work and are well attended especially at the onset of curricular reforms. Teacher associations arrange trips, seminars and summer courses for their members on diverse themes on demand (see e.g. SUKOL, 2015). The role of European language policies and related networks has gained in importance since the Finnish membership in the EU starting from 1995. Some language teachers have attended the European Center for Modern Languages (ECML) project dissemination seminars in Graz, Austria, and thereby acquired personal and professional links with their European colleagues. An ever-growing number of teachers and their pupils have made exchange visits to other European countries supported by programmes such as Erasmus or Nordplus, and increasingly, also beyond Europe.

In-service Support for Language Teachers

As mentioned above, language teachers in the Finnish basic education have wide academic freedom. Considering the high quality objectives of the national core curriculum, especially the latest one (Finnish National Board of Education, 2014), it is easy to understand the teachers' need for cooperation networks to implement the curriculum in practice and to enable their own professional development and lifelong learning. Networking in different directions and with many kinds of stakeholders should be encouraged and supported (Luukka et al., 2008: 153). A more open way of thinking can be nurtured by active, research-based networks for developing language education as cooperation between researchers, teacher educators, teachers and teacher students at the national as well as international level. A few examples of foreign language teachers' opportunities for networking and professional cooperation are described in the following.

REFORMING THE CURRICULUM

Networking activities of language teachers have been actively encouraged, offered and/or even funded nationally and locally, especially by the Finnish National Board of Education. During the curriculum reform process (Halinen, 2015), the Board

of Education invited teachers, teacher educators and researchers to cooperate in groups to draft and develop the national core curriculum. In addition, during the reform process the Board of Education initiated creating pedagogical materials for teachers and teacher teams to support implementing the curriculum in practice (e.g. Finnish Education Evaluation Centre & Finnish National Board of Education, 2015; Hildén & Härmälä, 2015; Mustaparta, 2015). The pedagogical implementation guide edited by Hildén and Härmälä (2015) is based on and inspired by the findings of the evaluation of learning outcomes in foreign languages at the end of basic education and it offers language teachers, e.g., practical options and suggestions regarding the use of ICT, ELP, and multimodal learning and authentic encounters. The writers are well-established researchers and teachers of different languages with extensive experience in teacher training and mentoring.

Developers Networking

In 2009–2011, the National Board of Education funded developing foreign language education in basic education in the frame of a project called KIELITIVOLI (in English: Amusement park of languages) (Tuokko, Takala, & Koikkalainen, 2011). The target group for the project was versatile, including different stakeholders in the field of language teaching in comprehensive schools: educational providers, headmasters, language teachers, comprehensive school pupils and their parents. The project had two main aims: firstly, to diversify the selection of languages offered and studied in comprehensive schools and secondly, to develop the quality of language teaching. The project included, for example, tailor-made in-service training for participating teachers (e.g. use of modern ICT and social media in language teaching), support and opportunities for networking between teachers, adding authentic connection to foreign languages and cultures.

For the purposes of Kielitivoli project, the National Board of Education created a website Kieltenopet verkossa (in English: Language teachers in the net) in 2009. Kieltenopet verkossa has become an open national network for language teachers and other developers of foreign language teaching. The network is maintained by an expert team in language education of the Board of Education. Anybody who wants to join the community is welcome to register as a member to network with other developers and share ideas in different theme groups and forums or in a personal blog (see Kieltenopet verkossa, 2015).

Combining Theory and Practice

Since the millennium, cooperation between the national teacher education units in the seven universities has expanded and intensified, e.g., in the form of research-based projects. This cooperation materialized as a series of ViKiPeda conferences (Conference in Foreign Language Pedagogy) launched in 1999. ViKiPeda was a national conference organized every two years, by rotation, by one of the seven

universities offering subject teacher education in foreign languages (in Helsinki, Joensuu Jyväskylä, Oulu, Tampere, Turku, and Vaasa). It offered a forum for sharing the latest research findings concerning language teaching and learning in different contexts of lifelong language learning. A major aim has been to invite not only teacher educators and researchers but also foreign language teachers in the field to participate and familiarise themselves with the current research results for the benefit of developing language teaching in practice and also to present their own experiments and experiences.

One of the central aims of ViKiPeda conferences from the very beginning was national, and increasingly, international networking. The conference always boasted foreign guest speakers, and the articles in the conference proceedings were increasingly written in either English or German instead of Finnish (conference proceedings published so far: Kaikkonen & Kohonen, 2000; Kohonen & Kaikkonen, 2002; Mäkinen, Kaikkonen, & Kohonen, 2004; Koskensalo, Smeds, Kaikkonen, & Kohonen, 2007; Tella, 2008; Kantelinen & Pollari, 2009; Bendtsen, Björklund, Forsman, & Sjöholm, 2012). The second round of ViKiPeda conferences was started in the University of Jyväskylä in the spring of 2013 and in the spirit of an international paradigm shift, the conference was renamed as KieliPeda (Conference in Language Education).

National Teacher Association

The Federation of Foreign Language Teachers in Finland, SUKOL, is a national organization of associations of foreign language teachers, founded in 1957. SUKOL has nowadays 29 local and 8 national member associations. These in turn have a total of approximately 5000 members. It is a pedagogic organization, which aims to promote the instruction and study of foreign languages in Finland. SUKOL gives grants for teachers to participate in seminars and courses in order to support foreign language teachers' professional development. Also, it supports FL teachers' everyday work by producing and selling teaching materials and language tests (SUKOL, 2015). SUKOL publishes a professional magazine Tempus, issued 6 times annually and disseminating the latest research findings in language teaching and learning as popularized articles. In addition, Tempus invites foreign language teachers to write and share their tips for good practices of teaching and learning. SUKOL aims to connect language teachers but it wants to network as an association itself as well: it is a member of FIPLV, Fédération Internationale des Professeurs de Langues Vivantes, which in turn is a B-status member of UNESCO. Quite naturally, SUKOL has close relations with its Nordic counterparts, too (see SUKOL, 2015).

FUTURE CHALLENGES OF FOREIGN LANGUAGE TEACHING AND LEARNING

Determined effort has been put into developing language teaching and learning in basic education in Finland and the progress gained deserves to be maintained.

Simultaneously, there are admittedly a number of challenges that need to be addressed. A persistent problem, pointed out frequently over the years, hampering Finnish language education is the lack of overall planning at the national level (e.g., Pyykkö, 2009). Another considerable challenge is the fact that the curricula of different education levels and different languages do not form a functional continuum (Pyykkö, 2009, p. 49). Thirdly, and partly following from the challenges mentioned, the diversity of language studies offered and studied is too narrow, having too heavy a concentration on English, in spite of the clear need of, e.g. Swedish, Russian, German, Spanish and Chinese. Along with this pursuit, the mastery of national languages should be ensured in an officially bilingual country. An early start would be beneficial especially to those languages that pupils are not exposed to in their daily lives through the media (e.g., Mård-Miettinen & Björklund, 2007; Sajavaara, Luukka, & Pöyhönen, 2007).

Diversity of language studies should also be acknowledged and supported by means of extensive curricular planning to avoid unnecessary overlaps and gaps in content and scheduling. Not all content areas need to be studied in all languages. School curricula should acknowledge the principles of plurilingualism/multilingualism and allow for more diverse profiles of language skills as goals of study. For example, instead of more or less even target profiles across syllabi, predominantly receptive skills might suffice in some languages, while productive proficiency might be strived for in others. The role of communicative oral language use in a school context could easily be enhanced by increasing tasks that enable cultural encounters and accordingly add to the authenticity of school studies.

One of the greatest current challenges is caused by the dire economic situation. Basic education is free of charge for school-aged pupils (aged 7–16). Responsibility for educational funding is divided between state and municipalities/local authorities. Still, the funding channelled to the municipalities for basic education is not earmarked, which means that it is up to the local authorities to decide how to fund basic education. This apparently causes (and has already caused?) inequality between municipalities and schools regarding, e.g., the selection of both compulsory and optional language studies offered. Alarmingly, in Finland where equal opportunities of societal progress have traditionally been highly valued, research findings point towards increased differences in learning outcomes among schools and regions (Finnish Education Evaluation Centre & Finnish National Board of Education, 2015; Hautamäki et al., 2000; Tuokko, 2007).

The latest national evaluation of proficiency in foreign languages and in the second domestic language, Swedish, carried out in 2013, resulted in a set of recommendations for all assessed languages. These address in the first place the principles of autonomy, authenticity and modern affordances. Pupils should be given more opportunities to plan and assess their own work, and the use of ICT, as well as authentic materials and contacts with schools abroad, should be increased. Furthermore, homework contents and practice exercises should be modernised.

Moreover, to foster equality, the link between various sets of objectives and school grades should be clarified, and finally, assessment of communicative ability should be based equally on oral and written modes of language use (Finnish Evaluation Centre & Finnish National Board of Education, 2015; Härmälä, Huhtanen, & Puukko, 2014; Hildén & Rautopuro, 2014a, 2014b, 2014c). Meaningful and systematic use of the European language portfolio, ELP, in basic education could be one concrete means of responding to many of the current challenges in language education, e.g., challenges in regard to pupil autonomy / self-directedness, development of multilingualism and multiculturalism, as well as overall identity development. Implementation of the ELP requires new thinking, and a certain amount of in-service training/activities of professional support should accompany true commitment to this mode of work.

Another recognisable challenge acknowledges language teachers' often self-professed striving to teach extensive content. While the core curriculum allows individual teachers extensive freedom over their teaching content and methods, they often tend to strive for such ambitious course content that not only their own but also students' workload may grow heavy. A challenge for teachers seems to be interpreting the framework of the core curriculum with the relative freedom it offers. The curriculum reforms every ten years or so challenge teachers to analyse and revise their professional practices and engage in a sometimes cumbersome transformation process. Nevertheless, as academic professionals, Finnish teachers are more than capable of tackling this transformation process and renewing their professionalism.

In conclusion, language studies are a valuable and essential part of the Finnish basic education. It is of paramount importance to keep in mind that languages in today's world are not studied as separate entities of information. Modern language education is intertwined in all subject contents and supports the acquirement and development of knowledge and skills for lifelong learning and overall human growth. Moreover, learning languages enhances skills for learning in general, thus providing tools for personal growth and an asset for further knowledge building. Modern language proficiency entails functional, transversal skills self-evidently needed in intercultural encounters. The ongoing paradigm shift towards language education emphasises the commonly agreed-upon European objectives of multilingualism and multiculturalism (and plurilingualism and pluriculturalism). Today's language education also recognises and acknowledges the expanding diversity in language teaching and learning methods, contents, contexts and practises such as imaginatively combining in and out of school activities in foreign language learning and teaching. In Finland, this shift has been embraced in the latest National Core Curriculum for Basic Education (Finnish National Board of Education, 2014), paving the way for a welcome transformation toward a transversal intercultural language education.

REFERENCES

Bendtsen, M., Björklund, M., Forsman, L., & Sjöholm, K. (Eds.). (2012). *Global trends meet local needs*. Report from the Faculty of Education, Åbo Akademi University, Vasa. (Rapport No 33/2012).

Breen, M. P. (2009). Learner contributions to task design. In K. van den Branden, M. Bygate, & J. M. Norris (Eds.), *Task-based language teaching. A reader* (pp. 333–356). Amsterdam/Philadelphia, PA: John Benjamins Publishing Company.

CEFR. (2001). *Common European framework of reference for languages – Learning, teaching, assessment. Council of Europe*. Cambridge: Cambridge University Press. Retrieved November 17, 2015, from http://www.coe.int/t/dg4/linguistic/cadre1_en.asp

ECML. (n.d). *European Centre for Modern Languages of the Council of Europe*. Retrieved December 5, 2015, from http://www.ecml.at/

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: OUP.

ELP (European language portfolio). (n.d). *Council of Europe. Language policy division*. Retrieved November 17, 2015, from http://www.coe.int/t/dg4/education/elp/

Engeström, Y. (1982). *Perustietoa opetuksesta* [Foundations of Teaching and Learning]. Helsinki: Valtiovarainministeriö. HELDA – The Digital Repository of University of Helsinki. Retrieved December 8, 2015, from http://hdl.handle.net/10224/3665

Eurooppalainen kielisalkku. Finnish National Board of Education. Retrieved December 5, 2015 from http://kielisalkku.edu.fi/fi

EVK. (2003). *Eurooppalainen viitekehys. Kielten oppimisen, opettamisen ja arvioinnin yhteinen eurooppalainen viitekehys.* Translated from Common European Framework of Reference for Languages – Learning, Teaching, Assessment. By I. Huttunen & H. Jaakola. (2001). Helsinki: WSOY.

FINEEC (Finnish Education Evaluation Centre). (n.d). Retrieved December 2, 2015, from http://karvi.fi/en/

Finnish Education Evaluation Centre & Finnish National Board of Education. (2015). *Outcomes of language learning at the end of basic education in 2013*. Information Materials 2015:1. Retrieved December 5, 2015, from http://karvi.fi/publication/outcomes-language-learning-end-basic-education-2013/

Finnish National Board of Education. (2004). *Perusopetuksen opetussuunnitelman perusteet 2004 [National Core Curriculum of Basic Education 2004]*. Retrieved December 18, 2015, from http://www.oph.fi/download/139848_pops_web.pdf

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014 [National Core Curriculum of Basic Education 2014]*. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Halinen, I. (2015). What is going on in Finland? – Curriculum reform 2016. Retrieved November 20, 2015, from http://www.oph.fi/english/current_issues/101/0/what_is_going_on_in_finland_curriculum_reform_2016

Hautamäki, J., Arinen, P., Hautamäki, A., Ikonen-Varila, M., Kupiainen, S., Lindblom, B., Niemivirta, M., Rantanen, P., Ruuth, M., & Scheinin, P. (Eds.). (2000). *Oppimaan oppiminen yläasteella. Oppimistulosten arviointi 7* [Learning to learn in the upper classes of the comprehensive school. Evaluation of learning outcomes 7]. Helsinki: Opetushallitus.

Hildén, R. (2009). Transforming language curricula through a research and development project – a case from Finland. In E. Ropo & T. Autio (Eds.), *International conversations on curriculum studies. Subject, society and curriculum* (pp. 235–256). Rotterdam: Sense Publishers.

Hildén, R., & Härmälä, M. (2015). *Hyvästä paremmaksi – kehittämisideoita kielten oppimistulosten arviointien osoittamiin haasteisiin* [Becoming better than good – Pedagogical ideas based on the national evaluation of learning outcomes in foreign languages](Vol. 2015, No 6). Helsinki: Finnish Education Evaluation Centre & Finnish National Board of Education. Retrieved December 5, 2015 from http://www.oph.fi/download/165698_hyvasta_paremmaksi_kehittamisideoita_kielten_oppimistulosten_arviointien_oso.pdf

Hilden, R., & Rautopuro, J. (2014a). *Ruotsin kielen A-oppimäärän oppimistulokset perusopetuksen päättövaiheessa 2013* [Learning outcomes in advanced syllabus of Swedish at the end of basic education in 2013] (Vol. 2014, No 1). Helsinki: Finnish Education Evaluation Centre & Finnish National Board of Education. Retrieved December 6, 2015, from http://karvi.fi/publication/ruotsin-kielen-oppimaaran-oppimistulokset-perusopetuksen-paattovaiheessa-2013

Hilden, R., & Rautopuro, J. (2014b). *Saksan kielen A- ja B-oppimäärän oppimistulokset perusopetuksen päättövaiheessa 2013* [Learning outcomes in advanced and short syllabi of German at the end of basic education in 2013] (Vol. 2014, No 4). Helsinki: Finnish Education Evaluation Centre; Finnish National Board of Education. Retrieved December 6, 2015 from http://www.oph.fi/download/162060_saksan_kielen_A_ja_B_oppimaaran_oppimistulokset_perusopetuksen_paattovaihees.pdf

Hilden, R., & Rautopuro, J. (2014c). *Venäjän kielen A- ja B-oppimäärän oppimistulokset perusopetuksen päättövaiheessa 2013* [Learning outcomes in advanced and short syllabi of Russian at the end of basic education in 2013] (Vol. 2014, No 5). Helsinki: Finnish Education Evaluation Centre & Finnish National Board of Education. Retrieved December 6, 2015, from http://www.oph.fi/download/160079_venajan_kielen_a_ja_b_oppimaaran_oppimistulokset_perusopetuksen_paattovaihee.pdf

Hildén, R., & Takala, S. (2007). Relating descriptors of the Finnish school scale to the CEF overall scales for communicative activities. In A. Koskensalo, J. Smeds, P. Kaikkonen, & V. Kohonen (Eds.), *Foreign languages and multicultural perspectives in the European context; Fremdsprachen und multikulturelle Perspektiven im europäischen Kontext* (pp. 291–300). DICHTUNG, WAHRHEIT UND SPRACHE: LIT-Verlag.

Härmälä, M., Huhtanen, M., & Puukko, M. (2014). *Englannin kielen A-oppimäärän oppimistulokset perusopetuksen päättövaiheessa 2013* [Learning outcomes in advanced syllabus of English at the end of basic education in 2013] (Vol. 2014, No 2). Helsinki: Finnish Education Evaluation Centre & Finnish National Board of Education. Retrieved December 6, 2015, from http://www.oph.fi/download/160066_englannin_kielen_a_oppimaaran_oppimistulokset_perusopetuksen_paattovaiheessa.pdf

Härmälä, M., Huhtanen, M., Silverström, C., Hilden, R., Rautopuro, J., & Puukko, M. (2014). *Inlärningsresultaten i främmande språk i de svenskspråkiga skolorna 2013. A-lärokursen i engelska samt B-lärokurserna i franska, tyska och ryska* [Learning outcomes in advanced syllabus of English and short syllabi of French, German and Russian at the end of basic education in 2013] (Vol. 2014, No 6). Helsinki: Finnish Education Evaluation Centre & Finnish National Board of Education. Retrieved December 6, 2015, from http://www.oph.fi/download/160083_inlarningsresultaten_i_frammande_sprak_i_de_svensksprakaiga_skolorna_2013.pdf

JULIET. University of Jyväskylä. Department of Teacher Education. Retrieved December 5, 2015, from https://www.jyu.fi/edu/laitokset/okl/opiskelu/sivuaineet/juliet/en/intro/overview

Kaikkonen, P., & Kohonen, V. (toim.). (2000). *Minne menet, kielikasvatus? Näkökulmia kielipedagogiikkaan* [Where are you going, language education? Perspectives to language pedagogy]. Jyväskylän yliopisto: Opettajankoulutuslaitos.

Kantelinen, R., & Pollari, P. (Eds.). (2009). *Language education and lifelong learning*. Joensuu, Finland: University of Eastern Finland. Philosophical Faculty. School of Applied Educational Science.

Kieltenopet verkossa. *Kielitivoli – Vieraiden kielten opetuksen kehittäjien yhteisö* [Language teachers in the net. Kielitivoli – Community for developers of foreign language teaching]. Retrieved December 5, 2015, from http://kieltenopetverkossa.ning.com/

Kohonen, V. (Eds.). (2005). *Eurooppalainen kielisalkku Suomessa. Tutkimus- ja kehittämistyön taustaa ja tuloksia* [European Language portfolio in Finland. Background and selected results of research and development work]. Helsinki: WSOY.

Kohonen, V. (2009). Autonomy, authencity and agency in language education: The European language portfolio as a pedagogical resource. In R. Kantelinen & P. Pollari (Eds.), *Language education and lifelong learning* (pp. 9–44). Joensuu, Finland: University of Eastern Finland. Philosophical Faculty. School of Applied Educational Science and Teacher Education.

Kohonen, V., & Kaikkonen, P. (Eds.). (2002). *Quo vadis foreign language education?* Reports from the Department of Teacher Education in Tampere University. A27/2002.

Kohonen, V., Jaatinen, R., Kaikkonen, P., & Lehtovaara, J. (2001). *Experiential learning in foreign language education*. London: Pearson Education.

Koskensalo, A., Smeds, J., Kaikkonen, P., & Kohonen, V. (Eds. / Hg.). (2007). *Foreign languages and multicultural perspectives in the European context* [Fremdsprachen und multikulturelle Perspektiven im europäischen Kontext]. Dichtung-Wahrheit-Sprache. Berlin: LIT Verlag.

Kristiansen, I. (1998). *Tehokkaita oppimisstrategioita: esimerkkinä kielet* [Effective learning strategies: languages as an example] WSOY: Helsinki.

Kumpulainen, T. (Ed.). (2014). *Koulutuksen tilastollinen vuosikirja 2014* – Årsbok *för utbildningsstatistik 2014* (Koulutuksen seurantaraportit 2014:10). Tampere: National Board of Education. Retrieved November 17, 2015, from http://www.oph.fi/download/163331_koulutuksen_tilastollinen_vuosikirja_2014.pdf

Luukka, M.-R., Pöyhönen, S., Huhta, A., Taalas, P., Tarnanen, M., & Keränen, A. (2008). *Maailma muuttuu – Mitä tekee koulu? Äidinkielen ja vieraiden kielten tekstikäytänteet koulussa ja vapaa-ajalla* [The world is changing – How about the school? In-school and out-of-school text practices in mother tongue and foreign languages]. Finland: University of Jyväskylä, Centre for Applied Language Studies.

Mäkinen, K., Kaikkonen, P., & Kohonen, V. (Eds.). (2004). *Future perspectives in foreign language education*. Finland: Oulun yliopiston kasvatustieteiden tiedekunnan tutkimuksia 101/2004.

Mård-Miettinen, K., & Björklund, S. (2007). *Kielikasvatus ja kielikoulutus varhaiskasvatuksessa ja esiopetuksessa: alku elinikäiselle kielenoppimiselle* [Language education and language schooling in early and preprimary language education: the start for lifelong language learning]. In S. Pöyhönen & M.-R. Luukka (Eds.), *Kohti tulevaisuuden kielikoulutusta. Kielikoulutuspoliittisen projektin loppuraportti* [Towards future language education. The final report of the Project Finnish Language Education Policies] (pp. 45–55). Finland: Jyväskylän yliopisto. Soveltavan kielentutkimuksen keskus.

Mustaparta, A.-K. (Ed.). (2015). *Kieli koulun ytimessä – näkökulmia kielikasvatukseen*. Helsinki: National Board of Education.

Ortega, L. (2009). *Understanding second language acquisition*. London: Hodder Education.

Perusopetusasetus 852/1998. [Basic Education Decree]. Retrieved December 2, 2015, from http://www.finlex.fi/fi/laki/ajantasa/1998/19980852

Perusopetuslaki 628/1998. [Basic Education Act]. Retrieved December 22, 2015, from http://www.finlex.fi/en/laki/kaannokset/1998/en19980628.pdf

Pöyhönen, S., & Luukka, M.-R. (Eds.). (2007). *Kohti tulevaisuuden kielikoulutusta. Kielikoulutuspoliittisen projektin loppuraportti* [Towards future language education. The final report of the Project Finnish Language Education Policy]. Jyväskylä: University of Jyväskylä, Centre for Applied Language Studies.

Pyykkö, R. (2009). The main challenges of language education policy in Finland. In A. Koskensalo, J. Smeds, & R. de Cillia (Eds.), *The role of language in culture and education* (pp. 45–55). Münster: LIT Verlag.

Sajavaara, K., Luukka, M-R., & Pöyhönen, S. (2007). Kieleikoulutuspolitiikka Suomessa: lähtökohtia, ongelmia ja tulevaisuuden haasteita [Finnish language education policy: starting points, problems and future challenges]. In S. Pöyhönen & M.-R. Luukka (Eds.), *Kohti tulevaisuuden kielikoulutusta. Kielikoulutuspoliittisen projektin loppuraportti* [Towards future language education. The final report of the Project Finnish Language Education Policies] (pp. 13–42). Jyväskylä: Soveltavan kielentutkimuksen keskus.

Skehan, P. (1998). *A cognitive approach to language learning*. Oxford: OUP.

SUKOL. (n.d). *The federation of foreign language teachers in Finland.* Retrieved November 28, 2015, from www.sukol.fi

Takala, S. (2009). Plurilingualism – (how) can it be realized? In A. Koskensalo, J. Smeds, & R. de Cillia (Eds.), *The role of language in culture and education*. *Sprache als Kulturelle Herausforderung* (pp. 173–191). Münster: LIT Verlag.

TeFoLa. University of Eastern Finland. School of Applied Educational Science and Teacher Education, Joensuu. Retrieved December 5, 2015, from http://www2.uef.fi/fi/filtdk/tefola

Tella, S. (Ed.). (2008, May 21–22). *From brain to brain: Strong signals in foreign language education* (Research Report 290). Proceedings of the ViKiPeda-2007 Conference in Helsinki. University of Helsinki, Finland.

Tuokko, E. (2007). *Mille tasolle perusopetuksen englannin opiskelussa päästään? Perusopetuksen päättövaiheen kansallisen arvioinnin 1999 Eurooppalaisen viitekehyksen taitotasoihin linkitetyt tulokset* [What level do pupils reach in English at the end of the comprehensive school? National Assessment results linked to the Common European Framework]. University of Jyväskylä: Jyväskylä Studies in Humanities 69.

Tuokko, E., Takala, S., & Koikkalainen, P. (2011). *KIELITIVOLI. Perusopetuksen vieraiden kielten opetuksen kehittäminen. Seurantaraportti 2009–2010* [Amusement park of languages. Developing the foreign language teaching in the basic education. Follow-up report 2009–2010]. Opetushallitus: Raportit ja selvitykset 2011:13. Retrieved November 28, 2015, from http://www.oph.fi/download/132462_Kielitivoli.pdf

Valtioneuvoston asetus 422/2012. *Valtioneuvoston asetus perusopetuslaissa tarkoitetun opetuksen valtakunnallisista tavoitteista ja perusopetuksen tuntijaosta* [Government Decree on the General National Objectives and Distribution of Lesson Hours in Basic Education]. Retrieved December 2, 2015, from http://www.finlex.fi/fi/laki/alkup/2012/20120422

van den Branden, K., Bygate, M., & Norris, J. M. (2009). (Eds.). *Task-based language teaching. A reader.* Amsterdam/Philadelphia, PA: John Benjamins Publishing Company.

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Willis, D., & Willis, J. (2009). Task-based language teaching: Some questions and answers. *The Language Teacher, 33*(3), 3–8.

Willis, J. (1996). *A framework for task-based learning*. Essex: Longman.

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12. RELIGIOUS EDUCATION IN FINNISH SCHOOL SYSTEM

ABSTRACT

The Finnish solution for RE in public education is a unique model if we compare it to the solutions used in other European countries. In Finland RE is given according to the pupils' own religions. The Finnish model of RE implies the idea of democratic, civil society, where different faiths, beliefs and worldviews can co-exist. The curriculum of RE in Finland emphasises religious literacy and religious competence. Furthermore, elements of cultural heritage and identity are also present in the curriculum. The pupils need skills for inter-religious dialogue and also skills for living in a multi-religious society. The Finnish approach to RE emphasises tolerance towards others. The subject teachers of RE have very good education; they have a master's degree from a university and they are also qualified to teach some other school subject, usually psychology. Although RE is not a PISA-subject it has a role in comprehensive education in supporting the formulation of pupils' attitudes and worldviews in Finnish schools.

Keywords: religious education, identity, RE subject teacher education, curriculum

BACKGROUND

This chapter focuses on religious education (hence RE) in Finnish basic education. Religious education has in recent years been the focus of international research and political debate. Most European societies provide some kind of RE in their school curricula. Internationally, there has been much active discussion about the function of and the most suitable solution for RE in public schools in multicultural, post-modern societies, and whether RE could be made more uniform in European Union states in order to handle and teach religions contextually as a part of the cultural and religious diversity of Europe (see Everington, 2007). In addition, recently scholars have debated about how RE can be linked to topics such as value education in schools and to education concerning human rights, other democratic ideals, citizenship and multiculturalism.

The Europeanization of RE is a fairly recent trend as traditionally RE in different societies and the accepted concepts of nationality, citizens' rights, the integration of minorities in society, and questions of multiculturalism, have been seen as

H. Niemi et al. (Eds.), Miracle of Education, 179–190.

intertwined (Skeie, 2001, p. 237; Plesner, 2002, p. 111; Hull, 2002, pp. 123–125; Willaime, 2007, pp. 62–65). However, in many European societies there have been shared concerns about what will happen to the present generation of minority youth. Religious education has been viewed as one way to integrate minorities into society. It has been argued that RE gives young people skills for living with, and an ability to respect the dialogue and tolerance associated with adapting diverse lifestyles and customs into the receiving cultures and societies (Williaime, 2007, p. 63; Sakaranaho, 2007, pp. 7–8). Furthermore, it has been maintained that RE can provide important support for pupils' identity formation processes. It gives pupils tools to understand their own identities as human beings and opens pathways for living and acting in a multicultural world (Niemi, 2005, pp. 42–43).

This chapter will begin with describing the background of the Finnish religious education solution and by examining it within a broader European and Nordic context. Then the chapter will proceed to more practical matters. The chapter will then focus on religious education teachers. It will then describe the role of religious education in Finnish school education. Finally, the chapter will close with some current issues and development challenges for religious education in Finland.

THE FINNISH SOLUTION FOR RELIGIOUS EDUCATION IN PUBLIC SCHOOLS

The current Finnish solution for RE is a unique way of organising RE in public schools. Finland has a very strong public school tradition and there are few private schools in the country. There are only a few religious based private schools in Finland and the role of churches and religious communities is very limited in public education. The educational system in Finland differs from many other societies where the role of religious communities is very strong in basic education. Nowadays, there are less than twenty religious schools in Finland, and their role in comprehensive education is very marginal, despite the fact that in the 1990s some evangelical Protestant schools were founded in Finland. The Finnish school system is thus essentially non-religious (Kallioniemi, 2008; Ubani & Tirri, 2014).

In Finland the teaching of religion is generally seen as a function of society. Over time there have been debates about the function and contents of RE in public schools. In some periods of Finnish school history it had been suggested that RE should be replaced by some other subject, e.g., common ethics, but after discussions by Finnish school policy makers and in the Finnish Parliament it has been accepted that there should be compulsory RE lessons in public schools. The background of this decision is the sociological religious situation of Finnish society: the majority of people are members of the Lutheran Church and the society has been very homogenous in religious matters. Muslims constitute the second largest religious minority in Finland. Another religious minority of almost equal size is the Greek Orthodox Church. Its status in Finnish society is very similar to the Lutheran Church, which has been akin to a state church since the Reformation. The historical roots of the current solution for RE date back to the 1920s. It was then deemed that

RE in grammar schools should be taught according to the religion to which the majority of the pupils in the schools belonged. No big changes to the organizational model of RE have been made since and the basic structure for the organization of RE has remained unaltered (Kallioniemi, 2004, pp. 146–148).

The Finnish solution for religious education can be characterized from an international perspective as a religion-based model to organize religious education in state-owned schools (Schreiner, 2001, p. 263). However, in Finland religious education has different aims and functions than catechetical confessional education. Skeie (2001, p. 243) has formulated a framework for comparing religious education in Europe. According to Skeie, solutions for religious education in Europe can been divided into two different types: (a) the uniform, strong solution and (b) the multiform, weak solution. In the uniform, strong solution there is an emphasis on society's willingness to adopt one model for religious education, which can be confessional or non-confessional religious education. The other model can be labelled the multiform, weak solution, which is emphasised in societies less willing to adopt a uniform solution for religious education. Finland's solution belongs to the multiform, weak solution group. Actually, the Finnish solution belongs to a sub-category of the secular system, as there are different kinds of religious education of respective religions operating side-by-side in schools (Skeie, 2001, pp. 241–243).

From the European perspective the Finnish solution is unique, as religious minority students participate in RE according to their own religion in state-owned schools. The Finnish model differs from the models in other Nordic countries, too. For instance, in Sweden, the renewal of RE took place in 1962 and the subject is non-denominational in its character (Larsson, 1996, pp. 70–71). The same kind of solution was accepted in Norway in 1997 (Haakedal, 2000, 88–97). In Europe, only the Austrian model is similar to the Finnish solution. However, in Austria the religious communities are responsible for the RE syllabus and they also authorise the textbooks for RE (Pollitt, 2007, p. 19; Schreiner, 2001, p. 97). In Finland the religious education syllabi are developed co-operatively between the National Board of Education and religious communities – but the instruction is controlled and enforced by the state. This is a very unique way to organise religious education in a state-owned school system (Davie, 2000, pp. 90–91; Kodelja & Bassler, 2004).

At the beginning of 2000 changes in RE occurred again on legislative grounds. The Finnish Parliament renewed the Act of Freedom from Religion in 2003. After amending the Freedom from Religion Law, the Law for Comprehensive School (454/2003) was also amended. According to the Law, pupils have a right to religious education in school, if some regulations are fulfilled (e.g. the Board of Education has accepted the curriculum for that specific form of religious education and there are three pupils whose parents have asked for it). The background of the renewed law was the idea of positive freedom from religion. The state was to ensure the right to freedom of religion and also ensure that individuals have possibilities to practice their religions. The law also formulated the right to RE in the more positive than negative spirit of freedom from religion. This involved changes to

RE in schools. While "confessional RE" changed to "RE according to one's own religion", pupils who did not belong to religious communities could no longer ask for exemption from RE. The law has been framed to put all religions on the same footing and tries to promote religious equality (Seppo, 2003, pp. 177–179). In Finland there is a specific subject called "life questions and ethics" (secular ethics) for those pupils who do not belong to any religious community. "Life questions and ethics" is based mainly on philosophy. Despite its name, the contents of "life questions and ethics" also include religious studies and cultural anthropology. As the Finnish solution of RE is based on individuals' membership in state recognized religious communities, the schools not only give instruction in different religions but also teach different forms of the same religion, e.g. Lutheran, Orthodox and Catholic Christianity. Despite the fact that the number of students who belong to any religious community has been decreasing over the years, approximately 90% of Finnish pupils participate in Lutheran RE lessons in comprehensive school. RE is a very popular school subject for the youngest pupils, but its popularity decreases in the higher classes.

After the new legislation was passed, the Board of Education began to prepare new curricula for RE, which was completed in 2004. In addition to Lutheran and Orthodox RE curricula, 11 different curricula at the comprehensive level were written and accepted in 2006 (Framework for Comprehensive Curriculum for Other Religions 2006). The framework for minority RE has been produced in co-operation with the religious groups and the Board of Education. This curriculum set out the common aims for all models of RE. It also stated the aims for Lutheran and Greek Orthodox RE. After the early 2000s, the variety of religions has increased in schools to the extent that it is possible that some schools provide religious education lessons in at least six or seven different forms, e.g. Lutheran, Orthodox, Islam, Catholic, Adventist RE and also Life Questions and Ethics (Kallioniemi & Siitonen, 2003, p. 53).

In 2004, the general aims for all the religion-based groups' curricula were formulated to look at the religious and ethical dimensions of life from the viewpoint of the pupils' own development and also as a broader phenomenon in society. The aim of RE was to produce all-around literacy. According to the general aims of RE the task of this education was to make the pupils familiar with their own religions, with the Finnish religious traditions, and with other religions to help the pupils understand the cultural and human meaning of religion, to introduce the pupils to ethical responsibility and to help them understand the ethical dimension of religion (National Core Curriculum for Basic Education, 2004). Although all different forms of RE had the same general aims, their interpretations varied significantly in their curricula. In principle, minority religious groups' curricula were in line with these general aims, but most of them differ from these nationally accepted aims in their emphasis. For instance, Orthodox and Catholic RE were based clearly on the dominations' own religious traditions and attempted to support the pupils' Catholic or Orthodox identities (Kallioniemi, 2008). This dissonance was addressed in the

national curriculum in 2014 (Finnish National Board of Education, 2014). As has been stated, the objectives of RE in the new National Core Curriculum for Basic Education (Finnish National Board of Education, 2014) are quite similar to the national core curriculum in 2004 with more emphasis on dialogue between and within traditions, skills in life management and conflicts connected with religions, for instance. The key difference between the curricula in RE in 2004 and 2014 is the shift from knowledge to skills and competence in the curricular thinking that reflects the change in the whole curricular thinking (Finnish National Board of Education, 2014).

THE NATURE AND ROLE OF RE IN BASIC EDUCATION

Religious Education is a subject taught in basic education. The subject can be approached from two viewpoints: the characteristics of the subject itself and its school legislative status. These two viewpoints overlap so that in both instances RE is related to other school subjects and school education in general. However, the characteristics of the subject are more important than the legislative aspect in this discussion. Some of the subject specific issues were covered in the discussion concerning changes in the 2000s. Concerning those differences, it can be noted that the legislative status of RE is in principle similar to other subjects: it is state-given, compulsory, and every teacher should teach is as a part of her or his duty.

The total number of RE lessons given has been reduced significantly in recent decades. Usually in the lower and higher levels of comprehensive school there is one RE lesson a week. However, the aims are very comprehensive One of the general aims for all the religion-based groups' curricula is to look at the religious and ethical dimensions of life from the viewpoint of the pupils' own development and also as a broader phenomenon in society. The aim of RE is still to produce all-around literacy in religions, beliefs and values. According to the general aims of RE, the goal is for the pupil to become familiar with one's own religion and its diversity, but also to become familiar with religious and non-religious traditions in Finland and globally, to understand the relationship between religion and culture, and to develop well-rounded literacy of religions and non-religious worldviews. In addition, the pupils are encouraged to think critically and to reflect on religions and non-religious worldviews from different viewpoints, and on the relationship between belief and knowledge along with reflecting on the symbolism, language and concepts typical for religion. The aim is also to provide tools for dialogue between and within religions and other traditions and to encourage the students to honor life, human dignity and the H(h)oly of one's own tradition and of other people's tradition. In the instruction, the students are familiarised with the ethical thinking of the religion that is being studied and of other religious and non-religious traditions, and are encouraged to think ethically and to personally reflect on ethical issues. The purpose of instruction is to support knowledge of oneself, self-esteem and development of life management skills. The instruction also gives tools for

constructing and evaluating one's own identity, world-view and approach in life. Finally, the instruction supports the pupils' development into responsible members of the community and society, including global citizenship (Finnish National Board of Education, 2014).

The main pedagogical idea of RE has been very contextual for decades: originally, the instruction began with the children's proximate environments. Then the questions were broadened to other areas. In recent decades, the shift has moved toward religious studies. The content of Religious Education in the current National Core Curriculum for Basic Education (Finnish National Board of Education, 2014) is divided into three topics: good life, relationship to one's own religion and the world of religions. These topics apply for all religions.

The first content area is called *good life*. The teaching of ethics and life questions has been a vital part of RE in Finland. Usually life question and ethics approaches RE in a very child-centred way, i.e., the basic aim of the contents is to strengthen children's and young people's familiarization with themselves and also to help them maintain a positive self-image. Also, ethical issues such as human rights and religious freedom are discussed here. The second content area is *relationship to one's own religion*. The main topics deal with the children's own religion and religious habits at home and in society: e.g., how families in Finland celebrate Christmas and Easter and the church festivals in a typical life cycle, such as confirmation, marriage and funerals. The third content area focuses on the *world of religions*. Learning about other faiths and religions begins in the local environment: in the lower grades, investigations are made about which religions are observed in the children's communities and about the habits and rituals of followers of these religions. Gradually there is a shift towards broader questions such as: inter-religious dialogue, culture, and religion in politics (NCCBE, 2016).

These three content areas act more like topics than a list of content requirements in instruction: the idea is that the contents represent a continuum from primary education and lower secondary education and give a schema based on which the knowledge of the pupil is developed during basic education. In fact, as in the whole curriculum in basic education, the amount of content has been significantly reduced following the shift from a knowledge-based curriculum to skill and competence-based instruction (Finnish National Board of Education, 2014). The emphasis on cultural understanding and life in communities has become more integral in the curriculum, too. Likewise in RE, the curriculum encourages cooperation among the different groups represented in various RE lessons, along with ethics and life questions, in its characterisation of the learning environment (Finnish National Board of Education, 2014).

There are a variety of textbooks for RE. Usually pupils in each school get their own new RE textbook every year. The textbooks are produced by commercial publishers and they are usually written as a collaborative effort by RE specialists and teachers. Usually the textbooks are of a very high-level, as they are kept up-to-date. Nowadays there are also a lot of suitable teaching materials for teachers and

working materials for pupils on the Internet. RE is a very popular school subject for the youngest pupils, but its popularity decreases in the higher grades. When RE is compared to other basic education subjects there are certain unique characteristics in religious education beyond the obvious differences in substance (Finnish National Board of Education, 2014). These characteristics can be grouped under four descriptive qualities: integrative practice, intimate interaction, critical thinking and holistic knowledge.

Integrative practice. First, religious education is an integrative subject. Although the classical contents of RE: church history, bible stories and religious festivals and ceremonies, have been a central part of RE curricula, they are taught from an integrative approach. Integration characterizes both its practice and aims. In pedagogical practice, the content of religious education covers, for instance, History, Arts, Music and Literature. Furthermore, human rights education, citizenship education and environmental education have been a vital part of RE curricula. Likewise, the instruction is methodically diverse as it uses methods from different subjects and related fields. On the other hand, the aims of the subjects include an integrative approach underlying the instruction, namely, supporting the formation of a personal worldview and emphasising pupils' life-questions. The formation of a personal worldview and the examination of pupils' life-questions have been leading aspects in the aims and contents of RE since the 1970s when comprehensive schools were first introduced in Finland. Many different kinds of pupils' autobiographic materials are used in basic teaching. For example, in the lower classes the pupils reflect on their self-images by drawing different kinds of self-images and in the higher classes pupils have to answer different kinds of questionnaires concerning their own self-reflections. Different kinds of actual life questions of pupils are a very central part of RE curricula (NCCBE, 2016).

Intimate interaction. Second, religious education is increasingly becoming an intimate subject. As the number of religious traditions included in RE has increased, the number of pupils in each instructional group has decreased. In addition to the strong tradition of Biblical story telling used in the lower grades, in the 2000s, methods that include elements of contemplation, quiet, peace and wondering about nature have increased in use. This approach, which focuses on children's spirituality, is nowadays very strong in RE in the lower classes (Kallioniemi, 2007). The current classroom culture emphasis on sharing and wonder in religious education contrasts with everyday haste and to some extent traditional frontal instruction (see ibid.). The pedagogy of RE in Finland has in recent years developed towards a more co-operational direction: typical teaching methods in lower classes include story-telling, group tasks and methods which focus on creativity.

Critical thinking. Third, religious education in Finland emphasises critical thinking. While the denominational elements are still included in the instruction, the emphasis

is increasingly on open-endedness and integrity of personal convictions. Dialogical methods are used for supporting the development of personal argumentation and views on life, ethics and other issues concerning religion. Since the 1980s, the denominational elements have increasingly become a source for reflection on personal meaning rather than something adopted as such (Kallioniemi & Ubani, 2008). The emphasis of meaningfulness has been very strong in RE. At the background of this approach is existential philosophy and humanistic psychology (Niemi, 1991, pp. 37–38).

Holistic knowledge. When compared to other theoretical subjects with content aims, religious education is relatively inclusive as it has different ways of being aware of and conceptualising phenomena in life. At the background of this is an emphasis on the holistic development of the pupil. This is actualised in the approach towards subject specific contents such as belief, conviction, faith, or emotions. As phenomena they are not necessarily sufficiently reducible cognitive conceptualisations. While conceptualisations are used for understanding such phenomena, the formulations are not used to normatively explain them.

RE TEACHERS IN FINLAND

In Finland the teacher qualifications for RE in public schools are completely academic. In other words, religion professionals are not qualified to teach RE without proper teacher education. Religious education is usually provided by primary teachers (grades 1–6), in the lower basic education grades. In the lower secondary level (grades 7 and above) subject teachers are responsible for teaching RE. In Finland, religious education teacher education is a function of universities. The vast majority of RE subject teachers in Finland are theologians, but in recent years there have been more and more RE teachers who have taken religious studies. Most RE teachers have specialised in some other school subjects, e.g. psychology or history. They have to pass the content studies courses in their subject faculty and studies in pedagogy at departments of teacher education. New forms of RE subject teacher education have been developed in recent years. The leading idea is to develop this education in a research-based direction. The teacher as an action researcher is one leading idea of RE teacher education. As the studies in subject pedagogy in RE are mainly based on the educational research, student RE teachers also have to pass a course in research methods in education. All religious education teachers have to take part in a seminar as part of their studies in the teacher education programme. This seminar work is like a minor master's thesis in education. Students choose a research topic; usually they collect some research data, analyse the data and then write a report. The topics vary: in recent decades the most popular research topics have been concerned with how learning occurs in RE. There are also increasing numbers of research projects in RE teacher education (Kallioniemi, 1997; Hella, 2007; Ubani, 2011).

The subject RE teachers' professional identity has been shifting from the theological profession toward more pedagogical professionalism especially since the 1970s. Schools have emphasised the RE teachers' status and function in schools as representatives of their own area of expertise. The RE teachers have also clearly emphasised their own professional identity and wanted to see themselves as part of the school staff rather than being representatives of a religion or religious traditions in schools (Kallioniemi, 1997, p. 153). In an international study, Finnish RE teachers' pedagogical orientation has been compared to teachers in 15 other European countries. The study described the Finnish RE teachers' professional orientation as modern traditionalist. On the other hand they appreciate and have adapted themselves to the multicultural and pluralist trends in Finnish society. Almost all (99.6 percent) of the Finnish teachers that took part in the study agreed that the most important goal of RE is teaching about religions. However, two-thirds (62.7 percent) of the very same teachers agreed also on the importance of teaching religion. Finnish RE teachers also seemed to be versatile in their use of teaching methods (Räsänen & Ubani, 2009; Ubani, 2011).

Primary teachers pass a specific course for teaching RE in their basic education. The courses are not the same in different universities, but usually there are lectures and groups in which the student primary teachers are taught to understand the function of RE as a part of the school curriculum. Furthermore, they become prepared to understand the meaning of religion in the life of human beings, humankind and societies. They also learn how to plan RE curricula and to apply different kinds of methods in teaching RE. Some 10% of student primary teachers continue their studies to specialise more in RE. They do this by studying in a faculty of theology, which provides specific courses for them. Some students also do their master's thesis in the field of RE. Student primary school teachers think that RE is an important subject for pupils and society, but they have problems in teaching it in actual school situations. Many student primary teachers have pointed out that their motivation for teaching RE is low and they have problems with the content knowledge of RE (Kallioniemi & Ubani, 2010, pp. 260–261).

Currently, the key challenge in RE teacher education is minority RE teachers' qualifications. Teacher education for teachers in these groups began in 2007 at the University of Helsinki with financial aid from the Ministry of Education, but there are many problems that have not yet been solved. For example, in Finland all teachers' education is at the university level. In many minority groups there are candidates who do not speak Finnish very well. When a teacher teaches at the comprehensive level she or he should be able to speak Finnish fluently. In addition there have not been many candidates who have the required basic education. Many candidates, who, e.g., want to teach Islamic RE in Finnish schools, have not been through basic Finnish education. In Finland we have had no chairs for Islamic Studies either. However, the Department of Religious Studies has now developed a specific education programme for content knowledge in Islamic and Buddhist Studies.

DISCUSSION

The latest discussions in Finland concerning religious education in state schools have brought up the need for a common curriculum for religious education and ethics in schools. In basic education, two options of how the current practice can be modified have been suggested. First, one proposal is to develop one common religious education subject for all students. The other option is to continue the present practice with the inclusion of shared instruction in upper grades for all students, such as ethics instruction that would be based on class dialogue. Since the early 2000s, discussions on the legitimacy of religious education in Finnish school education have decreased. As Finnish state education has included religious education since its beginning, any changes in the subject or its discontinuation would lead to the need to re-evaluate and re-analyse all Finnish comprehensive education and its constitution from a holistic viewpoint. Furthermore, while religious education is not directly measured in PISA, it can be argued that the subject contributes to balancing the Finnish curriculum in an integrative manner.

Although there has been much debate about the model of RE in comprehensive schools, the majority of Finnish citizens, headmasters and teachers are of the opinion that teaching RE is very important to comprehensive education. The significance of RE has in recent years became more obvious in Finnish society, because changes towards a multicultural society have been so prominent. The Finnish model for RE is a unique one; it takes paternal rights as the focus of education. Everybody gets RE according to his or her own religion. Although the background of RE is according to one's own religion, the subject can include many opportunities to educate children to understand the vast diversity of different religions. In addition, it may also create occasions to participate in religious dialogue in everyday life. Furthermore, while it aims to promote critical understanding and ethical thinking, it strives to give a basic competence for living as a citizen in a post-modern multi-religious society.

REFERENCES

Davie, G. (2000). *Religion in modern Europe. A memory of mutates*. New York, NY: Oxford Press.

Everington, J. (2007). Freedom and direction in religious education. In C. Bakker & H.-G. Heimbrock (Eds.), *Researching re teachers. RE Teachers as Researchers* (pp. 111–124). Münster: Waxmann.

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014* [National Core Curriculum of Basic Education 2014]. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Framework for comprehensive curriculum for other religions. (2006). Helsinki: Finnish National Board of Education.

Haakedal, E. (2000). From Lutheran Catechism to world religions and humanism: Dilemmas and middle ways through the story of Norwegian religious education. *British Journal of Religious Education*, *23*(2), 88–97.

Hella, E. (2007). *Variation in the Understanding of lutheranism and its implications for religious education: Meaning discernment of students and teachers in Finnish upper secondary schools* (Doctoral Dissertation). University of Helsinki, Faculty of Theology, Helsinki.

Hull, J. M. (2002). Understanding contemporary European consciousness: An approach though geo-politics. *Panorama*, *12*(2), 123–140.

Kallioniemi, A. (1997). *Uskonnon Aineenopettajan Ammattikuva* [The Vocational Profile of RE Teachers]. Helsingin yliopiston opettajankoulutuslaitos. Tutkimuksia 180. Helsinki: Yliopistopaino.

Kallioniemi, A. (2004). Research in religious education in Finland. In R. Larsson & C. Gustavsson (Ed.), *Towards a European perspective on religious education* (pp. 145–156). Bibliotheca Theologiae Practicae 24. Skellftåe: Artos & Norma Förlag.

Kallioniemi, A. (2007). Uskonnonopetus alakoulussa [RE in primary school]. In J. Luodeslampi & S. Nevalainen (Eds.), *Opetan Uskontoa Alakoulussa* [I Teach RE in Primary School] (pp. 7–24). Helsinki: LK-kirjat.

Kallioniemi, A. (2008). Perspectives for religious education in a multicultural society. *Europäische Perspektiven 1: Jahrbuch des Büros für Internationale Beziehungen, Studienjahr 2007/08 / Hrsg. Pädagogischen Hochschule Wien* (pp. 74–84). Wien: LIT.

Kallioniemi, A., & Siitonen, M. (2003). Religious education teachers' conceptions of the solution of religious education– a Finnish case study. *Journal of Religious Education*, *51*(4), 52–60.

Kallioniemi, A., & Ubani, M. (2008). Eksistenssinalyyttinen didaktinen teoria uskonnonopetuksen uudistajana. In A. Kallioniemi, A. Toom, M. Ubani, H. Linnansaari, & K. Kumpulainen (Eds.), *Ihmistä Kasvattamassa: Koulutus – Arvot – Uudet Avaukset. Cultivating humanity: Education – Values – New Discoveries. Professori Hannele Niemen Juhlakirja* (pp. 311–330). Suomen kasvatustieteellinen seura. Kasvatusalan tutkimuksia 40. Turku: Finnish Educational Research Assoiciation.

Kallioniemi, A., & Ubani, M. (2010). Uskonnon didaktiikan opetus luokanopettajankoulutuksessa. In A. Kallioniemi, A. Toom, M. Ubani, & H. Linnansaari (Eds.), *Akateeminen Luokanopettajankoulutus. 30 Vuotta Teoriaa, Käytäntöä ja Maistereita* (pp. 243–270). Suomen kasvatustieteellinen seura. Kasvatusalan tutkimuksia 52. Turku: Finnish Educational Research Assoiciation.

Kodela, Z., & Bassler, T. (2004). *Religion and schooling in open society. A framework for informed dialogue*. Slovenia, Ljubljana: Open Society.

Larsson, R. (1996). Svensk religionspedagogik. In R. Larsson (Ed.), *Nordisk Religionspedagogik, Religionpedagogiska Institutets Skriftserien. Raport 1996:1* (pp. 63–77). Löddeköping.

Niemi, H. (1991). *Uskonnon Didaktiikka: Oppilaista Elämän Subjekteja* [The Didactic of the Religious Education: Supporting Students to Become Subjects of the Life]. Keuruu: Otava.

Niemi, H. (2005). Identity formation and religious education – Meeting the challenge for a meaningful life. In K. Tirri (Ed.), *Religion, spirituality and identity* (pp. 27–44). Bern: Peter Lang.

Plesner, I. T. (2002). Religio-political models and models for religious and moral education. *Panorama*, *14*(2), 111–122.

Pollitt, H.-E. (2007). Religious education in Austria. In E. Kuyk, R. Jensen, D. Lankshear, E. Löh Manna, & P. Schreiner (Eds.), *Religious education in Europe. Situation and current trends in schools* (pp. 17–22). Oslo: IKO Publishing House.

Räsänen, A., & Ubani, M. (2009). The Finnish RE teacher – a modern traditionalist. In H.-G. Ziebertz & U. Riegel (Eds.), *How teachers in Europe teach religion. An international empirical study in 16 countries. International practical theology* (Vol. 12, pp. 57–67). LIT: Berlin.

Sakaranaho, T. (2007). Pienryhmäisten uskontojen opetus ja monikulttuurisuuden haasteet. In A. Kallioniemi & E. Salmenkivi (Eds.), *Katsomusaineiden Kehittämishaasteita. Opettajankoulutuksen Tutkinnonuudistuksen Virittämää Keskustelua* [Challenges to Develop RE and Secular Ethics] (pp. 3–16). Research Reports 279. University of Helsinki: Department of Applied Sciences of Education. Helsinki: Yliopistopaino.

Seppo, J. (2003). *Uskonnonvapaus 2000-luvun Suomessa* [Freedom of Religion in 20th Century in Finland]. Helsinki: Edita.

Skeie, G. (2001). Citizenship, identity, politics and religious education. In H.-G. Heimbrock, C. Sheilke, & P. Schreiner (Eds.), *Towards religious compentence. Diversity as a challenge for education in Europe* (pp. 237–252). Schriften aus dem Comenius-Institut. Műnster: Lit.

Ubani, M. (2011). Expertise over character? The perceptions of the competent RE teacher before and after training: The case of Finland. *Religious Education Journal of Australia*, *27*(2), 3–9.

Ubani, M., & Tirri, K. (2014). Religious education at Finnish schools. In M. Rothgangel, M. Jäggle, & G. Skeie (Eds.), *Religious education at schools in the Europe. Part 3: Northern Europe* (pp. 99–120). Wien: Vienna University Press.

Willaime, J.-P. (2007). Different models of religion and education in Europe. In R. Jackson, S. Miedema, W. Weisse, & J.-P. Williaime (Eds.), *Religion and education in Europe. Developments, contexts and debates* (pp. 57–66). München, Merlin: Waxmann.

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13. HISTORY, SOCIAL STUDIES AND GEOGRAPHY EDUCATION IN FINNISH SCHOOLS AND TEACHER EDUCATION

ABSTRACT

This chapter highlights the main characteristics of the humanities, or school subjects having a humanistic orientation, from the point of view of geography, history and social studies in comprehensive schools. The educational objectives for these three subjects in the present National Core Curriculum for Basic Education are focused on the development of students' thinking skills and understanding of the nature of historical, societal or geographical knowledge, and skills of using, for example, historical sources. This emphasis on learning, thinking, and skills implies that activating teaching methods are used in lessons, and the assessment of learning outcomes is expected to follow the skills-based strand of humanities education. Future challenges are also in focus, for example, intercultural education, which is becoming more and more crucial to history, social science and geography.

Keywords: assessment, cross-disciplinary themes, geography, history, social studies, subject didactics

INTRODUCTION

The composition of school curricula and the status and traditions of specific school subjects can be very different between countries. This is obvious in the case of the humanities, where subject constructions can be numerous. In Finland, the humanities as such are not an established entity, and the list of school subjects having a humanistic orientation that basically could belong to this family includes a number of subjects which are independent subjects in compulsory schools such as: history, social studies, religion, and geography. Unlike, for instance, the subject cluster of social studies in American schools, history and social studies are independent subjects. Geography is also an independent subject, is counted in the science subjects, and is taught by the same teachers who teach biology. In the Finnish educational system, and in the present chapter, social studies refers to the subject including elements of civic education, economy, sociology and law.

In this chapter the focus is on geography, history and social studies, on their aims and contents in the present National Core Curriculum for Basic Education

H. Niemi et al. (Eds.), Miracle of Education, 191–209.

(for comprehensive schools) and on their main features as school subjects (Finnish National Board of Education, 2004). Moreover, we will also describe the education of teachers of these subjects. What is common to these three subjects is that each of them describes and examines human beings and their activities in their regional, social and cultural environments. The National Core Curriculum for Basic Education (Finnish National Board of Education, 2014) as well as the one for Upper Secondary Schools (2003) emphasise basically similar values, such as human rights, equality, democracy, respect for the diversity of nature and sustainable development and acceptance of cultural diversity, all of which are significant in the teaching of the humanities, both for their subject-specific aims and contents. These subjects are, however, rather different from each other from the point of view of their aims, contents and nature of knowledge.

For decades, history and social studies had formed a kind of subject coalition and had a common curriculum although the contents of each subject were kept apart. In the 2003–2004 curricular reform, they were finally separated into two subjects, in which student achievement was assessed independently. However, both subjects are still usually taught in the secondary level by history teachers who took social sciences as a minor subject in their degrees, while in primary school they are taught as a rule by class teachers, as are most subjects. A major reason for the separation was the different nature of these subjects, each relying on a fundamentally different academic discipline. The decision to separate history and social studies into two independent subjects can be seen as an attempt to improve the status of social studies education, as the politicians have been worried about young people's political disinterest and disengagement, and thus they were willing to encourage citizenship education.

As for geography, this chapter will predominately look at cultural geography (one of the branches of geography), but the point of view of physical geography can't be ignored in the Finnish school system, because it is an important part of the geography curriculum in schools. In Finland geography has long been taught as an independent subject. In the first school years, geography is connected to biology and other natural sciences like chemistry, physics and health education, forming a subject group called environmental studies. From the point of view of humanistic geography, it is noteworthy that the social environment was not included in the first school years' textbooks until after the 2004 curricular reform. The reason why geography has been connected to the natural sciences but not to the humanities or social studies in Finland is because the roots of geography lie in physical geography (see the chapter by Lavonen & Juuti). There is a strong possibility that its connection to natural sciences, even at universities, gives geography a stronger stature as a school subject than is the case in some other European countries where geography is connected to the humanities. Also in Finland, knowledge of cultural geography, especially human geography, has become more essential nowadays, and because of this there are several geographical themes which are closely connected to the humanities or social studies in Finnish school education, such as the diversity of human life, cultural

identity and global citizenship. These are the reasons why geography is included in the subject group of the humanities in this book.

HISTORY, SOCIAL STUDIES AND GEOGRAPHY IN THE NATIONAL CORE CURRICULUM OF FINNISH COMPREHENSIVE SCHOOLS

The humanities are minor school subjects, compared, for instance, with mathematics, first language and foreign languages, especially in the lower grades of comprehensive school. The amount of teaching time allocated to these subjects is shown in Table 1.

History teaching does not usually begin in comprehensive school until grade 5, when the pupils are 11 years old, although some themes may occasionally be addressed within some other subjects, such as mother tongue, geography and religious education. The present **history** syllabus for basic education (2014) is divided into two parts: history for grades 4 to 6 (ages 10 to 12), and history for grades 7 to 9 (ages 13 to 15). For grades 4–6, the minimum number of history lessons has been 3 per week. The new curriculum brought social studies into the lower grades (minimum 2 lesson hours altogether). In the three higher grades of the comprehensive school, history is normally taught in grades 7 and 8 (2 hours per week) and social studies in grade 9 (3 hours per week).

The purpose of history education in the new National Core Curriculum 2014 (Finnish National Board of Education, 2014) is to develop the students' historical consciousness and their knowledge of various cultures and to encourage them to become active and responsible citizens. There is also a very clear focus on the skills component and on students' historical thinking.

Table 1. Allocation of instructional time for humanities subjects by grade in comprehensive school (lesson hours or 45 minutes/week/year)

Grade	1	2	3	4	5	6	7	8	9
Students' age	7	8	9	10	11	12	13	14	15
Level (unofficial)	primary level						lower secondary level		
The humanities									
History and social studies	–	–	–	5 (Minimum 5 lesson hours/week at least 2 hours for social studies)			7 (Minimum 7 lesson hours/week at least 3 hours for social studies)		
Environmental studies (Geography + 4 other subjects)	Integrated environmental studies 4 lesson hours/week/year		Integrated environmental studies 10 lesson hours/ week/year				Geography 1.2 lesson hours/week/year		

The history syllabus is structured chronologically, from prehistoric times to the present. History teaching in grades 4 to 6 aims at familiarising children with their own roots, with the nature and acquisition of historical knowledge, and with history's central concepts, such as time and change. Especially in the earlier grades, the pupils should get opportunities to experience historical empathy. The goals are related to the nature of history and historical thinking. The historical content consists of some central events and phenomena from prehistory, ancient times, the Middle Ages up to about the time of the French Revolution, and in the history of Finland, from prehistory to the end of the Swedish regime in Finland in the early 19th century. The syllabus of grades 7–9 aims at deepening the pupils' understanding of historical knowledge. The pupils should learn to find and use historical information from various sources, be able to formulate an opinion, understand different interpretations, explain human activity and also predict future alternatives on the basis of their knowledge of historical changes. In general, grades 7 and 8 deal with 19th and 20th century history, respectively. A typical feature of the Finnish history syllabus is an emphasis on modern history and on recent history in particular. In the syllabus of grade 8, this implies a strong focus on the political turmoil of the 20th century, in which the key events of Finnish history (achievement of independence, the Civil War, the Second World War) get a prominent role. It has to be emphasized that the history of Finland is dovetailed with European and world history, and the teaching content is not limited to the history of Finland.

Social studies can be seen as a key subject in citizenship education, the channel for dealing systematically with the contents of citizenship education. It is also the subject that aims to give students the necessary knowledge base and tools for thinking and participating in society. However, its status in the Finnish school system has not been very strong because it has been taught as late as the final year of comprehensive school; however the recent curricular reforms have improved its standing. The number of lessons had been increased already in 2004, and the subject began to be introduced at the primary level. The content of social studies in both the primary and lower secondary levels is divided into four key thematic areas: everyday life and management of one's life; democratic society; active citizenship and participation; and economic activity. In the primary grades, social studies deal with issues that are close to the children, such as practising decision-making, discussing human rights and equity, using and earning money, saving and sustainable consumption. In the secondary level, generally in grade 9, the focus is more on the institutions and functions of society, and the structures of decision-making. The key themes include individuals as members of a community, the welfare of the individual, exerting influence and decision-making (political systems, administration, media), citizens' security, managing one's own finances, economics and economic policy.

Geography is taught through basic education (Table 1) from grades 1 to 9 (ages 7–15) and also in the optional upper secondary school (ages 16–18). It is introduced for the pupils of grades 1–6 as a part of environmental studies (Finnish National Board of Education, 2014). In environmental studies both human and natural scientific

approaches are combined. This means that geography is integrated with the subjects of biology, physics, chemistry and health education in grades 1–6 and is taught by classroom teachers. In grades 7–9, subject teachers take the responsibility. The basis in grades 1–6 is to learn to appreciate nature and live a valuable life in appreciation of human rights. An important aim of geography is that the pupils in grades 1–6 should adopt a positive relation with nature and the environment and they should also learn to understand the importance of the interaction between the individual and the environment, as well as practicing living according to sustainable development. Building a geographical world image in a changing world starts in the early years in basic education. The core content concerns the home region and the world of the human living environment in grades 1–2. In grades 3–6 the various regions of the world come under examination. The students also begin to develop an idea of what is involved in being a Finnish citizen and part of European culture. Geography lessons give the pupils the opportunity to understand phenomena associated with the activity of human beings and the natural world. The geographical areas studied expand from Finland to Europe and to the rest of the world using various types of maps and other geomedia; in regional geography the focus has been systemic. In grades 7–9 geography is taught as an independent subject and a more detailed description of natural, built and social environments is introduced both at the local and global levels. Thus geography is a humanistically oriented science subject, which connects knowledge from several other disciplines. Geography education is based on the pupils´ world of experiences.

The distribution of lesson hours determined by the government specifies the minimum number of contact hours in geography just like in all subjects. A minimum of 0.8 lesson hours per week of geography is taught in the 3rd to 6th grades in Finland, if geography and biology are taught to the same extent, as they are in most of the schools.

ON THE ESSENTIAL NATURE OF SPECIFIC SUBJECTS

History and History Education

The challenges, goals and expectations for school history are versatile and they change over time. Finding a balance between questions dealing with what and how, or contents and skills, has been a topic of discussion for several decades in Finnish history education. A related distinction is the triangle between values, facts and skills. These are, of course, not dichotomous distinctions, and contents and skills are intertwined. Nevertheless, various approaches to teaching history can be categorized on the basis of their emphases, and they are basically reflecting ‘different orientations toward historical pedagogy and epistemology’ (Seixas, 2000). The classical way of teaching history was focused on values, transmitting in the Finnish case, nationalistic values and supporting the master narrative of a nation fighting for its independence. This ethos was especially strong in the earlier half

of the 20th century. It was followed by an objectivistic trend, pursuing a neutral transmission of facts and contents, trying to be pure in values and attitudes. The objectivistic mode of teaching has been very strong (Castrén, 1992; Arola, 2002). It is a cognitively and pedagogically easy orientation, and it can be a safe solution, if teachers want to avoid dealing with conflicting information or controversial and sensitive issues and only mediate facts. Today, however, at least according to the school curricula and pedagogical literature, the common trend of history teaching in Western societies, including Finland, is to emphasise students' thinking skills, and skills of acquiring knowledge, and as well as understanding the multiple perspectives of history (van der Leeuw-Roord, 2003). This is very obvious in the present Finnish history curriculum for Basic Education, where there is a clear emphasis on constructivist and socio-cultural notions of learning. History in principle can also be seen through critical lenses, as conflicting stories and multiple truths, as multiple windows to the same historical events. Consequently today, there is a strong focus on the multi-perspective approach to teaching history, seeing it as a discourse of various interpretations (Stradling, 2003). However, we have very little evidence about the actual processes of history teaching in the classrooms. The principles of multi-perspectivity are not perhaps fulfilled very often, but, for instance, training students to examine historical sources and make conclusions based on evidence has certainly become a fairly common method.

The National Core Curricula for Basic Education underlines the nature of the academic domain as the foundation of the school subject; it aims at fostering critical thinking skills, and to acknowledge the multi-perspectivity of history, and the concepts of time, causation, change and continuity (Finnish National Board of Education, 2014). A key concept in the present history curricula is historical consciousness, which involves seeing the continuum between past, present and future. History is also seen as related to citizenship education, supporting the construction of students' identities and their development into active citizens.

Social Studies and Social Science Education

Social studies can be characterised as a cross-disciplinary school subject, because its content is based on different branches of social sciences – political science, economics, social policy, sociology and law (Elio, 1993; Löfström, 2001). The role of these sciences can be seen not only as related to actual contents, but perhaps more as a way of thinking and basic concepts. As Löfström, Virta and van den Berg (2010) remark, it may be difficult to fully pay attention to the nature of the social sciences in the subject of social studies because the subject is based on various branches of the social sciences. The actual content drawn from social sciences is, however, rather thin, particularly in the comprehensive school curriculum.

Instead, the social studies curriculum contains a lot of descriptive instruction about organizations, institutions and structures in society (for instance parliament, the government, voting, saving, and municipal services). In the practice of teaching,

attention is also given to society at the micro-level, and on how adolescents, for instance, encounter social decision-making and economical issues in their everyday lives. An important side of this school subject is socialisation: one of the main goals of the social studies education is to educate students to citizenship, foster their skills in active participation in society, and furthermore to train them to use and evaluate critically information about society (Ochoa-Becher, 2007). This diversity of content is very clearly reflected in the goals of the social studies curriculum.

Value-based principles are emphasised in the objectives of social studies, and they are included in the criteria for assessment, for instance, the training ethical consideration, but such goals are not directly used in assessment. This is explained by the difficulties related to assessing the goals that deal with values (Löfström et al., 2010). In fact, many of the goals of social studies, such as becoming an active citizen, will only be fully observable in the future when the students are adults, and what really can be counted as the result of social science lessons will be highly uncertain.

In the recent international study of adolescents' civic knowledge, attitudes and participation, International Civic and Citizenship Education Study 2009 (ICCS), the Finnish teachers and principals had in the questionnaire an item where they had to rank the goals of civic education. Their highest priority was "promoting students' critical and independent thinking", and the second dealt with caring and valuing the environment. Most of the other high-ranking goals dealt with knowing and understanding society and political institutions. Such goals as participating in the local community or preparing pupils for future political participation were very lowly ranked. Only 4% of teachers and 1% of principals thought they were important goals. Very few of the respondents thought that an important goal was to develop strategies for resisting racism or xenophobia (Suoninen, Kupari, & Törmäkangas, 2010). These results suggest that there is an obvious risk that the socio-ethical purposes of social studies are overshadowed by the emphasis on cognitive purposes. The ethical and participatory dimensions of social science education leave no doubt that there is a challenge for future development of the curriculum.

The assessment methods in general have recently become more versatile, more material based (using written documents, statistics and graphics), thus emphasising the development of skills. However, in thinking about the functioning of society, one may ask what the main role of social studies instruction is. Is it educating citizens who know about democracy – or citizens who can act in the society? These goals are not mutually exclusive, and it would, of course, be worse to have citizens who do not know but act anyway.

Contents related to society are included in many other schools subjects as well, such as history, geography, religious education, first language education, ethics, science, health studies and home economics. Furthermore, citizenship education can be seen as the general overall purpose of schooling. In ICCS 2009, most Finnish teachers and principals expressed the opinion that civic education is the responsibility of the whole school and all the teachers, irrespective of subject specialization (Suoninen et al., 2010). However, one distinction can be

made: citizenship education in a broad sense, with its purposes that are related to socialisation, is common to the whole school – but social science is a subject which aims to examine society systematically.

Geography and Geography Education

Traditionally *geography* in Finland is divided into the two main branches of general and regional geography. General geography focuses on things and phenomena which are based on the physical environment and are connected to man made things (the human environment) and their effects, whereas regional geography studies the world´s regions, their specific unique characteristics which are related to their nature and culture. Accordingly, general geography is divided into physical and cultural geography. The humanistic branch of cultural geography studies, among other things, the identity of the place of humans, regional images and interpretations of landscapes, and it highlights one's personal relationship with the environment (Haarni et al., 1997; Yi-Fu Tuan, 1974; Jones & Olwig, 2008). The relation between humans and their environment has become an even more important study goal in physical geography, too. There are several other branches of geography, but all their research topics are connected to concepts like area, region (local, global), space and time. Therefore today´s geography is a diversified science, which connects the natural sciences, the humanities and social sciences, and nowadays it highlights similarities between the studied matters instead of differences (Kwan & Weber, 2004). In Finland geography in universities is taught in faculties of mathematics and the natural sciences.

Geography in Finland is a school subject that operates as a bridge between natural-science and social-science thinking and is connected partly to social sciences, too (Finnish National Board of Education, 2004, 2014), and it answers questions concerned with: "what (kind of), where and why?" It is important that pupils learn how to acquire geographical knowledge and how to think geographically. As a school subject, geography helps pupils to outline the connections between human-made things and the physical environment and its constructs or phenomena, thus supporting the pupils in their efforts to perceive the global entirety. This is most clearly shown during the lessons when the physical and human aspects of the geographical theme are present and the studied matters are smoothly bound together, for example in the issue of creating a sustainable environment. The main aim of geography is expressed in the following sentence of the National Core Curriculum for Upper Secondary School (2003): "Geography examines the structures and functions of living and lifeless nature and human-made systems". The idea is that the students should become aware of the interdependencies between nature and human activity and to study the world as a changing and culturally diversified living environment. This highlights again the importance of geography as an integrating subject between the study themes of the natural sciences and the humanities.

LITERACY OF HUMANITIES (PISA, TIMMS, ICCS)

There are several studies in which the knowledge, skills and attitudes of pupils have been tested nationally and also internationally. In the earlier studies mostly the knowledge of the pupils has been tested, whereas the present tests measure more abilities and thinking skills. Firstly, some Finnish national examinations are presented here. There is an optional examination to measure the pupils' knowledge and skills in biology and geography at the beginning of Grade 7. There is another voluntary geography test that can be chosen by the schools or teachers as a final test at the end of the compulsory basic school (grade 9). Not all schools have taken part in these tests, so there are no nationwide results available.

Finland has participated in several international studies of learning results. In The Third International Mathematics and Science Study (Kupari et al., 1999) the Finnish pupils (7th grade) were well disposed towards geography and biology among sciences. The mean of the marks of the Finnish pupils was significantly above the international average in their abilities to acquire the scientific information by researching. This study also measured the students' knowledge of the environmental and natural resources where the Finns had similar results.

In PISA 2006, the main attention was on natural sciences (including geography) for the first time. The knowledge and skills of the Finnish pupils (age 15) were best in all domains of the natural sciences. The top-rated domains were using scientific evidence, identifying scientific issues and explaining phenomena scientifically. These results also indicated that pupils can solve geographical issues but the domain of human geography was not studied. In PISA 2009, the corresponding domains were examined – both the cognitive and affective aspects of students´ competencies in science – as in 2006, the Finnish pupils were the best.

During the past two decades, a number of studies have been published in Finland about adolescents' historical thinking, but we know actually very little about what really happens in the classrooms. Sirkka Ahonen (1998) has studied adolescents' historical consciousness and identity, and their conceptions of some key phenomena in national history. This study is a continuation of the Finnish contribution to the international Youth and History study (Angvik & von Borries, 1997). Ahonen presents part of its national results and also reports on interviews of one hundred 16- and 17-year-old upper secondary school students. One of the main findings was that the national narrative was still quite strong; and the adolescents considered that the wars in 1939–1944 were the most significant events in national history. The author presumes that patriotism may be based more on the general historical culture in Finland, not directly on history teaching, which still seems in part to be following the objectivistic traditions of teaching. The study deals with upper secondary students but younger students perhaps do not differ very much. The actual Youth and History data from Finland, concerning 15–16 year old students, indicates that they are more patriotic than equivalent students from other Nordic

countries. Their nation was very important to 65% of the Finnish respondents, and their own country to 74% of them.

Another study is Juha Vänttinen's (2009) doctoral dissertation, which was based on an ambitious teaching project with 13- and 14-year olds in a multicultural school. The author was teaching his classes and using very systematic documents, and testing how his students can interpret and draw conclusions from the material. According to the results, the source-based teaching methods were suitable for lower secondary classes. This is actually encouraging, and corresponds very well with the aims of the present history curriculum. However, it is challenging for the history teachers and requires profound expertise in both subject matter and teaching methods.

As for civic education, two large scale international evaluations (CIVED, 1999; ICCS, 2009), which assessed adolescents' knowledge, participation and attitudes related to society, indicate that Finnish adolescents (14-year olds) have a very good knowledge of society, but they have very weak interest in this field. Altogether 3300 14-year-old Finnish adolescents participated in this study from 176 schools. Finnish adolescents obtained 576 points, the same number as the best nation, the Danes, while the international average was 500. Girls performed significantly better than boys, but the differences between schools were very small. There were also significantly more top-level performers in the Finnish sample than in any other country, and the least percentage of poor performers. Although the results were very good already in 1999, they had now slightly improved. What makes these results even more special is that the target group in the international studies CIVED and ICCS were 14-year-olds who had not yet received systematic civic education. However, their knowledge in both studies was at the top level, second place in both studies, which indicates that critical thinking skills and also a good deal of information about society is filtered through effectively, for instance, from history and geography instruction, and from school life in general. The excellent results in knowledge items are certainly due to a large extent to the schools, and in the attention given to the contents of citizenship education in general, although the achievement level is also related to their family background and their parents' interest in political and social issues (Suoninen et al., 2010; cf. Suutarinen, 2002).

Where Finnish adolescents do not perform well, are their attitudes toward political and social issues. They, together with Swedish, Norwegian and Belgian pupils, have a very low interest in political issues, and especially in political parties. Nevertheless, there are areas that are experienced as more important, mainly environmental issues. The majority of these adolescents also think that they are going to vote in the future, but very few consider that they would join a party or be a candidate in election. They trust in the institutions of the Finnish society more than adolescents in the other participating countries on average, support equality of gender more than the international average (although males have more conservative attitudes). These adolescents in general and the girls more than boys had tolerant attitudes toward the rights of ethnic minorities.

These results can be compared and partly contrasted with those of the national evaluation 2012, which was conducted by the Finnish National Board of Education for the first time in the history of the subjects of history and social studies (Ouakrim-Soivio & Kuusela, 2012; Ouakrim-Soivio, 2013). The participants (ca 4700) were grade 9 students, 15 years of age, from 109 schools. Test items were designed on the basis of the assessment criteria in the NCCBE 2004, focussing on skills relevant for these subjects, for instance, historical empathy, time concept, critical interpretation of sources, statistics, graphs and messages from media and explaining societal issues. Grade 9 students performed fairly well in history, for instance, in items dealing with concepts of time, but they had difficulties with items related to various skills, such as interpreting sources and understanding causality. The average performance was about 50 per cent of maximum credits, but there was broad variance among participants. The average performance was slightly better in social studies (percentage of credits was 64). The results were best in items requiring skills of argumentation about societal issues, but there were obvious difficulties in critical interpretation of media, statistics and graphs, as well as items considering the alternatives of political decision making.

Activating Teaching Methods

None of the present school curricula for history, social studies or geography articulate explicitly what teaching and learning methods should be used per se, but, instead, teachers are free to choose their teaching methods. However, the National Core Curriculum for Basic Education emphasises in general that teachers are expected to use methods that support the development of the skills of learning, thinking, argumentation and problem solving, as well as participation, social and collaborative skills and using digital media (Finnish National Board of Education, 2004). The present school curricula are based on an active and dynamic conception of knowledge and learning. This refers to the constructionist notion of learning as a mental activity, and the individual and social-constructivist conceptions of the formation of knowledge.

Another, related challenge is that the humanities should be taught, not as an accumulation of separate pieces of information, but as a specific way of thinking and understanding, and the task of the teacher should be to nourish the students' higher order thinking. This is one of the main challenges of teacher education: to prepare the prospective teachers to teach thinking and understanding, not only mediating information. These are challenges for Finnish schools, although teachers of history, social studies and geography already today use student-centred teaching methods fairly frequently.

As for history, the goals of curriculum have underlined skills-based teaching. Students should learn to use and interpret historical evidence, interpret conflicting sources, detect bias and understand multiple perspectives to historical questions.

This approach to history education is based mainly on the British tradition of history teaching. All in all, using this method, students should learn to understand the basic of historical epistemology, the construction of knowledge on the basis of critical scrutiny, and hopefully, this critical literacy would have a transfer effect for managing the continuous flood of information in everyday life. This requires systematic and continuous practice, not only occasional episodes. Although history still is a subject based strongly on reading texts and expressing what you can through writing, reading history actually implies multiple-forms of literacies – in addition to words, there is more and more about visual texts, electronic and digital media.

A good example of this working with historical documents was the teaching experiment that Juha Vänttinen (2009) constructed as the basis for his doctoral thesis. He selected sets of sources and designed tasks based on them, beginning in grade 7 with fairly easy documents, proceeding to more difficult ones in grade 8. He used, for instance, letters written by imaginary Finnish migrants from North America, and the pupils had to figure out their individual motives for migration and understand historical changes. For instance, with documents about Germany under Hitler's regime, pupils were challenged to compare contradictory sources and be sensitive to bias in the texts. In general, visual, graphic and statistical sources have become important in the practice of history teaching, which is certainly common to the humanities in general.

In geography, learning through "graphics", in other words using "geomedia" and media coverage (topical and current documents of the whole world), plays and has played an important role in teaching and learning in basic education. The "geomedia" include maps, photos, drawings, diagrams, videos, etc., but nowadays more and more use is made of computer based graphics and geographical information systems (GIS). GIS processes place information and supports especially the reading and control of the location information. Geographical information systems make it especially possible to collect information and handle materials. They also provide tools that support analysis and illustrating. They contain, in addition to location, information about property data, which determines the target and describes the properties of the target. So the place information consists of a wholeness formed by the location information, property data and contact information. The versatile use of maps also includes the presenting of the topics, which can be learnt in human geography with the map. There is a GIS program for schools (www.paikkaoppi.fi), which all the teachers in Finland can use. The versatile use of maps by GIS programs also makes it possible to present topics that can be taught in human geography with the maps and it develops the students' spatial skills.

In learning environments like www.paikkaoppi.fi spatial understanding, map skills, knowledge of the place and values are foci of learning. The following are examples of the use of the system. The city environment is usually structured by pupils via places and the meaning of the places. However, they seem not to have a personal relationship to their surroundings. To practice not to be blasé about their

environment and to become sensitised to its issues, the pupils are asked to take photos in a place they feel is important or they like in the environment. They are also asked to write about why it is valuable for them and to link their images to the information in the "PaikkaOppi" map program. They are asked to place these photos and essays on the right place on the map using geographical coordinates and information available in the system. At the end of the practice the pupils have to tell other pupils about their chosen important place, and its connection to information available in the map program or elsewhere. This type of practice can easily be connected to historical and biological knowledge of the place and it also provides an opportunity to practice computer skills and taking photos.

An example of a cross-disciplinary activity is a landscape history course arranged in one school in the spring of 2010. The course was planned jointly by the teachers of geography, history and landscape studies. The aim of the course was to study changes in landscape – how particular physical features or man-made structures have changed over time. PaikkaOppi's map program was used to study original maps dating from the 18th century and compare them to the current maps and aerial photos. Data sets were overlaid in the map program and basic visual analyses were executed. Also, the map service was used to combine the teaching of geography and literature in a special course to enhance pupils' knowledge of their own local environment's cultural history. The pupils set out in the city of Turku to look for places that might have some cultural reference. After plotting these places on the map program, the pupils added excerpts from local literature – novels and poems that were related to these places.

Assessment

Assessment in the humanities is based mainly on teacher-made school-based examinations, course work, assignments or portfolios. More and more often the exams also include tasks calling for students' own thinking, problem solving, and understanding of wider contexts, concepts or documents. According to the new assessment culture, classroom assessment is expected to be supportive and individualised, based on the principles of authentic or performance assessment.

One of the major reforms in the 2004 comprehensive school curriculum was setting up criteria for the assessment of student achievement in all subjects, and these criteria were elaborated further in the new curriculum in 2014. The criteria for grade 9 were created as early as 1999, but in the 2004 curriculum criteria for "good knowledge of subject matter" were also set for turning-points in school, the transition for the individual student from being taught by class teachers over to being taught by subject-specific teachers. The assessment criteria only describe the standards for 'good' knowledge or skills in the subject, which practically means 8 on a scale from 4 to 10; there are no standards for satisfactory (5) or excellent (9, 10) achievement. There are differences in the criteria of subjects representing the humanities.

A special feature for the criteria in history is the emphasis on the skills of acquiring, understanding and using historical knowledge. The criteria are mainly formal, indicating nothing of the factual contents that the students should adopt. The reason for this lies in a relativist notion of the significance of historical events. The formal emphasis in the criteria, and also in the goals for history teaching, is clearly influenced by the British tradition of history education (cf. Husbands, 2003).

The criteria for social studies resemble those of history, focussing on the skills of dealing with information. Assessing learning outcomes in this subject is challenging, especially with reference to the role of social studies in citizenship education. The formative functions of assessment are most relevant, because of social studies' role of supporting individuals' development in citizenship. This is especially true for objectives that are related to social and moral values and attitudes, such as appreciation of human rights, equality and democracy. Furthermore, the most essential outcomes become visible long after the students' school years end and thus are not accessible for school assessment, while the easy targets of assessment may not be relevant for citizenship (Grant & Salinas, 2008).

In geography, the criteria for 'good' knowledge or skills are divided into several categories of which the most essential are skills in acquiring geographical information – like interpreting several kinds of maps, photographs and statistics and how to utilize news sources and information from data networks – analysing the world, Europe and Finland and the common environment. These national, equalising criteria of the final assessment have very often been transferred directly to local curricula.

THE EDUCATION OF HISTORY, SOCIAL STUDIES AND GEOGRAPHY TEACHERS

Today, the teacher education programme is normally sandwiched between subject studies, but a gateway to teacher studies in a few universities is also open to those who want to qualify as teachers after finishing their degrees. Subject studies are organised by the faculties of humanities, social sciences or science, and the teacher studies by the departments of teacher education. The teacher studies normally last only one year, which is a short time in the process of teachers' professional development. For the subject teachers in the humanities and other school subjects, the teacher studies include courses in general education, subject-specific teaching courses and a practicum. Subject didactics refers to the subject-specific component in teacher education. It can be seen as a bridge between the academic subject and education, and between the school subject and the learning individual. Thus, it is an approach combining the nature of the specific subject to the general theories of education. It is a subject focussed on pedagogical content knowledge.

The course structure and detailed contents of subject didactic can differ between departments of teacher education. The core content is, however, often made up of contents that introduce the prospective teachers to think about the nature of the school

subject and its form of knowledge, as well as the thinking and learning processes related to the subjects. They are also introduced to the school curricula and their development, teaching methods and materials and student assessment. As subject didactics is related to pre-service teacher education, the practical solutions, such as teaching methods, assessment, using visuals and ICT, belong to the core content, and are in general most highly appreciated by the teacher trainees. However, this is not sufficient, if we want to support the prospective teachers' growth as reflective professionals, and to develop subject didactics as an academic domain and as a field of research. The students learn also about research into learning and teaching and write a minor dissertation. Cross-disciplinary approaches (sustainable development, global and multicultural education, active citizenship, media literacy, future studies) also belong to the curriculum.

The didactics of social studies has so far been confined to history didactics, with the exception of Helsinki University, where there has been opportunity to differentiate these programmes partially. Some components are common to both subjects, but there are also specific themes (the nature of social studies as a school subject, students' attitudes and motivation, some practical issues related to teaching methods, relevant research). In principle, the didactics of history is more developed in Finland than that of the social sciences, and it is an urgent task for us educators to try to strengthen the preparation of teachers for teaching social studies.

The nature of the geographical discipline and the contents of school geography are discussed in the didactics studies at the departments of teacher education at Finnish universities. The kinds of didactic courses available differ from university to university and on the sub-specialization of the didactics teachers, but certain basic things are taught to everybody like the importance of graphics and maps in learning geography (Cantell et al., 2007). Various applications of the theory to everyday life are introduced for both subject teacher students and class teacher students. The students do geographical internships in their studies and they also do practical training in the teacher training schools of the universities.

Academic geography is brought into the school level via subject-specific didactic studies. In these studies the theoretical content of science is brought to the school environment. Kaivola and Rikkinen (2007) have shown that geography teaching has been under continuous change in Finland in the last decades. According to them the innovations of the academic research and higher education have permeated the schools in several ways. It is noteworthy that the trend in Finnish curriculum development has given geography teachers more opportunities to design their educational settings (Kaivola & Rikkinen, 2007). At the same time, effective teaching and learning methods for geography have been introduced. There has also been better comprehension of how to make good use of commonplace geographical knowledge. In the didactics studies ways to transform the geographical content and its concepts so that pupils of different age groups can understand them are also reviewed. All these tendencies are widely presented in the set of didactics books of Rikkinen of which the newest volume came out in 2007 (Cantell et al., 2007).

Especially the thinking skills associated with learning geography are accentuated as well as studying geography in a socio-cultural learning context and in a social frame of reference (Cantell, 2001). Naturally geography teaching is dependent on trends in society and is seldom value free.

COMMON CHALLENGES

There are certain questions which all the humanities have very much in common, and in the future they will be challenged to cross subject borders, while cooperating and creating more coherent issue-centred structures to deal with the themes together. Many of the future challenges are also included in cross-disciplinary themes like acting to achieve sustainable environments and societies, globalisation and active citizenship. An example of active citizenship in geography is widening of one´s regional identity to become an active global citizen (Cantell, 2005). In the study of Paakkunainen (2007) only about 30% of Finnish participants felt they were global citizens and a few more than 50% felt they were European citizens. All in all, "active citizenship" is a big challenge in Finnish school culture, not only because Finnish adolescents are not very interested in these matters according to the same research results (ICCS) but also because these issues are difficult to teach and learn and they are also age dependent.

Cultural diversity has created a new situation for many Finnish teachers, who have to design teaching methods and approaches that are meaningful in multicultural and multilingual student groups. The situation can, however, be very different in different parts of the country. All the teachers share some of these changes, while others are more directly subject-specific. The development of intercultural competence, or culturally relevant pedagogy, can be seen as vital for subject teachers, both in pre-service and in-service education. Firstly, it deals with the guiding of all students, including those with migrant backgrounds, in their learning; secondly it affects communication in classroom situations; and thirdly it affects value issues related to school and education in general and culture particularly.

Some changes brought by multiculturalism are related to the nature of subjects and to the functions that they have in society and for individuals. Key issues are whose history, or whose geography we teach, and whose social values are reflected in the ethos of civic education. The enlarging multiculturalism in Finnish society is raising the question of what kind of geography is important to teach. This will be a new task for didactics research and an important task for geography teachers in schools, too.

In culturally diverse classrooms, there are adolescents who come from different historical cultures, representing different interpretations of sensitive and controversial current issues and their backgrounds. The growing diversity of the population challenges the traditional uni-dimensional history education with requirements of multi-perspectivity. Although the Finnish history curriculum is not strongly focussed

on national history, more space should certainly be given to global history (Virta, 2008).

The social studies curriculum in most school systems has been based on the presentation of the institutions and structures in the self-same society, from a rather national point of view. It has been a channel of socialization into one society. This is still relevant but not sufficient, given the growth of international migration, globalization and more rapid communication (Virta, 2010). Basically, instead of citizenship education we perhaps should speak about intercultural citizenship education. It is not limited to integrating the children with migrant backgrounds into their new society but all pupils need the capacity to work and live in international contexts and multicultural societies.

In conclusion, many of the matters presented can be included in Future Education. The viewpoint of Future Education can be enforced in several subjects, subject groups and cross-curricular themes. In Future Education the mental pictures of a worldview (philosophy of life) are used in teaching and learning. The mental pictures represent the entity of personal knowledge, conceptions, assumptions and beliefs. These kinds of information can be collected from narratives, essays and drawings. To be connected to the humanities it is important to ask: "What is the direction in which the phenomenon is developing?"

REFERENCES

Ahonen, S. (1998). *Historiaton Sukupolvi? Historian Vastaanotto ja Historiallisen Identiteetin Rakentuminen 1990-luvun Nuorison Keskuudessa* [The No-History Generation? The Reception of History and the Construction of Historical Identity by Young People in the 1990's] Historiallisia Tutkimuksia 202. Helsinki: Suomen Historiallinen Seura.

Angvik, M., & von Borries, B. V. (Eds.). (1997). *Youth and history. A comparative European survey on historical consciousness and political attitudes among adolescents*. Hamburg: Körber Stiftung.

Arola, P. (2002). Maailma muuttui – muuttuiko opetus? Suomalaisen historian ja yhteiskuntatiedon opetuksen vaiheita [The world changed – What about teaching? About the history of history and social science education in Finland]. In J. Löfström (Ed.), *Kohti Tulevaa Menneisyyttä. Historiallis-yhteiskunnallinen Kasvatus Uudella Vuosituhannella* [Towards the Future Past. History and Social Science Education in the New Century] (pp. 10–34). Jyväskylä: PS-kustannus.

Cantell, H. (2001). *Oppimis- ja Opettamiskäsitykset Maantieteen Opetuksen ja Aineenopettajankoulutuksen Kehittämisen Lähtökohtana* [Conceptions of the Learning and Teaching – Basis for the Development of the Teaching Geography and of the Education of Subject Teachers] Tutkimuksia 228. Finland: University of Helsinki, Department of Teacher Education.

Cantell, H. (2005). Kansalaisvaikuttaminen – lokaalista globaaliin, oppitunnilta oikeaan elämään [Active *citizenship* – in the local into the global, active citizenship from lessons to life]. In J. Rantala & A. Siikaniva (Eds.), *Kansalaisvaikuttaminen Opettajankoulutuksen Haasteena* [Active Citizenship as a Challenge for Teacher Education] (pp. 33–46). Historiallis-yhteiskuntatiedollisen kasvatuksen tutkimus- ja kehittämiskeskuksen tutkimuksia 3. Helsinki: University of Helsinki.

Cantell, H., Rikkinen, H., & Tani, S. (2007). *Maailma Minussa – Minä Maailmassa. Maantieteen Opettajan Käsikirja* [World in me - I in world. The handbook for geography teachers]. Studia Paedagogica 33. University of Helsinki: Department of Applied Sciences of education.

Castrén, M. J. (1992). Historianopetus muuttuvassa yhteiskunnassa [History education in a changing society]. In M. J. Castrén, S. Ahonen, P. Arola, K. Elio, & A. Pilli (Eds.), *Historia Koulussa [History at School]* (pp. 11–47). Helsinki: Yliopistopaino.

Elio, K. (1993). Yhteiskunnallinen sivistys, yhteiskuntatieto ja oppiaines [Societal bildung, societal knowledge and subject matter]. In P. Arola, K. Elio, T. Huuhtanen, & A. Pilli (Eds.), *Yhteiskuntatieto Koulussa [Social Science at School]*. (pp. 11–79). Helsinki: Yliopistopaino.

Finnish National Board of Education. (2004). *Perusopetuksen opetussuunnitelman perusteet 2004* [National Core Curriculum of Basic Education 2004]. Retrieved December 18, 2015, from http://www.oph.fi/download/139848_pops_web.pdf

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014* [National Core Curriculum of Basic Education 2014]. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Grant, S. G., & Salinas, C. (2008). Assessment and accountability in the social studies. In L. S. Levstik & C. A. Tyson (Eds.), *Handbook of research in social studies education* (pp. 219–236). New York, NY: Routledge.

Haarni, T., Karvinen, M., Koskela, H., & Tani, S. (1997). *Tila, Paikka ja Maisema: Tutkimusretkiä Uuteen Maantieteeseen* [Space, Place and Landscape: Expeditions to New Geography]. Tampere: Vastapaino.

Husbands, C. (2003). *What is history teaching? Language, ideas and meaning in learning about the past*. Buckingham: Open University Press (Originally published 1996).

Olwig, K. R., & Jones, M. (2008). Thinking landscape and regional belonging on the northern edge of Europe. In M. Jones & K. R. Olwig (Eds.), *Nordic landscapes – Region and belonging on the northern edge of Europe* (pp. ix–xxix). Minneapolis, MN: University of Minnesota Press.

Kaivola, T., & Rikkinen, T. (2007). Four decades of change in geographical education in Finland. *International Research in Geographical and Environmental Education*, *16*(4), 316–327.

Kupari, P., Reinikainen, P., Nevanpää, T., & Törnroos, J. (1999). *Miten Matematiikkaa ja Luonnontieteitä Osataan Suomalaisessa Koulussa? Kolmas Kansainvälinen Matematiikka- ja Luonnontiedetutkimus TIMSS 1999 Suomessa* [How are the Mathematics and the Natural Sciences Known at Finnish School? The Third International Study of the Mathematics and Natural Sciences, TIMSS 1999 in Finland]. Jyväskylä: Jyväskylän yliopistopaino.

Mei-Po, K., & Weber, J. (2003). Individual accessibility revisited: Implications for geographical analysis in the twenty-first century. *Geographical Analysis*, *35*(4), 341–353.

Löfström, J. (Ed.). (2001). *Yhteiskuntatiedon Tiedetausta. Ainedidaktisia Lähtökohtia Oppiaineen Kehittämiseen* [The Disciplinary Foundations of Social Studies: Subject Didactics as Platform in Developing the Subject]. Helsinki: University of Helsinki, Department of Teacher Education.

Löfström, J., Virta, A., & van den Berg, M. (2010). Who actually sets the criteria for social studies literacy? The national core curricula and the matriculation examination as guidelines for social studies teaching in Finland in the 2000's. *Journal of Social Science Education*, *9*(4), 6–14.

National Core Curricula for Basic Education. (2003). Helsinki: The Finnish National Board of Education.

National Core Curricula for Upper Secondary School. (2004). Helsinki: The Finnish National Board of Education.

Ochoa-Becher, A. S. (2007). *Democratic education for social studies. An issues-centered decision making curriculum. A volume in international social studies forum*. Greenwich, CT: Information Age Publishing.

Ouakrim-Soivio, N. (2013). *Toimivatko päättöarvioinnin kriteerit? – Oppilaiden saamat arvosanat ja Opetushallituksen oppimistulosten seuranta-arviointi koulujen välisten osaamiserojen mittareina* (Raportit ja selvitykset 2013:9). Helsinki: Opetushallitus. [Do the Criteria for Final Assessment Function? Students' Grades and the Evaluation Conducted by The National Board of Education as Indicators of Differences between Schools.]

Ouakrim-Soivio, N., & Kuusela, J. (2012). *Historian ja yhteiskuntaopin oppimistulokset perusopetuksen päättövaiheessa 2011 [Achievements in History and Social Studies in the End of Comprehensive Education, 2001]* (Koulutuksen seurantaraportit 2012: 3). Helsinki: Opetushallitus.

Paakkunainen, K. (2007). *Nuorten Poliittinen Osallistuminen Kahdeksassa Euroopan Unionin Maassa (EUYOUPART) – Kansallisten Empiiristen Tulosten Vertailua ja Tulkintaa* [The Political Participation of the Youth in Eight EU Countries (EUYOUPART) – Comparison and Interpretation of National Empirical Results]. Valtion nuorisoasiain neuvottelukunta, Nuorisotutkimusverkosto. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Nuoriso/nuorisoasiain_neuvottelukunta/julkaisut/muut_tutkimukset/EUYOUPART.pdf

Seixas, P. (2000). Schweigen! Die Kinder! or Does postmodern history have a place in the schools. In P. N. Stearns, P. Seixas, & S. Wineburg (Eds.), *Knowing, teaching and learning history. National and international perspectives* (pp. 19–37). New York, NY: New York University Press.

Stradling, R. (2003). *Multiperspectivity in history teaching: A guide for teachers*. Strasbourg: Council of Europe Publishing.

Suoninen, A., Kupari, P., & Törmäkangas, K. (2010). *Nuorten Yhteiskunnalliset Tiedot, Osallistuminen ja Asenteet. Kansainvälisen ICCS 2009 - Tutkimuksen Päätulokset* [Adolescents' Knowledge, Participation and Attitudes Related to Society. Main Results of the International ICCS Study]. Jyväskylä: Jyväskylän yliopisto, Koulutuksen tutkimuslaitos.

Suutarinen, S. (2002). Tietävillä nuorilla syrjäytyneiden asenteet. Suomalaisten nuorten yhteiskunnallinen ajattelu ja toiminta kansainvälisessä vertailussa [Knowledgeable adolescents having attitudes typical of those in the margin. Societal thinking and acting of Finnish adolescents in international comparison]. In V. Brunell & K. Törmäkangas (Eds.), *Tulevaisuuden Yhteiskunnan Rakentajat. Yhteiskunnallisen Opetuksen Kansainvälinen Tutkimus Suomen Näkökulmasta* [Those Who will Build the Future Society. The Finnish Approach to the International Study of Civic Education] (pp. 11–60). Jyväskylä: Koulutuksen tutkimuslaitos.

van der Leeuw-Roord, J. (2003). *History changes. Facts and figures about history education in Europe Since 1989*. Hague: Euroclio.

Vänttinen, J. (2009). *Saako Historiasta Selvää. Monikulttuuriset Yläkoululaiset Historian Lähteillä. Historian Taidot Motiivien, Seurauksien, Historian Tulkintojen ja Lähteiden Arvioinneissa* [Making Sense of History? Multicultural Lower Secondary School Students Examining Historical Sources]. Turun yliopiston julkaisuja C: 289. Turku: University of Turku.

Virta, A. (2008). *Kenen Historiaa Monikulttuurisessa Koulussa* [Whose History should be Taught in a Multicultural School] (Kasvatusalan tutkimuksia 39). Turku: Finnish Educational Research Association.

Virta, A. (2010). Yhteiskuntaoppi muuttuvassa ja monikulttuurisessa yhteiskunnassa [Social science in a changing and multicultural society]. In E. Ropo, H. Silfverberg, & T. Soini (Eds.), *Toisensa Kohtaavat Ainedidaktiikat* (pp. 423–436). Tampereen yliopiston opettajankoulutuslaitoksen julkaisuja A: 31. Tampere: University of Tampere, Department of Teacher Education.

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14. ARTS EDUCATION

Instruments of Expression and Communication

ABSTRACT

Arts and culture education has its unique role in an educational whole. In this chapter arts education is viewed as a means for children and young people to develop a secure sense of themselves, both as individuals and members of various groups within multicultural and diverse societies. Arts education constructs students' abilities and intercultural competence for confronting an increasingly unforeseen world as future citizens that learn to develop their creative potential and free, critical thinking skills. This chapter presents an outline of Finnish arts education, which consists of the following separately taught subjects: visual arts, music, crafts (textile and technical), physical education and home economics. Each of these is represented as a compulsory subject in the Finnish National Core Curriculum. Within this 'arts and skills' subject group, this chapter refers more exactly to the aims, pedagogical principles and practices of visual arts and music, which are compulsory subjects in all European school curricula at the primary level.

Keywords: Finnish arts education, visual arts, music education, secure sense

ARTS AND CULTURE IN EDUCATION

The role of arts and cultural education at school has been recently emphasized in various international contexts (see ACESE, 2009, 7). For example, UNESCO has actively led the development of policy initiatives in the field of arts education. According to the Director General of UNESCO (1999), each stakeholder has to ensure the teaching of the arts in every child's education. The Road Map for Arts Education (UNESCO, 2006) aimed to provide advocacy and guidance for this project of strengthening arts education. This document stands for arts education helping to uphold the human right to education and cultural participation, to improve the quality of education, to develop individual capabilities, and to promote the expression of cultural diversity (ACESE, 2009, p. 7).

Arts education has been given an important part in preparing children for their roles in an increasingly unforeseen world. Globalization has brought both benefits and challenges, such as advancements in technology and knowledge, challenges in

H. Niemi et al. (Eds.), Miracle of Education, 211–225.

the economy, increased migration and multiculturalism. Arts education, as a part of the education system, can be viewed as a means for children and young people at school to develop a secure sense of themselves, both as individuals and members of various groups within multicultural societies (ACESE, 2009, 7). We refer a secure sense of self to mean individual and social expressivity and communicability in diverse (cultural and creative) texts and situations as both receiver and producer. In these roles the personal experiences and values of processing art strengthen the capacity for cultural participation.

Teaching the arts is said to help children and young people to learn to handle relationships between various elements. As Eisner (2002, 75–77) describes it, one learns to see the interactions among the qualities constituting the whole. For example, analysing a work of art, composing music or engaging in dance requires heightened awareness of relationships, an analysis-synthesis-process concerning the details in the whole. This 'problem of fit' in the arts has to be solved through personal somatic knowledge, which sets the learner in a position of authority in knowledge construction. The learner explores and decides which are the best relationships among colours and forms in image making. For example, the artistic learning process develops the ability to shift direction, or redefine the aims of a work when better options emerge (Eisner, 2002, 77–79, 82–83). This flexibility, improvisational and imaginational feature in intelligence develops forms of thinking and attitudes towards problems that are important to any field of human life.

In addition, one characteristic of arts education is that it teaches the use of various materials as mediums of expression and communication (Eisner, 2002, 79–81). Learning different techniques and skills creates understanding of the potential possibilities and limitations of the materials with which one works. Each material or combination of materials imposes its own limits; an appreciation of these limits help learners to deal with complexity in their self-regulation and thinking. Furthermore, the more experienced the learners become with various materials the more they grow up to be enlightened perceivers and communicators. As Eisner (2002, 85) states, the curriculum provides frames for reading the world. Thus, educational programmes that are effective both provide a variety of frames and develop the student's ability to shift frames. This highlights the role of multimodal literature in knowledge construction, which is one of the guiding themes in the latest Finnish National Core Curriculum for Basic Education (2014).

The place and the number of arts subjects within national curricula is said to mirror the priority that is given to arts education at primary and lower secondary levels of education. In addition, many claim that this field of education can potentially contribute to a creative learning environment in schools, especially if arts subjects are "mainstreamed" throughout the curriculum and if sufficient numbers of hours are devoted to this teaching area (ACESE, 2009, 23). Therefore, it is our aim to discuss the principles and strengths of arts education as a part of the Finnish school system, which have made it possible to achieve remarkable PISA results in several measurable areas of educational quality.

ARTS EDUCATION IN FINNISH SCHOOL SYSTEM

The conception of arts curricula varies a lot even in the European context (ACESE, 2009, 15, 23–28). This is one of the reasons why the quality of arts education is complicated to measure or compare internationally. So far this has not been implemented in PISA, for example. In about half of the European countries, each arts subject is considered separately in the curriculum (e.g. visual arts, music, drama, dance, media arts, crafts or architecture), while in the other half, they are combined as an integrated field of study (e.g. the 'arts'). In the Finnish school system, arts and cultural education as a whole is very unique in its nature, as it refers to the following five school subjects, which are taught separately: visual arts, music, crafts (textile and technical), physical education and home economics. The Finnish National Core Curriculum for Basic Education (2004) specifies separate objectives and core contents for each of these subjects, although they are also grouped in certain reviews of curriculum areas by the term 'arts and skills subjects'. Each subject in this 'arts and skills' group has separate compulsory and optional parts in basic education. Besides the arts and skills subjects' group, artistic and cultural themes are naturally involved in other school subjects too (for example, church art in religion and literary art in the mother tongue).

Recently, the Finnish National Board of Education implemented a large national evaluation of teaching and learning arts education in basic education. According to this research (see Jakku-Sihvonen, 2011, p. 9), pupils' attitudes towards arts and skills subjects (crafts, visual arts, music and physical education) are clearly positive, more positive than towards mathematics, mother tongue and literature or Swedish as a compulsory language. Jakku-Sihvonen proposes (2011, 9), that this finding should be taken into consideration in attempts to develop Finnish schools by enhancing pupils' experiences of happiness and enjoyment.

In the Finnish National Core Curriculum the arts and skills play an important role in basic education. It is not only the question of cognitive development in other dimensions, or a break from the demands of academic subjects or pure enjoyment, but also, for example, in improving reading and learning, in understanding Finnish traditions and culture and as part of individual and social growth (v. Garber, 2002). If the curriculum is read and analysed as a cultural statement, the arts education curriculum appears to have a strong influence on the whole educational system and thinking in Finland.

Giving all the arts and skills subjects a compulsory status in the curriculum – even if this means small numbers of lessons for some arts subjects – is quite a unique choice in the European context. This situation is mirrored in Europe only in Norway and the Flemish Community of Belgium (ACESE, 2009, 26). This uniqueness could be partly explained from a social perspective: art and culture education in Finland is strongly influenced by individual freedom acts and laws; these freedoms are stated in the Constitution. The most important constitutional rights from the point of view of arts education are freedom of expression (also relating to people's self-

expression) and freedom of the arts. Young people engaged with the arts and the personal experiences and values of art making are more likely to be an integral part of a communicative society and to culturally develop as individuals.

On this basis, the structure of the present Finnish curriculum for basic education gives voice to the diverse nature of arts and skills in a school-learning environment. This richness that every pupil can share in their basic education gives different pupils plenty of opportunities to find their personal strengths as learners. It is a choice for cultural equality, everyone's right to actively share and pass on a multiform cultural heritage, too. However, the total number of lessons devoted to arts education in the Finnish curriculum is only comparable with the average level within the European countries (ACESE, 2009, 29–31).

Arts education in Europe is mostly delivered by class teachers (generalists) at the primary level. In the majority of European countries, class teachers receive training in arts pedagogy as well as specified pedagogy in more than one arts subject. The most selected subjects are visual arts and music, which are compulsory subjects in all European school curricula at the primary level (ACESE, 2009, 16). After grade 7 in Finland, compulsory visual arts, music and crafts education usually become optional courses in grades 8 and 9. Home economics begins in grade 7 as a compulsory subject and continues as an optional subject in grades 8 and 9. The only subject in the 'arts and skills' subject group, which is compulsory throughout the basic education is physical education. Arts in grades 7–9 are usually taught by specialist subject teachers. Subject teachers in arts and skills subjects are educated in separate universities in co-operation with teacher education units (this includes textiles and technical craft teacher education as well as physical teacher education). In the higher educational programme, the compulsory teachers' pedagogical studies are arranged in co-operation with universities that have the statutory right to give degrees in educational science.

In this chapter, we will mainly focus on visual arts education in the Finnish school system. We will also introduce some general principles of music education, which also has the status of a compulsory subject at the primary level in the European context. The primary level is important in our case as well, because most compulsory arts and skills lessons are taught in grades 1–6 by class teachers in Finnish basic education.

AIMS OF VISUAL ARTS AT SCHOOL

In Finland, visual arts have been part of basic education for more than a century. During its long history as a compulsory school subject it has reconstructed its identity in interaction with several paradigm shifts in arts and in learning. The subject called "Drawing" [piirustuksen opetus, also kuvaanto] changed its name in the 1950's to "Visual skills" [kuvaamataito] and from 1999 on to "Visual arts" [kuvataide]. Nowadays, the lively discussion on the identity of this school subject highlights the role of all forms of visual culture, including visualization,

digitalization and technological development (Pohjakallio, 2005; Pohjakallio et al., 2015; Kallio-Tavin & Pullinen 2015). This self-reflective process surrounding the school subject is a natural consequence of the constantly changing and challenging nature of arts and visual culture as phenomena in society. This on-going change in arts and culture also calls for pedagogical sensibility to reconstruct the aims of arts-related learning.

Today, the main task of visual arts instruction in basic education is to guide the pupils to inquire and express multifaceted cultural reality by means of art. The aim is to support the construction of the pupils' identities, cultural knowing and the sense of community by making and interpreting images. Understanding the manifestation of visual culture in society – the art world, the environment and other kinds of phenomena of visual culture – is emphasized. The key objective of teaching is to develop the pupils' personal relationship with art and their critical thinking skills. On this basis, pupils are encouraged to actively influence their everyday living environment and the society. The visual arts have been given an important role in creating a foundation for appreciating and understanding the visual world of cultural heritage. One of the main purposes is to develop abilities in multi-literacy utilising both visual and other forms of representations (Finnish National Board of Education, 2014).

After giving these general aims for visual arts instruction the Finnish National Core Curriculum for Basic Education organises and concretises further the planning of instruction by grouping objectives into four themes: (1) *Visual perception and thinking*, (2) *Visual production*, (3) *Interpretation of the visual culture*, and (4) *Aesthetic, ecological and ethical value judgement* (Finnish National Board of Education, 2014). Accordingly, pedagogically important starting points for artistic learning are the visual world of the everyday environment, sensory observations, mental images, and personal experiences. Often visual arts lessons begin with discussions based on the pupils' own visual sub-cultures, personal experiences or instant observations of the studied phenomenon in the arts or visual culture. Teachers are guided to actively link the current subject areas to experiences that are meaningful to the pupils. This important link is typically strengthened by giving pupils the opportunity to collaborate in the planning phase together and freedom to construct personal solutions in visual production.

Visual exercises, various self made images or other visual products, are at the heart of every learning process, which often starts with planning and sketching. Freedom of expression and learning by doing are valued, since the objectives of visual arts teaching are to develop the imagination and promote the pupil's skills in creative problem solving, critical thinking and investigative learning (Finnish National Board of Education, 2014). As a natural continuation to these values, personal learning experiences are often discussed and documented, for example, in portfolios during the lessons. Pupils learn to appreciate and evaluate both the process and the product of art learning and they learn to use concepts of the visual world. Thus, the identity of visual arts as a school subject throughout the curriculum is not

constructed on the basis of domain specific contents of the subject area alone, rather on its own part in educating creative, investigative learners who will also become responsible citizens.

The main objectives in visual arts are divided into three sections (grades 1–2, grades 3–6, and grades 7–9, Finnish National Core Curriculum for Basic Education, 2014). During the first two years, the pedagogical approach is playful and the main purpose is to construct fundamental skills in visual expression and culture, as well as to become familiar with materials and the characteristics ways of working in art. Later in grades 3–6 and 7–9, the role of visual culture and media technologies increases in the teaching and learning process. The purpose is to deepen pupils' understanding of images as instruments of expression and communication in visual culture and improve their skills for interpreting them. Overall, the pedagogical approach is action oriented in visual arts, meaning that every learning situation must provide opportunities for pupils to interact, to work and experience art together in a way that deepens their personal relationship with art and visual culture.

CONTENTS OF VISUAL ARTS

The Finnish National Core Curriculum for Basic Education introduces the visual arts with the following three core contents, which all serve as starting points for exercises in visual perception, production, interpretation and value judgement. Each of the three core contents is described here briefly in the context of grades 3–6 (Finnish National Board of Education, 2014), which are usually taught by class teachers;

1. *Pupils' own visual sub-cultures*

- exploring pupils' self-made images and visual sub-cultures familiar to them
- reflecting visual culture as a way of participation in a community and in an environment

2. *Environmental visual cultures*

- introducing different kinds of surroundings (natural and built environments), designed objects and products, media cultures and virtual worlds
- investigating the pupils' expanding living environment and media's roles in it

3. *Art worlds*

- introducing visual art from different cultures, environments and ages
- reflecting various conceptions of art, types of art and ways of acting in the art world

Cultural visits are formally included in the school curriculum for visual arts. Usually this means visits to museums, art galleries or other forms of exhibitions. Such visits are systematically integrated into the curriculum whenever the relevant teaching topic arises. According to a recent evaluation, Finland represents the

minority of European countries, in which the link between museums and the education system is rather well developed and formalized (ACESE, 2009, 37). However, recent research (Laitinen, 2011, 151) showed that according to in-service teachers, in 15% of schools, these cultural visits had not yet been realised. According to pupils' opinions, in over 40% of schools these visits had not been arranged. Although the curriculum values this kind of art teaching and learning, not every school or area has equal opportunities to implement it in practice.

Taken together, the present national core curriculum constructs a rich and diverse identity for visual arts as a school subject and links the pupils' visual expression and thinking with all the other core contents. The teachers' pedagogical thinking is relied on in the implementation of this diversity. In addition, various publishers have produced guide-books for teachers and text books for pupils in the visual arts. Many of these books have been made in co-operation with in-service teachers and teacher educators and they are well in line with the general curriculum thinking (for example, Piironen & Forsman, 2006; Suvanto, Töyssy, Vartiainen, & Viitanen, 2004; Heinimaa, Perttilä, Tammioja, & Viitanen, 2007). Student teachers have already become familiar with current learning materials during their teacher training periods in teacher education programmes.

DYNAMICS OF INTERNAL INTEGRATION IN VISUAL ARTS

One of the crucial questions for a high quality of learning and teaching in visual arts is whether teachers are able to integrate the three core contents described above in their practice. According to the Finnish National Core Curriculum for Basic Education (Finnish National Board of Education, 2014), teachers are expected to take into account internal integration in their teaching so that the objectives for expression, skills and knowledge are realized simultaneously in visual exercises. The purpose is to integrate different content areas in various combinations in each exercise and not to leave any of them out or disconnected from the whole. As a result of this internal integration principle, teachers have the possibility of creating larger thematic wholes in knowledge processing, which toughens up the relaxed atmosphere in art learning.

However, media and visual communication still seems to have some challenges in terms of integration in school learning. For example, 54% of ninth grade pupils reported that they had had no opportunities to process digital images during their visual arts lessons at school (Laitinen, 2011, 118). In addition, 62% of the pupils claimed that they had never made video films at schools (Laitinen, 2011, 118). Nonetheless, media and visual communication was the content area in which pupils managed best in tests (Laitinen, 2011, 130), which as a coexistent result might reflect the role of informal learning environments in the pupils' everyday lives. Another aspect worth noticing is that in young pupils' thinking, the teaching of media and visual communication is perhaps concretely linked to use of certain technical equipment or instruments, while in teacher's pedagogical thinking important contents of media

and visual communication can be processed in many other ways as well. Instead of underlining the management of single techniques or instruments, our curriculum emphasizes the development of pupils' visual thinking and expression.

Thus, the principle of internal integration in teachers' pedagogical thinking is much more complicated than confirming whether every content area in the curriculum is implemented in practice. A high quality of internal integration results in meaningful wholes, multifaceted exercises in the direction of several simultaneous objectives. The level of quality is based on teachers' professional understanding of what is relevant for both their pupils and the diverse nature of the subject domain.

This professional understanding of the visual arts subject domain has been developed in Finnish discussion by several researchers. For example, based on Efland's work (1983/1998, 1995), Räsänen (2008) introduces four different models of visual arts teaching, which open new possible levels for integrative pedagogical thinking by a visual arts teacher. Each model is based on a combination of four elements. The varying elements are the conception of art, conception of learning, conception of a child's visual development and conception of interaction in the teaching-learning process. Each model has a different key idea in art teaching, which puts the elements together. Alternative key ideas are labeled "Self-Expression", "Form", "Imitation" and "Visual Culture". For example, in the 'Imitation model', the conception of art is mimetic, which values imitation skills in making and learning art. Teachers might guide a learning process which emphasizes visual perception as a central theme. While in the "Self-Expression model", the idea of art is premised on free and creative expression of thoughts and emotions, not necessarily using any figurative elements in visual communication. The teacher's role and the learner's focus in art learning are completely different in these alternative approaches. Thus, dynamic internal integration means that teachers are capable of varying their background thinking when planning visual exercises over a school year. As a result of eclectically combining different approaches in art teaching pupils get a secure sense and deeper understanding of what art is and visual culture as a learning environment in life.

SECURE SENSE THROUGH SOUND AND MUSIC

Music has a long history in the Finnish school system, although the term music has only been used in this context mainly from the 1960's. Earlier this subject was called "singing" [laulu] which indeed was the primary content of the subject. The transformation from singing to music was driven by a wider shift in society; urbanization, advances in modern technology and sound production, and the proliferation of popular music among other things.

The main aim in school music of the 21st century is to encourage learners to engage in musical activities and challenge them to express themselves by using music and sound. As in visual arts, the key objective of teaching is to develop

learners' deeper understanding and personal relationship with music (as a part of culture, as an art form) and sound (both natural and technological).

Music teaching is highly action oriented in Finnish schools, and the background philosophy lies in the idea of learning-by-doing. This rarely includes individual instrument training but group playing and practising several 'school instruments' (rhythm instruments, recorder, xylophone, keyboard, guitar, bass, drums).[1] The traditional Finnish instrument, the five-string kantele, is also played in many classrooms all over the country.

The main content and learning objectives in music education are divided into three sections (grades 1–2, grades 3–6, and grades 7–9, Finnish National Core Curriculum for Basic Education, 2014).

Each section includes the learner-centred viewpoint for sound and music perception, production and interpretation:

> Grades 1–2: Musical joy and participation, social cohesion, learning basic concepts through action, sound and music production
> Grades 3–6: Various actions with and through music, creative sound production and music composing, developing thinking skills and conceptualisation
> Grades 7–9: Comprehensive learning in music, constructing emotions and experiences, music as communication and affection, critical thinking and technology in music

Musical action in the classroom typically reflects the modern music cultures allowing, from the students' point of view, a very open and updated perspective to music in general. In practice, this means also singing and playing songs and music (and other sound material) children and young people are familiar with. This approach opens the possibilities for learners to realize music's links to different times, cultures and societies. The meaningful experiences gained through making and listening to music constitutes a foundation for understanding and conceptualizing music. Very often this is also the route to learners' own sound experiments and music production. Music making and learning through action also gives many opportunities for developing pupils' various social skills such as co-operation, patience, responsibility, pluralism, and cultural sensitivity.

Although musical action has been captivated in the implementation of music in the classroom and has been emphasized lately in Finnish music education (Juntunen, 2011), listening to music also plays an essential role in music teaching, as Hyvönen (2011, 14) remarks. According to Hyvönen, listening to music as an aural experience constructs the concept of music as a living, dynamic cultural form.

In Finnish schools, music is typically taught by a class teacher in grades 1–6 and a subject teacher in grades 7–9. The music teacher's role in the school community also often involves the planning and implementation of school festivals. During the past decades school shows have been a characteristic component of the Finnish school system, and they are still important parts of the school tradition especially during

Christmas time and in early June (at the end of the school year). Music then has an integral part in celebration as well as cultural knowledge and tradition.
It can be stated that music education in Finnish schools is based on social interaction, musical communication and sound experiments. At its best, music in schools strengthens children's and young people's personal development, active listening skills and competence as musically thinking members of a creative society.

HANDS-ON ART FOR CLASS TEACHER STUDENTS

In this section, we introduce some arts pedagogical ideas realized in class teacher education at the University of Helsinki. We base our two examples of visual arts and music education on current discussion about the nature of the learning process in arts. In recent decades in Finland, the learning process in arts teaching has often been premised on the experiential learning model adapted originally from Kolb (Kolb, 1984; Sava, 1993; Räsänen, 1997, 2000). The learning cycle starts with concrete personal experiences of the phenomenon. The process continues with reflective observations, which make possible the abstract conceptualisation of experiences. The new understanding of the phenomenon creates new perspectives for active experimentation by doing, which again creates new personal experiences of reflective observation. What is crucial for learning about the arts is that the cyclic model combines the learning of skills and knowledge, observation and action, as well as personal and social, rational and emotional, material/concrete and abstract in the construction of knowledge.

In class teacher education, teacher educators face great challenges in trying to master the described diversity of curriculum thinking in the rather short time devoted to studies of didactics in arts and skills subjects. For example, at the University of Helsinki the basic course in didactics of visual arts is 5 study points. At the same time, researchers have stated that there is concern about the rather narrow views of visual arts among students in generalist teacher education (Räsänen, 2005; Collanus, Kairavuori, & Rusanen, 2012). In addition, according to the Finnish National Board's research, the outcomes in visual arts learning at the end of the basic education are, at most, of an average level (Laitinen, 2011, 150). Therefore, it is necessary to strengthen studies in visual arts and its didactics within class teacher education in order to improve the quality of visual arts learning and teaching in schools (Laitinen, 2011, 152). Overall, consideration should be given to providing sufficient resources for visual arts instruction in order to enable implementation of the whole curriculum (Laitinen, 2011, 153).

Thus, educating competent teachers of arts includes vital personal experiences and shared reflective observations in order to conceptualise and understand the core didactics in arts, and its teaching practice. Class teacher students are positioned as active, responsible learners of the artistic processes in order to boost competence, authority and accountability in pupils' art learning at school. For example, to access the dynamics of internal integration in the planning of each visual exercise, students

take part in a process of making a big comic strip album together in the basic course of didactics of visual arts. Students are asked to innovate their own way of recycling some elements from a work of art representing the Finnish Golden Era in art history. Each of them chooses one work of art to study and to use in telling their personal story. Every student learns to apply some fundamentals of comic strips and the technical skills needed in visual expression and communication.

The album process serves as an example of internal integration, creating a larger learning process, which combines objectives for expression, skills and knowledge simultaneously in one visual exercise. Furthermore, the process combines the aims of different curriculum content areas as well. The theme of the album is within the frame of the content area known as 'Art worlds'. The comic strips represent the content area called 'Environmental visual cultures'. By drawing the comics themselves, the students enter the content area termed 'Pupils' own visual sub-cultures'. Other levels of internal integration join in the process, when students learn to integrate different ideas of art; art as mimetic skills (realistic master paintings from the Finnish Golden Era) and art as personal expression and social communication within popular culture (the comics world in contemporary art and in the everyday visual environment). The personal experience of the album process is monitored pedagogically together step by step by studying the phases of the artistic process from planning to products. Experiences of success and problems faced at different phases are analysed and discussed together, which is an on-line-construction of visual arts pedagogy in interaction with personal experience and social knowledge. This process opens the pedagogical discussion on the principles of pupil assessment as well. The process experienced by pupils serves as authentic learning material for discussion of the learner's active role in assessment, which is a supportive and guiding force in art learning.

Respectively in music, shared processes and hands-on learning (as the basis for developing pedagogical thinking and theory construction) for class teacher students could be carried out in the compulsory course (5 cp) on music didactics. For example, the following idea of a 'paper symphony' is based on shared, artistic expression as well as creative and collaborative music making. With modern digital technology, sounds can be easily recorded and edited. In the classroom many different sound experiments can be implemented by using the free digital sound recording and editing program called *Audacity*. One example is the paper symphony.

The paper symphony is based on the students' discovery of sounds made by many different types of paper (e.g. baking paper, tissue, various wrappings, cardboard, packaging material). Students can invent and test how to produce different acoustic sounds by touching and processing materials in several ways. After discovering different sounds, students will be asked to pick one of their favourite sounds produced by their paper techniques. Each student will record his/her own sound with Audacity (short samples) to the same project file. After recording many samples the idea is to 'compose' a symphony together by using this 'raw paper sound material'. This can be done by organising and editing the sound samples. The editing process requires

negotiating and testing the order and quality of the sounds: Which are parallel sounds; which of them will come first; which sounds will follow; and how can the rhythm and dynamics of the symphony be constructed? In addition to arranging sounds, the sounds will be used as effects as well. The basic structure of the paper symphony can follow the classical symphony model consisting of three parts: fast – slow – fast.

Expressivity and communicability can also be seen as part of a shared target – an effort to integrate art subjects within class teacher education. For example, circumstances allowing, the comic strips that students produce can act as a manuscript for a digital story where the paper symphony forms the basis for a soundtrack. Integration between the arts and skills subjects and also with other school subjects seems to be a recommended future trend by the education authorities (Laitinen et al., 2011, 243).

ARTS EDUCATION VISION: WE HEAR THE FUTURE

If the place and the number of arts subjects within national curricula is said to mirror the priority that is given to arts education, another mirror is the content of those subjects. The quality and functionality of the curriculum also needs to be considered as mirroring culture and society. Our cultural futures will certainly have to deal with a more globalized and digitalized situation than ever before. The concept of arts is changing too. The one vital element behind the success story of Finnish schools is the capability and willingness for transformation within each art subject – yet honouring the tradition and heritage. We are not setting frames which are too rigid for reading the world, and in the reading processes we value diverse cultural and creative texts and situations. The teaching substance and pedagogical practices are not set in stone. The transformation within the arts is expressed with comprehension of the needs of cultural change.

Within the progress of digital technologies and especially interactive media, art needs to be seen more as a social skill. Hopefully, the basis of the information and knowledge society will be founded on human, social and creative capital. People engaged with the arts, with the personal experiences and values of art making are most likely to be better prepared and mentally equipped for this challenge. The foundation of basic education needs to forge a broad enough front to ensure that the students will be able to develop cultural, multimodal, creative and artistic thinking, knowledge and expertise, as well as social interaction and communication.

These principles actually follow the Seoul Agenda by UNESCO (2010). The Seoul Agenda is a guide for the member states to implement the action items in a concerted effort to realize the full potential of high quality arts education. According to the agenda, states could renew educational systems through art education, achieve crucial social and cultural objectives, and ultimately benefit children, youth and life-long learners of all ages. The Seoul Agenda includes three goals for the development of arts education in general. It seems that the Finnish arts education has followed

these principles throughout the last few decades, and systematically developed the curriculum and its implementation from these perspectives:

> Goal 1: Ensure that arts education is accessible as a fundamental and sustainable component of a high quality renewal of education.
> Goal 2: Ensure that arts education activities and programmes are of a high quality in conception and delivery.
> Goal 3: Apply arts education principles and practices to contribute to resolving the social and cultural challenges facing today's world (UNESCO, 2010).

We strongly believe in arts education. The matter of cultural creation is no longer solely in the hands of experts or authorities. Arts education can be understood as one of the core elements in a shared process of culture renewal; Arts education could be considered as a basis for the whole cultural and social orientation of empowered future educators and learners. From this point of view, opportunities to develop arts education in general schooling has become one of the priorities for future educators and education policy makers. This vision implies a different kind of attitude, thinking, and integration, including viewpoints that many people in education are not accustomed to. In the background of miracles are often good, forward-looking choices.

NOTE

[1] Besides compulsory music education, Finland has established a national network of publicly supported music schools offering voluntary music learning (especially instruments) for children and adolescents. This network is one explanation behind the global respect and admiration of Finnish (classical) music artists (see Heimonen, 2004). The same kind of publicly supported school network also exists in visual arts education.

REFERENCES

ACESE. (2009). *Arts and cultural education at school in Europe* 2009. Brussels: European Commission. Education, Audiovisual & Culture Executive Agency (EACEA P9 Eurydice). Retrieved from http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/113EN.pdf

Collanus, M., Kairavuori, S., & Rusanen, S. (2012). The identities of an arts educator: Comparing discourses in three teacher education programmes in Finland. *International Journal of Education Through Art, 8*(1), 7–21.

Efland, A. (1983/1998). *Taidekasvatuksen Opetussuunnitelmia Tutkimassa* (V. Wuori & M. Räsänen, Trans.) [Curriculum Inquiry in Art Education: A Models Approach]. Helsinki: Taideteollinen korkeakoulu, Taidekasvatuksen osaston opintomoniste.

Efland, A. (1995). Change in the conceptions of art teaching. In R. Neperud (Ed.), *Context, content, and community in art education: Beyond postmodernism* (pp. 25–40). New York, NY: Teachers College Press.

Eisner, E. W. (2002). *The arts and the creation of mind*. New Haven, CT & London: Yale University Press.

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014* [National Core Curriculum of Basic Education 2014]. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Garber, E. (2002). Craft education in Finland. Definition, rationales and the future. *International Journal of Art and Design Education*, *21*(2), 132–145.

Heimonen, M. (2004). The development of Finnish music schools: A legal perspective. *Nordisk Musikpedagogisk Forskning Årbok*, *7*, 117–131.

Heinimaa, E., Perttilä, H., Tammioja, S., & Viitanen, P. (2007). *Kirja Kuvista 1–2* [A Book of Images 1–2]. Helsinki: WSOY.

Hyvönen, L. (2011). Minkälaista osaamista musiikin kuuntelutehtävät paljastavat? [What is learnt in music listening tests?] In S. Laitinen & A. Hilmola (Eds.), *Taito- ja Taideaineiden Oppimistulokset – Asiantuntijoiden Arviointia* [Learning Outcomes of Arts and Skills Subject Group – Experts' Evaluation] (pp. 13–25). Opetushallituksen raportit ja selvitykset 2011:11. Tampere: Juvenes Print – Tampereen Yliopistopaino Oy.

Jakku-Sihvonen, R. (2011). Oppimistuloksia arvioidaan koulutuksen kehittämisen perustaksi [Assessing learning outcomes to develop educational system]. In S. Laitinen & A. Hilmola (Eds.), *Taito- ja Taideaineiden Oppimistulokset - Asiantuntijoiden Arviointia* [Learning Outcomes of Arts and Skills Subject Group – Experts' Evaluation] (pp. 6–12). Opetushallituksen raportit ja selvitykset 2011:11. Tampere: Juvenes Print – Tampereen Yliopistopaino Oy.

Juntunen, M.-L. (2011). Musiikki [Music education]. In S. Laitinen, A. Hilmola, & M.-L. Juntunen (Eds.), *Perusopetuksen Musiikin, Kuvataiteen ja Käsityön Oppimistulosten Arviointi 9. Vuosiluokalla* [Assesment of Learning Outcomes of Music, Visual Arts and Crafts in Grade 9] (pp. 36–95). Helsinki: Finnish National Board of Education.

Kairavuori, S., Rusanen, S., & Collanus, M. (2008, September 5–8). Positioning teacher identities in arts and crafts education in Finland. Paper on CD-Rom: Congress Paper. In *Proceedings of Presentations. 32nd InSEA World Congress Osaka*. Osaka: InSEA.

Kallio-Tavin, M., & Pullinen, J. (2015). (Eds.). *Conversations on Finnish art education.* Helsinki: Aalto ARTS Books.

Kolb, D. (1984). *Experiential learning*. *Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.

Laitinen, S. (2011). Kuvataide [Visual arts]. In S. Laitinen, A. Hilmola, & M.-L. Juntunen (Eds.), *Perusopetuksen Musiikin, Kuvataiteen ja Käsityön Oppimistulosten Arviointi 9. Vuosiluokalla* [Assesment of Learning Outcomes of Music, Visual Arts and Crafts in Grade 9] (pp. 96–157). Helsinki: Finnish National Board of Education.

Laitinen, S., Hilmola, A., & Juntunen, M.-L. (2011). *Perusopetuksen Musiikin, Kuvataiteen ja Käsityön Oppimistulosten Arviointi 9. Vuosiluokalla* [Assesment of Learning Outcomes of Music, Visual Arts and Crafts in Grade 9]. Helsinki: Finnish National Board of Education.

Piironen, L., & Forsman, A. (2006). *Kuvien Kirja. Kuvataideopetuksen Käsikirja Perusopetukseen* [A Book of Images. A Handbook for Visual Arts for Basic Education]. Helsinki: Tammi.

Pohjakallio, P. (2005). *Miksi Kuvista? Koulun Kuvataideopetuksen Muuttuvat Perustelut* [Why Visual Arts? Changing Grounds for Visual Arts at School]. Publications of the University of Art and Design, Helsinki, A 60. Jyväskylä: Gummerus.

Pohjakallio, P., Kallio-Tavin, M., Laukka, M., Lundgren, T., Valkeapää, L., Vira, R., Vuorisalo, M., & Tyyri-Pohjonen, S. (Eds.). (2015). *Kuvis sata. Kuvataideopettajien koulutus 1915–2015* [Visual Arts One Hundred Years. Educating Visual Art Teachers 1915–2015]. Helsinki: Aalto ARTS Books.

Räsänen, M. (1997). *Building bridges*. *Experiential art understanding: A work of art as a means of understanding and constructing self*. Helsinki: Publication series of the University of Art and Design, A 18.

Räsänen, M. (2000). *Sillanrakentajat [Bridgebuilders]*. Helsinki: Publications of the University of Art and Design, A 28.

Räsänen, M. (2005). Multi-roled and skilled teachers of art. *International Journal of Education Through Art*, *1*(1), 53–63.

Räsänen, M. (2008). *Kuvakulttuurit ja Integroiva Taideopetus [Visual cultures and integrative art teaching]*. Publications of the University of Art and Design, Helsinki, B 90. Jyväskylä: Gummerus.

Sava, I. (1993). Taiteellinen oppimisprosessi [Artistic learning process]. In I. Porna & P. Väyrynen (Eds.), *Taiteen Perusopetuksen Käsikirja* [Handbook of Basic Arts Education]. Suomen Kuntaliitto: Opetushallitus.

Suvanto, T., Töyssy, S., Vartiainen, L., & Viitanen, P. (2004). *Kuvan Tekijä. Taide ja Visuaalinen Maailma.* [The Art Maker. Art and Visual World]. Porvoo: WSOY.

United Nations Educational, Scientific and Cultural Organisation (UNESCO). (1999). *Appeal by the director-general for the promotion of arts education and creativity at school as part of the construction of the culture of peace*. Retrieved from http://portal.unesco.org/culture/en/ev.php-URL_ID=9747&URL_DO=DO_TOPIC&URL_SECTION=201.html

United Nations Educational, Scientific and Cultural Organisation (UNESCO). (2006, March 6–9). *Road map for arts education*. The World Conference on Arts Education: Building Creative Capacities for the 21st Century, Lisbon. Retrieved from http://portal.unesco.org/culture/en/ev.php-URL_ID=30335&URL_DO=DO_TOPIC&URL_SECTION=201.html

United Nations Educational, Scientific and Cultural Organisation (UNESCO). (2010, May). *The Seoul agenda. Goals for the development of arts education*. Second World Conference on Arts Education, Seoul. Retrieved from http://portal.unesco.org/culture/en/ev.php-URL_ID=2916&URL_DO=DO_TOPIC&URL_SECTION=201.html

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PART IV

REFLECTIONS: FUTURE SCENARIONS AND INVESTMENTS FOR PATHWAYS OF SUCCESS

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15. DRAMA EDUCATION IN THE FINNISH SCHOOL SYSTEM – PAST, PRESENT AND FUTURE

ABSTRACT

Theatre is an example of an art form, which has always been part of the Finnish school system, although it has not had an official position in the National Curriculum. Nowadays we have many PhD theses that confirm that the use of drama in educational processes aids personal and social development, as well as the development of self-concept, self-discrepancy and a role-taking ability. Pupils who take drama classes enjoy school activities more, are much more willing to participate in them, are better at problem solving and better at coping with stress. They have significantly more tolerance towards other people. At the same time the potential complexity and diversity of creative processes in drama education is a challenge for teachers and teacher education. The use of drama education can be seen as an alternative to scripted schooling and also an answer to the main challenges of the postmodern knowledge culture, which aims for deeper conceptual understanding by preparing students to create new knowledge.

Keywords: drama, drama education, class teacher education, creative teaching

PAST: THEATRE AND DRAMA TRADITIONS IN THE FINNISH SCHOOL SYSTEM

The Finnish school system has a strong tradition of school theatre that still persists. The school theatre roots in Finland extend as far back as 1550 to the first monastery schools in Turku (Tiusasen, 1969, 31–32). Theatre has always been a part of the Finnish school system, although it has not had an official position as a subject in the National Core Curricula. From the 60s to 90s, there was a tradition of "Funny hours" in primary schools where pupils were able to present their own performances once a week. Also, a total of 81 school theatre play books that included almost 1400 school theatre plays were published between 1910–1979, which tells us something about the importance of school theatre activities (Tiusanen, 1969; Majapuro-Joutsamo, 1980; Toivanen, 2002).

The idea of drama in education spread to Finland from Great Britain and Scandinavia in the early 70s. The Creative Activity in Schools Association was founded on February 17, 1972. The association organized drama training for teachers and translated drama literature into Finnish (Karppinen, 1993, 82–85). Its purpose

H. Niemi et al. (Eds.), Miracle of Education, 229–240.

was to support and develop creative drama as part of Finnish school education. Drama practice was influenced by liberal personal development doctrines. The development of personality and free self-expression was taken as a priority in education (e.g. Slade, 1969; Courtney, 1974; Way, 1967; Bolton, 1979). Drama activities were focused on developing teaching methods for creative expression and group dynamics instead of performing school theatre plays.

Drama teaching in teacher education began at the Universities of Jyväskylä and Helsinki at the end of the 1980s. The drama-educator training programme for class and subject teachers started at the University of Jyväskylä and the Finnish Theatre Academy´s Continuing Education Institute in the 1990s, and led to the first drama and theatre pedagogy PhDs graduating in the early 2000s. Drama education has become an academic discipline in Finland. Didactics as the applied educational methodology of a subject area, and accompanying theoretical reflection about it, are at the centre of teacher training today. The concepts and forms of drama education have been structured to use *drama* and *drama education* as the basic terms in academic discipline, in teacher education and comprehensive school. Drama education is the main term and includes all forms of theatre in school education. Drama (classroom drama) is pupil-active, experiential and the socio-constructive way of aesthetic teaching and learning that takes place in actual school work (Laakso, 2004; Heikkinen, 2002, 2005; Toivanen, 2012, 2015). An exception is "Basic Education in the Arts" that differs from compulsory education in schools. Basic education in the arts system includes the following nine different art forms: music, literary arts, dance, performing arts (circus and theatre) and visual arts (architecture, audio-visual art, visual arts, and craft) and it has its own national Core Curriculum also devised by the Finnish National Board of Education. Education of theatre arts is goal-oriented, progressing from one level to the next (Curricula for Basic Education in the Arts, 2005) and in education of theatre arts the term *theatre education* is used instead of the terms "drama" or "drama education".

PRESENT: DRAMA EDUCATION IN FINNISH SCHOOLS IN THE 2020S

Systematic drama education is still not implemented in every school in Finland, even though drama education methods, forms of activity and concepts have been progressively developed and structured, especially since the beginning of the twenty-first century by many drama and theatre pedagogy PhDs (e.g. Sinivuori, 2002; Toivanen, 2002; Rusanen, 2002; Heikkinen, 2002; Laakso, 2004). Toivanen (2012, 2015) and Heikkinen (2005, 14–25) define drama education in the school system to mean all forms of theatre; performing theatre, participatory theatre and applied theatre put into practice in the learning environment. The division into different theatre genres is based on the definition of the roles of the participants and the viewers that arise from the origin or the presentation process. Performing theatre (e.g. school theatre) has traditionally been split between performers and audience. The viewers are the recipients of the actions. In applied theatre (e.g. forum theatre)

the artists involve the audience, whereas in participatory theatre (e.g. classroom drama, process drama) the border between the performers and the audience is partly or completely obliterated. The active involvement of the participants in the drama process is essential in participatory and applied drama. All forms of theatre in the field of education are called genres or, in other words, forms of activities.

The triangle model of drama in education (classroom drama) is based on combining the learning power of fictional situations and stories (what if) that enable students as participants to take on characters (presentation) in situations and stories "as if" they were real. Using drama techniques and roles turn the fictional "what if" situations and stories into a living "as if" experience for the pupils. At the centre of drama is the use of our natural capacity to imagine ourselves differently. This imagining begins from "what if": imagining ourselves in different times, places and roles. Real-life situations and stories give us the "what if" needed for imaginative drama work to begin. They provide us with a context and with characters and problems that need to be resolved or understood. Presentation with drama techniques moves us quickly to "as if" behaviour, as if we were in a different time, place and role (Bolton, 1998, 262–265; 277; Cooper, 2010, 17–18). Being in roles enables pupils to safely try out and experience what it might feel like to speak and act as someone else. The power of drama comes from the aesthetic doubling, i.e., the possibility to pretend to be someone else. Drama offers an active dimension for learning about "as if" real-life situations in education. By taking the roles of characters in situations and stories, students are able to behave as if they were inside the situation, facing the same experiences and problems as the characters. Because there is no external audience, drama lets pupils safely play and share issues and past or future experiences that are

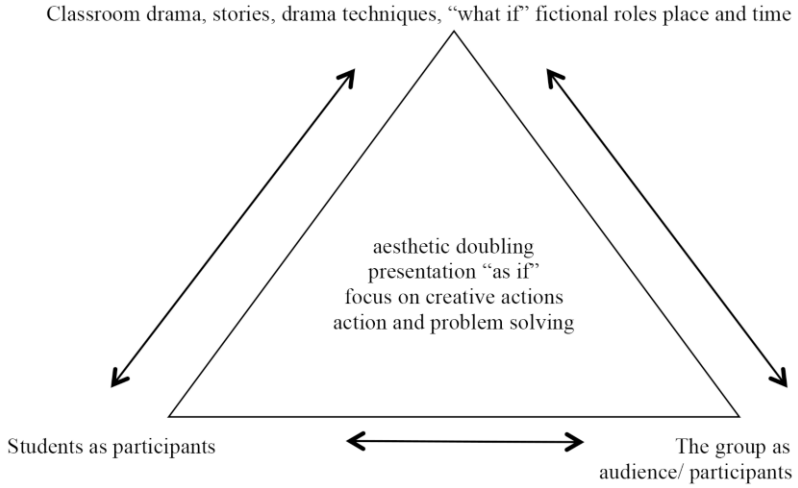

Figure 1. The triangle model of drama in education (Toivanen, 2012; Toivanen, 2015)

disturbing or exciting to them in real life, rehearsing and resolving them with the group (participants).

Drama represents the concepts of experiential and socio-constructive learning. The purpose of drama in education is to create an interactive and positive learning environment in which the participants' construction of knowledge and learning takes place through functional and interactive social relationships. This is important because although Finland has been placed at the top of the PISA rankings, Finnish results from measures concerned with thriving in school have been at the low end of the scale (Konu, Lintonen, & Rimpelä, 2002; Konu & Lintonen, 2005). By alternately acting in a role and as themselves, the learners acquire operating experiences and create new knowledge of the phenomena that are being reviewed (Kolb, 1984). The idea of socio-constructive learning is that learners are self-guided in fictitious symbolic interactions that reflect on the phenomena internally and externally (Kauppila, 2007; Rasmussen, 2010). The learner perceives the phenomena first-hand but strengthens what is being learned through social interaction. In social interaction the learners can outsource their own thinking and reflect on it with the other group members. The concept of socio-constructive learning stresses the development of identity and the perception of the values of the goals. A long-term goal in drama education is to help learners understand themselves, others and the world in which they live. Regardless of the approach, artistic learning in drama education should be emphasized because it offers opportunities for learners to create their own drama representations. This implies that the different forms, methods and conventions of drama should be taught widely and in various ways to enable learners to interpret the reality of meanings (Bowell & Heap, 2001; Heikkinen, 2002, 2005; Joronen, Konu, Rankin, & Åstedt-Kurki, 2011; Joronen et al., 2008; Laakso, 2004).

PRESENT: DRAMA EDUCATION IN TEACHER EDUCATION

Drama education is already part of class teacher education in Finland. The extent of drama studies varies in different universities from basic studies (1–5 credit points) to minor subject studies, which are worth 25 credit points. The goal of the drama educational process in teacher education is mainly to develop skills in drama methods, but also includes the ideas of developing teacher-pupil interaction skills, the ability to be present in the dialogue, and the ability to listen to the group (see Kara & Cam, 2007; Dickinson & Neelands, 2008; Toivanen, Komulainen, & Ruismäki, 2011; Toivanen & Kaasinen, 2013). Drama skills cover a wide range of drama techniques incorporating physical movement, vocal action, and mental concentration. The goals of drama as teaching methods in teacher education can be seen as (Toivanen, Komulainen, & Ruismäki, 2011):

To increase awareness of the teacher student's self (mind, body and voice) and others (collaboration and empathy);

To increase the interaction skills of teacher students; to improve clarity and creativity in the communication of verbal and nonverbal ideas;

To increase the understanding of human behaviour, motivation and diversity in educational situations.

The purpose of drama in class teacher education is to develop the skills needed to teach drama as part of the mother tongue subject and as a teaching method in other subjects in order to improve the quality of learning. Drama is also used to extend the worldview of the student teachers and deal with difficult educational situations in a safe environment while analysing them together (see Bowell & Heap, 2010; Dickinson & Neelands, 2006; Colantonio, Kontos, Gilbert, Rossiter, Gray, & Keightley, 2008). Student teachers gain experience in various roles (teachers, parents, pupils etc.) that explore human tensions and conflicts using drama conventions and techniques. Drama has both an emotional and intellectual impact on the participants. It holds up a mirror for us to examine ourselves and deepens our understanding of human motivation and behaviour. It broadens our perspective through stories that portray life from different points of view (Laakso, 2004; Howard-Jones, Winfield, & Crimmins, 2008, 187–200). By training creative teaching skills with drama in teacher education, student teachers get new experiences and through them they can reshape their mental pictures and representations of teaching reality. In their study, Howard-Jones et al. (2008, 199–200) highlighted that even a short drama intervention helps trainee teachers show progression in their attention to and understanding of creative cognition in the classroom.

The research project "Challenge of the empty space" at Helsinki University's Teacher Education Department, has established that the potential complexity and diversity of creative processes in drama is a challenge for teachers and as well for teacher education (Toivanen, Rantala, & Ruismäki, 2009; Toivanen, Antikainen, & Ruismäki, 2012; Toivanen, Mikkola, & Ruismäki, 2012). The aim of the research project was to develop a theoretical background for drama teaching didactics and to create a teacher education programme for drama teachers' holistic interaction skills. In most other school subjects, pupils' working, movements and interactions in classrooms are controlled. The teacher controls the pupils' behaviour by the layout of desks, teaching materials and scripted teaching methods (Sawyer, 2004). Movement around the classroom is restricted by the teacher's instructions. In contrast, classroom drama teaching usually starts with moving the desks aside. Working in drama takes place in open spaces. In the open space, fiction, drama techniques, pupils' and the teacher's actions are the basic materials for the drama lesson. A teacher using drama needs to be able to manage time, space and bodies and to do so in both the social dimension of the classroom (pedagogic) and the aesthetic (subject knowledge, didactic) dimension of the drama art form (Wales, 2009; Dickinson & Neelands, 2006, 35–41; Stinson, 2009). As Kansanen and Meri (1999, 107–116) have claimed, a skillful teacher operates on two levels, the didactic and the pedagogic. The didactic level is the teacher's relationship with the subject, and the pedagogical level is the teacher's relationship with the pupils. The meaningfulness of education and work enjoyment is based on the mastery of both levels of education.

The triangle model, which describes drama teaching (Figure 2), is based on Kansanen´s triangle model of education in such a way that it takes into account the specific nature of drama education and its working in two realities. Drama teaching (Figure 2) includes both the didactical and pedagogical levels of education. The didactic level (1) includes pre-interaction (planning learning objectives, selecting teaching content and methods). The didactic level (2) of education is connected to teachers' decision making in the teaching-studying-learning process interaction (making pedagogical decisions in action, managing fictional time, space, aids etc.) and post-interaction (reflection). At the pedagogical level, teachers need to be able to manage individual pupils and groups of students in the social dimension of education.

Toivanen, Antikainen and Ruismäki (2012) identified and explained some teaching factors that determine the success or failure of drama lessons. The main reasons teachers named for the failure of drama lessons were due the teachers' actions, e.g., being too strict in following a prior lesson plan, a lack of pedagogical courage to improvise, failure in classroom management, or a lack of presence in educational situations. The other reasons for failure were group structural factors (the engagement of the pupils, the atmosphere, norms and group size) and external factors such as a small classroom space or a lack of time. The most important variables involved the teachers' actions. The results indicate that teachers should acquire the capacity to understand the creative nature of drama teaching in order to use drama more effectively. An ability to react to educational situations only gradually develops into a quick intuitive operation (Gladwell, 2006, 133–135). Intuitiveness is one aspect of creative teaching. A beginning teacher needs routines, but he or

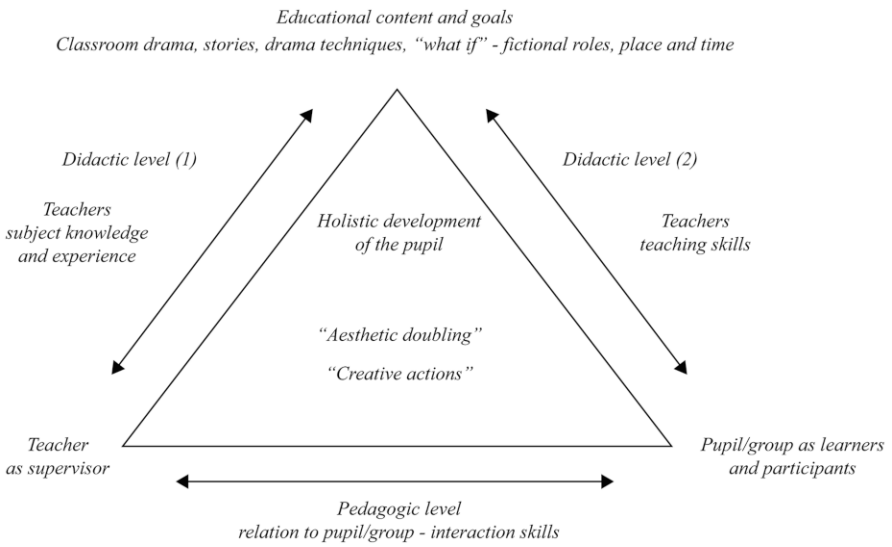

Figure 2. The triangle model of drama teaching

she also needs the ability to flexibly apply them (Sawyer, 2004, 18). Teachers using drama in education especially need the ability to move away from structured routines and lead disciplined improvisation sessions in educational situations. "Disciplined" refers to the aspects of the teaching and learning activity that are more or less fixed, and "improvisation" refers to identifying what aspects can be more or less fluid (Beghetto & Kaufman, 2011, 96). The disciplined parts of teachers' work happen mainly in pre-pedagogical interactions (planning goals, selecting lesson structures and teaching methods, materials and activities) and improvisation is part of pedagogical interaction (the ability to be flexible with instructions, directions, lesson structure and teaching methods in a teaching situation and supporting pupils' ownership in learning). Becoming a teacher who can use drama in education requires skills and subject knowledge of drama and group dynamics and the ability to deal with disciplined improvisation in the teaching-studying-learning process. This means the ability to make pedagogical decisions for action concerned with managing fictional time, space, aids etc. Teachers who use drama also need to be able to manage time, space and bodies in an open room and to do so both in the social dimension of the classroom and in the aesthetic dimension of the art form (Neelands, 2009, 41–42). They have to deal with recognition and facilitation at the same time.

FUTURE: CHALLENGES OF FINNISH SCHOOL SYSTEM AND DRAMA EDUCATION

The new Finnish national curriculum that will be introduced in August 2016 underlines interaction, collaboration and students' active role in learning (The Finnish National Board of Education, 2014). Drama in the new National Core curriculum for Basic Education (2014) is placed within the subject "mother-tongue and literature", but has also been named as a teaching method in many other subjects (e.g. history, natural sciences, handicraft and religion). Mother tongue is defined as a multidisciplinary skills, knowledge and cultural subject, which is divided into sub-areas; the ability to work in interactional situations, the ability to construct and create multimodal texts and the ability to understand language, literature and culture. The task of drama in the mother tongue subject is to confirm the subject's functional, experiential and aesthetic character. Drama objectives and core contents are included in the sub-area of the ability to work in interactional situations. The interaction section involves the teaching of linguistic and physical expression skills with the help of discussion, narration, play, drama, improvisation and theatre. Although the objectives are still mainly focused on interaction skills, for the first time the description and objectives of the core contents of drama education in the curriculum have been formulated more precisely. So in the future every pupil in a Finnish comprehensive school should be able to work with games, drama strategies (freeze-frames, teacher in role etc.) and theatre based rehearsals to devise short pieces of fictional situations with fictional roles, times and spaces during their schooling. Drama should help pupils to express themselves and communicate their

understanding in more aesthetic and creative ways to themselves and their fellow participants (Rasmussen, 2010; Neelands & Goode, 2000; Neelands, 2009).

Comprehensive school is the place where pupils in all social classes and cultural backgrounds meet and work together. Increasing multiculturalism, digitalisation and socioeconomic differences produce segregation in societies. This is also reflected in schools and will pose challenges for the Finnish school system in the future. Teachers must be aware of the fact that their pupils may be at very different phases of their learning processes. This may also affect children and young people's well-being in schools. Schooling which is too goal oriented can lead to exhaustion in schools, cynicism toward the meaning of school and produce a sense of inadequacy in the pupils (Rimpelä, Fröjd, & Peltonen, 2010; Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009). Drama as an art subject and teaching method is one answer to the challenges of the postmodern school. Using drama can create a positive climate that can be used to shape groups in school classes' emerging structural factors as well as the social competence and social wellbeing of the group members (see Junttila, 2010; Toivanen & Pyykkö, 2012), thereby helping group members to feel secure and enable school classes to perform their basic tasks better. The structural factors of a group, i.e., its norms, roles, statuses, communication in the group and group cohesion, are phenomena that occur in the interactions between the group members and affect those interactions (Pennington, Gillen, & Hill, 1999, 358; Toivanen & Pyykkö, 2012). The structural factors are closely related to the components of social relationships and self-fulfilment, the learning environment, leadership, student-teacher relationships, group action, the opportunity to develop self-esteem and the chance to make a difference, which were defined in a school well-being study by Konu (2010, 15–18).

Several studies (e.g. Cooper, 2010, Catterall, 2009; Wright, 2006; Laakso, 2004; Toivanen, 2002; Rusanen, 2002; Gallaher, 2001) have indicated that using different forms of drama education can affect the development of an individual´s social competence and also the development of groups. These researches confirm that the use of drama as an art subject and educational method in educational processes develops personal and social skills, as well as self-concept, self-discrepancy and role-taking ability. Pupils who had participated in drama education have been found to feel more confident about their communication skills and are more likely to feel that they are creative. These pupils enjoy school activities more and are much more willing to participate in them, and are better at problem solving and coping with stress. They are also significantly more tolerant towards other people. They are more empathic; more concerned about others and are more able to change their perspective. In drama sessions, the group and teacher collaborate together to determine whether to accept a proposal, how to weave that proposal into the drama process that has already been established, and then how to further elaborate on it. Drama education is based on negotiation and dialogue with a class, which can stimulate creativity and enjoyment in educational processes for both teachers

and students (see Dickinson & Neelands, 2006, 1–2; Howard-Jones, Winfield, & Crimmins, 2008). The main objectives for drama as a part of the Finnish school system is to develop social welfare, encourage, promote and develop student creativity skills so that they can express themselves and their thoughts through drama and theatre and to be able to interact constructively with different people and groups. Drama can in many ways help tackle the future educational challenges that Finnish teacher education and its school system will face. When the next generations of teachers develop the capacity to teach and understand drama in teacher education, it could also be used most effectively as a methodology for the exploration of issues and the teaching of all subjects and cross-curriculum themes, which can be used to develop pupils holistically. Drama deserves its place in the new Finnish National Core Curriculum.

REFERENCES

ACESE. (2009). *Arts and Cultural Education at School in Europe* 2009. European Commission. Education, Audiovisual & Culture Executive Agency (EACEA P9 Eurydice), Brussels. Retrieved from http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/113EN.pdf

Beghetto, R. A., & Kaufman J. C. (2011). Taking advance of structure with improvise in instruction: Examples from elementary school classroom. In K. R. Sawyer (Ed.), *Structure and improvisation in creative teaching* (pp. 94–112). Cambridge: Cambridge University Press.

Bolton, G. (1979). *Towards a theory on drama in education.* London: Essex.

Bolton, G. (1998). *Acting in classroom drama: A critical analysis.* London: Trentham Books.

Bowell, P., & Heap, B. S. (2001). *Planning process drama.* London: David Fulton Publishers.

Catterall, J. S. (2009). *Doing well and doing good by doing art: The effects of education in the visual and performing arts on the achievements and values of young adults.* Los Angeles, CA/London: Imagination Group/I-Group Books.

Colantonio, A., Kontos, P., Gilbert, J., Rossiter, K., Gray, J., & Keightley, M. (2008). After the crash: Research-based theatre for knowledge transfer. *Journal of Continuing Education in the Health Professions*, *28*(3), 180–185.

Collanus, M., Kairavuori, S., & Rusanen, S. (2012). The identities of an arts educator: Comparing discourses in three teacher education programmes in Finland. *International Journal of Education Through Art, 8*(1), 7–21.

Cooper, C. (Ed.). (2010). *Making a world of difference, A DICE resource for practitioners on educational theatre and drama.* Retrieved May 5, 2011, from http://www.dramanetwork.eu/file/Education%20Resource%20long.pdf

Courtney, R. (1974). *Play, drama & thought. The intellectual background to drama in education.* London: Cassell & Collier.

Dickinson, R., Neelands J., & Shelton primary school. (2006). *Improve your primary school through drama.* London: David Fulton.

Efland, A. (1983/1998). *Taidekasvatuksen Opetussuunnitelmia Tutkimassa* (V. Wuori & M. Räsänen, Trans.). [Curriculum Inquiry in Art Education: A Models Approach]. Helsinki: Taideteollinen korkeakoulu, Taidekasvatuksen osaston opintomoniste.

Finnish National Board of Education. (2003). *National core curriculum for upper secondary schools: National core curriculum for general upper secondary education intended for young people.* Helsinki: Finnish National Board of Education.

Finnish National Board of Education. (2005). *Curricula for basic education in the arts.* Helsinki: Finnish National Board of Education. Retrieved May 5, 2011, from http://www.oph.fi/english/education/basic_education_in_the_arts

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014 [National Core Curriculum of Basic Education 2014].* Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Gallagher, K. (2001). *Drama education in the lives of girls: Imagining possibilities.* Toronto: University of Toronto Press.

Gladwell, M. (2005). *Blink: The power of thinking without thinking.* New York, NY: Little, Brown and Company.

Heikkinen, H. (2002). *Draaman maailmat oppimisalueina. Draamakasvatuksen vakava leikillisyys* [Drama Worlds as Learning Areas – the Serious Playfulness of Drama Education]. Jyväskylä: Jyväskylä studies in Education, Psychology and Social Research 201.

Heikkinen, H. (2005). *Draamakasvatus – opetusta, taidetta ja tutkimista* [Drama education – teaching, art and research]. Jyväskylä: Gummerus Kirjapaino Oy.

Howard-Jones, A., Winfield M., & Crimmins, G. (2008). Co-constructing an understanding of creativity in drama education that draws on neuropsychological concepts. *Educational Research*, *50*(2), 187–201.

Joronen, K., Rankin, H. S., & Åstedt-Kurki, P. (2008). School-based drama interventions in health promotion for children and adolescents: Systematic review. *Journal of Advanced Nursing*, *63*(2), 116–131.

Joronen, K., Konu, A., Rankin H. S., & Åstedt-Kurki, P. (2011). An evaluation of a drama program to enhance social relationships and anti-bullying at elementary school: A controlled study. *Health Promotion International*, *26*(1).

Junttila, N. (2010). *Social competence and loneliness during the school years – Issues in assessment, interrelations and intergenerational transmissions.* Annales Universitatis Turkuensis, Serial B, part 325. University of Turku.

Kara, Y., & Cam, F. (2007). Effect of creative drama method on the reception of some social skills. *University Journal of Education*, *32*, 145–155.

Kansanen, P., & Meri, M. (1999). The didactic relation in the teaching-studying-learning process. *TNEE Publication*, *2*(1), 107–116.

Karppinen, T. (1993). Ilmaisukasvatus – draamapedagogik ry [Expressional education – drama pedagogy]. In A.-M. Nurmi (Ed.), *Tie teatteri-ilmaisuun* [Ways to theatre education] publications of Theatre Academy of Finland 21 (pp. 82–89). Helsinki: Yliopistopaino.

Kauppila, R. A. (2007). *Ihmisen tapa oppia. Johdatus sosiokonstruktivistiseen oppimiskäsitykseen* [Human way of learning – Introduction to social constructive learning] Opetus 2000. Juva: PS-kustannus.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice-Hall.

Konu, A. (2010). Koululaisten hyvinvoinnin arviointi ja alakoulujen hyvinvointi 2000 -luvulla [Evaluation of schoolchildren prosperity and well-being of primary schools in the 2000s]. In K. Joronen & A. ja Koski (Eds.), *Tunne- ja sosiaalisten taitojen vahvistaminen kouluyhteisössä [Strengthen emotional and social skills in the school].* Tampere: Tampere University Press.

Konu, A., & Lintonen, T. (2005). Theory-based survey analysis of well-being in secondary schools in Finland. *Health Promotion International*, *21*(1), 27–36.

Konu, A., Lintonen, T., & Rimpelä M. (2002). Factors associated with school children's general subjective well-being. *Health Education Research*, *17*, 155–165.

Laakso, E. (2004). *Draamakokemusten äärellä. Prosessidraaman oppimispotentiaali opettajaksi opiskelevien kokemusten valossa* [Edge of the Drama experience. The process drama as a learning potential of teacher students in the light of experience]. Jyväskylä: Jyväskylä University Printing House.

Majapuro-Joutsamo, M. (1980). *Suomalainen koululaisnäytelmäaiheinen kirjallisuus* [Finnish school play themed literature] (Master's thesis). University of Helsinki, Institute for Art Research, Helsinki.

Neelands, J. (2009). *Beginning drama 11–14* (2nd ed.). London: David Fulton Publishers.

Neelands, J., & Goode, T. (2000). *Structuring drama work. A handbook of available forms in theatre and drama* (2nd ed.). Cambridge: Cambridge University Press.

Pennington, D. C., Gilen, K. G., & Hill, P. (1999). *Social psychology.* Lontoo: Arnold.

Rasmussen, B. (2010). The 'good enough' drama: Reinterpreting constructivist aesthetics and epistemology in drama education. *Research in Drama Education: The Journal of Applied Theatre and Performance*, *15*(4), 529–546.

Salmela-Aro, K., Kiuru, N., Leskinen, E., & Nurmi, J.-E. (2010). School-Burnout Inventory (SBI) reliability and validity. *European Journal of Psychological Assessment, 25*(1), 48–57.

Sawyer, K. (2004). Creative teaching: Collaborative discussion as disciplined improvisation. *Educational Researcher*, *33*(2), 12–20.

Sawyer, K. (2006). Educating for innovation. *Thinking Skills and Creativity*, *1*, 41–48.

Sinivuori, T. (2002). *Teatteriharrastuksen merkitys: teatteriharrastusmotiivit ja taiteellinen oppiminen teatteriesityksen valmistusprosessissa* [The meaning of the theater hobby: Theater hobby motives and artistic learning the production process a theater performance]. Tampere: Tampere University Press.

Slade, P. (1969). *Child drama.* London: University of London Press.

Stinson, M. (2009). "Drama is like reversing everything": Intervention research as teacher professional development. *Research in Drama Education: The Journal of Applied Theatre and Performance, 14*(2), 225–243.

Rimpelä, M., Fröjd, S., & Peltonen H. (2010). *Hyvinvoinnin ja terveyden edistäminen perusopetuksessa 2009* [Promoting well-being and health in primary schools in 2009]. Helsinki: The Finnish National Board of Education.

Rusanen, S. (2002). *Koin traagisia tragedioita: yläasteen oppilaiden kokemuksia ilmaisutaidon opiskelusta* [I experienced tragedy: Secondary school pupil's experiences of studying drama]. Helsinki: Theatre Academy of Helsinki.

Tiusanen, T. (1969). *Teatterimme hahmottuu: näyttämötaiteemme kehitystie kansanrunoudesta itsenäisyyden ajan alkuun* [The Finnish Theatre takes shape: The development of performing arts from folklore to the national independence time]. Helsinki: Kirjayhtymä.

Toivanen, T. (2002). "*Mä en olis kyllä ikinä uskonut itsestäni sellasta.*" *Peruskoulun viides- ja kuudesluokkalaisten kokemuksia teatterityöstä* ["I wouldn't have believed I could ever do anything like that"- Experiences in theatre work of 5th and 6th grade comprehensive school pupils]. Helsinki: Theatre Academy of Helsinki.

Toivanen, T. (2010). *Kasvuun, 1–8 -vuotiaiden draamakasvatusta* [Growth, 1–8 year-old children's drama education]. Helsinki: WSOYPro.

Toivanen, T. (2012). Pohdintaa draamakasvatuksen perusteista suomalaisessa koulukontekstissa: opetusmenetelmä vai taideaine [Reflections drama education in the Finnish school context: The teaching method or an art subject]. *The Finnish Journal of Education, 43*(2), 92–198.

Toivanen, T. (2015). *Lentoon – draama ja teatteri perusopetuksessa* [The take off – drama and theater in comprehensive school]. Helsinki: SanomaPro.

Toivanen, T., & Kaasinen, M. (2013). Comparing body awareness between actors and drama teachers. *Cognitive-crcs, 1*(1), 4–9.

Toivanen, T., & Pyykkö, A. (2012). Group factors as a part of drama education. The *European Journal of Social & Behavioral Sciences, 2*(2), 150–168.

Toivanen, T., Rantala, H., & Ruismäki, H. (2009). Young primary school teachers as drama educators – possibilities and challenges. In H. Ruismäki & I. Ruokonen (Eds.), *Arts-contact points between cultures. 1st International Journal of Intercultural Arts Education Conference: Post-Conference Book* (Research Report 312, pp. 129–140). Helsinki: University of Helsinki.

Toivanen, T., Komulainen, K., & Ruismäki, H. (2011). Drama education and improvisation as a resource of teacher student's creativity. *Procedia Social and Educational Sciences, 12*, 60–69.

Toivanen, T., Antikainen, L., & Ruismäki, H. (2012). Teacher's perceptions of factors determining the success or failure of drama lessons. *Procedia: Social and Behavioral Sciences, 45*, 555–565.

Toivanen, T., Mikkola, K., & Ruismäki, H. (2012). The challenge of an empty space: Pedagogical and multimodal interaction in drama lessons. *Procedia: Social and Behavioral Sciences*, *69*, 2082–2091.

Wales, P. (2009). Positioning the drama teacher: Exploring the power of identity in teaching practices. *Research in Drama Education: The Journal of Applied Theatre and Performance, 14*(2), 261–278.

Way, B. (1967). *Development through drama.* London: Longman.
Wright, P. R. (2006). Drama education and development of self: Myth or reality? *Social Psychology of Education*, *9*(1), 43–65.

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16. ICTS IN A SCHOOL'S EVERYDAY LIFE – DEVELOPING THE EDUCATIONAL USE OF ICTS IN FINNISH SCHOOLS OF THE FUTURE

ABSTRACT

The ICTs in School's Everyday Life Project is a national project carried out by the Finnish Ministry of Transport and Communications, the Ministry of Education and the Finnish Board of Education in co-operation with industry and commerce. The project was included in the Finnish government programme and National Information Society Policy of Finland. The aim of the project was to create a national educational technology plan and the vision was that Finnish schools would have practical models and innovative teaching practices for using ICT in all Finnish schools. The project aimed to produce new knowledge and know-how for schools and educational administrators about the latest developments in ICTs, but more importantly to develop the educational use of ICT in multi-dimensional ways. A new Finnish core curriculum reform process for basic education started in 2012 and the final documents were published at the end of 2014. The new curriculum emphasizes 21st century skills, like critical and creative thinking skills and collaborative modes of studying. ICT is seen having an important role in supporting and developing these skills. It is useful tool, which also can expand learning environments and diversify methods of working.

This chapter presents some of the background knowledge and strategic guidelines contained in the National Educational Technology Plan and Finnish National Core Curriculum and discusses their implications in schools' everyday lives.

Keywords: educational use of ICTs, media culture, media education, strategic planning

MEDIA CULTURE IS PART OF CHILDREN'S EVERYDAY LIFE IN FINLAND

Communication technologies and the world of media are ubiquitous in Finnish society today, permeating working life, services, leisure pursuits and societal structures. The development of information and communication technologies (ICTs) and different media figures prominently in many ways in our everyday lives, where

H. Niemi et al. (Eds.), Miracle of Education, 241–252.

new forms and social uses of media emerge constantly. In a reflection of this trend, Finnish educators and decision makers have seen opportunities for using ICT in teaching and learning increase dramatically in the last decade.

Media culture, the different ways in which media are used and the tools for using them become an established part of children's lives in Finland when they are as young as seven or eight years old. Children and adolescents use the Internet, a range of social networking services and cell phones; they use their phones to take pictures and listen to music, watch television and play numerous games. ICT and media play a significant role in developing the competences and skills of children and adolescents, moulding their view of their world in the process (Kangas, Sintonen, & Lundvall, 2008; Kotilainen, 2011, 68–70).

In the course of the past decade, social media and advances in mobile tools have revolutionized the use of ICT on the ground. Today, every school and municipality can tap into the working methods based on collaboration and intense personal experience that the literature of the field has been talking about for the last ten years.

The services offered by social media claim large numbers of users and the applications in this area are used for many purposes. For example, Facebook reported that it has broken the 1.5 billion-user mark. The number of monthly active WhatsApp users, a crossplatform mobile messaging application, in September 2015 was 900 million worldwide. Approximately 52% of 12 to 65 year-old Finnish citizens use the service. This means a total of 2 million Finnish users. It has also been estimated that approximately 89% of the youth aged 12 to 17 are active users. The photo-sharing app Instagram had over 400 million monthly active accounts.

One of the most popular social media services among children and adolescents is YouTube, used for sharing video clips. In the autumn of 2015, there were an utterly astounding four billion video clips viewed daily. And the phenomenon does not seem to be a passing fad—quite the contrary. New applications, services and ways of using media emerge constantly, as old ones fall out of use.

Why is it that the use of social media services and network communities are so popular among children and adolescents? The first explanation often put forward is that the technology is easy to use. Little or no technical know-how is needed. Users also value the opportunities to exercise creativity and self-expression and to be part of something. If she or he wants to, anyone can be an active agent or player on the net, not merely a consumer or user of material produced by others. One hears the word "produsage", meaning that the users themselves, or in collaboration with their friends, can produce and create content that reflects their interests. Every user has the chance to be an active communicator, sending information in addition to receiving it. With a single click, one can easily produce content to be explored and admired—by both a global audience and one's best friends. Many net phenomena also function as important topics of conversation and sources of humour and entertainment in young people's media culture (see Kynäslahti et al., 2007; Kalliala & Toikkanen, 2009).

THE RATIONALE FOR ICT: 21ST CENTURY SKILLS

Discussions of the reform and development of the schools and teaching in Finland focus on the skills needed in the twenty-first century or the skills citizens will need in the near future. The proposal put forward by the Finnish Ministry of Education and Culture regarding the general national objectives and the distribution of lesson hours for basic education (2010, 14) summarized the skill set of the citizen of the future as follows: (1) thinking skills, (2) ways of working and interaction, (3) crafts and expressive skills, (4) participation and initiative, and (5) self-awareness and personal responsibility.

The definitions used in the International Assessment and Teaching of 21st Century Skills (ATC21S), a project conducted at the University of Melbourne, are based on extensive international collaborative research. ATC21S divided skills into four categories: (1) ways of thinking, (e.g. critical thinking, creativity, problem solving); (2) ways of working, (e.g. communication and collaboration); (3) tools for working (e.g. information and communications technology (ICT) and information literacy); and (4) skills for living in the world (e.g. global agency, social responsibility) (National Educational Technology Plan, 2010; Basic Education in Finland, 2020; Salo, Kankaanranta, Vähähyyppä, & Viik-Kajander, 2011; Kankaanranta & Vahtivuori-Hänninen, 2011; Finnish National Board of Education, 2014). Gardner (2010) highlights especially the following five types of intelligence that will be needed for the future: (1) the disciplined mind, (2) the synthesizing mind, (3) the creating mind, (4) the respectful mind, and (5) the ethical mind.

This conception of skills needed for the future challenges the way schools teach, process and disseminate knowledge and develop skills today. The curriculum used in basic education in Finland has often been criticized for having an excessive focus on content and the presentation of information broken down by subject. Does it make use of and construct knowledge in a manner that will help pupils understand everyday life, or do pupils merely have to reproduce information which has been spoon-fed to them in textbooks and which may remain superficial and irrelevant to them? (e.g. Vitikka, 2010).

Based on the values of the new core curriculum and the national goals stipulated in the Education Act and in the Government Decree, the seven areas of extended, cross-cutting (common to all school subjects) competencies based on 21st century skills are described in the new core curriculum. They are:

1. Thinking and learning to learn;
2. Cultural literacy, interaction, and expression;
3. Taking care of oneself, everyday life skills, safety;
4. Multiliteracy;
5. ICT competence;
6. Working life skills and entrepreneurship;
7. Participation, influence, and responsibility for a sustainable future.

All these competences consist of knowledge, skills, values, attitudes and the ability to apply them in different contexts (Vahtivuori-Hänninen et al., 2014).

New Finnish Core Curriculum for Basic Education (2014) strongly emphasizes the role of ICT in the teaching-studying and learning process and school development. It is seen as essential that learning environments take into account that children are living in a complex and globalized world, filled with and modified by different ICTs, media services, and games. The new curriculum also emphasizes that the skills and competencies needed for the exploitation of ICTs must enable the student to grow into an active member of society. The student is treated as an active learner. It is seen crucial that students learn to set goals and solve problems both independently and with others. The new curriculum emphasizes that well-being, balanced development of personality and ability to manage daily life are also important goals of learning. According to the new curriculum, ICTs provide many tools for that and for active and meaningful learning (Vahtivuori-Hänninen et al., 2014).

Educational administrators and other decision-makers in that sector are of one mind that teaching would do well to make more versatile and appropriate use of ICT and the opportunities it affords for developing the skills and competences that will be needed in the future. People are also looking to ICTs for help in renewing the working culture of schools, in supporting a sense of community and collaborative learning and in building teaching and learning environments (National Educational Technology Plan, 2010).

WILL SCHOOL FADE OUT OF YOUNG PEOPLE'S EVERYDAY LIVES?

How can we best take advantage of ICTs and media to improve teaching and learning environments? Or should we ignore the issue completely? Some have claimed that schools will drift farther and farther from the everyday life of children and adolescents if we do not rise to the challenge (Lankinen, 2010).

Teacher education will figure crucially here. A solid command of ICT and a range of media and network environments in teaching seem to be playing an ever-greater role among the basic skills and competencies required of teachers and teacher educators. Everyone qualifying as a teacher has the right to acquire the basic knowledge and know-how needed for using media in a rich variety of ways in different subjects and to achieve a solid grasp of how ICTs can be used pedagogically when designing, implementing and assessing his or her teaching.

One piece of good news in light of recent research is that the opportunities to use ICT in the schools to support teaching and learning have improved. For some schools and teachers, the wide-ranging use of ICT and media in teaching and learning is routine. The doors of the classroom have been opened to the outside world globally, and in the process new opportunities have presented themselves to share and combine competencies and to collaborate. One characteristic of schools that have succeeded in realizing the potential of ICT and making it an integral part of their teaching is that ICT and media are used in every facet of the school's work and

by the entire school community (Kankaanranta, Palonen, Kejonen, & Ärje, 2011; Niemi, Kynäslahti, & Vahtivuori-Hänninen, 2013).

The challenge where equality is concerned is that substantial differences remain among schools, school levels and regions, and that these gaps seem to have widened rather than shrunk (Kankaanranta et al., 2011; Niemi et al., 2013). Considerable efforts are still required before all Finnish children and teachers can be afforded equal access to the same array of learning environments and experiences.

THE NATIONAL PLAN FOR THE EDUCATIONAL USE OF ICTS: SOME PROSPECTS

Finland was quick and timely when it came to introducing ICT in teaching and learning, and the country's significant financial commitments to the endeavour made it a frontrunner internationally in the 1990s. Perhaps one of the most productive efforts on the practical level was the national strategic plan (Finland—Towards an information society, A National Outline) and the related development undertaken by the Ministry of Education and the National Board of Education in 1995. Numerous development projects were launched that could later boast successful outcomes. For example, 75% of the country's teachers took part in OPE.fi alone, a series of technical and pedagogical skills development programs coordinated by the Finnish National Board of Education. Then again, many of the training programmes ended up being attended by the same core of active teachers. This trend in Finland has continued: Some teachers have solid skills and a desire to develop themselves and their work, but good ideas and applications and models for how to do things have yet to spread extensively enough throughout the school system.

International comparisons of the use of media and ICT in teaching show that today Finland falls in the middle of the pack in Europe in the educational use of ICTs (e.g. SITES, 2006; CICERO Learning report, 2008; European Schoolnet, 2009; OECD CERI, 2010). Many municipalities and schools have made brisk progress and some schools represent the best in the field both pedagogically and technically. Innovations and experiential pedagogical models for the educational use of ICTs do support teaching and learning, and classrooms are very well equipped.

Recent years have seen the gaps between schools and between municipalities widen. The rather autonomous way in which municipalities have developed the educational use of ICT has not always meant optimal progress nationwide. Indeed, one reason why progress has slowed in Finland is that the country lacked a clear national-level action programme. The economic investments in infrastructure have not in themselves been sufficient (Kankaanranta, 2011; see also Kozma et al., 2003; Law, Pelgrum, & Plomp, 2008).

The new National Plan for the Educational Use of ICT was published in December 2010. The plan is the outcome of an extensive collaborative project entitled "ICTs in Schools' everyday life", coordinated by the Ministry of Transport and Communications and jointly implemented by the National Board of Education

and the Ministry of Education and Culture. The project involved 20 innovative schools, 13 research units, and experts from business life and municipalities. The report presents the national objectives, as well as general strategic directions and proposed measures.

The report notes that the challenge is to disengage the schools from their present technology-oriented and superficial use of ICT. The educational use of ICT should be a natural facet of all school activities. Its use should proceed from the following considerations: (1) development of learning, mastery, and learning environments, (2) support for pupil growth, (3) the needs of teachers and teaching, and (4) the needs of society and working life.

The following problems were identified at the first stage as the principal challenges facing efforts to develop the educational use of ICT in Finnish schools:

- Insufficient technical infrastructure, which varies from school to school and municipality to municipality, and unsuccessful technical solutions in the schools' learning environments
- A lack of technical and pedagogical support (for teachers and pupils)
- Little use of innovative pedagogical models that support active engagement of the pupil, collaboration and teamwork
- The availability, quality and dissemination of digital learning materials
- Challenges posed to schools' working cultures, sense of community and capacity for collaboration
- Development of municipal school authorities, the competencies of school directors and schools' management practices, the challenge of change management and communicative competence
- A lack of partnerships between businesses and schools that are geared towards organizing schools' services
- Bringing the educational use of ICT in teaching up to date in teacher training

The Finnish national plan (2010) clearly pointed out that a systemic change is required in which the educational system and the way in which schools work would be revamped to correspond to the modern conception of learning. In implementing the changes, the recommendation is that existing structures be used, such as the current bases of the curriculum. Implementation of the plan and achievement of the desired results will require cooperation between the public sector in its entirety, the business community, educational providers and the schools.

The aim is for all Finnish schools to bring to bear in a stimulating way the tools and opportunities which ICT offers for supporting teaching and learning. If the schools succeed, every pupil will experience new, enabling learning environments and ways of working.

The strategic plan points out that the change will require up-to-date infrastructure and equipment in the schools. The technical solutions chosen must be of high quality and those choices must give due consideration to sustainable development. Also needed are solid technical and pedagogical support services for teachers and pupils

in all schools. In developing the working culture of schools, change management and a strengthening of cooperation and a sense of community will be crucial; two means to this end are the use of co-teaching and peer coaching models. Net-based high-quality and experiential materials should be readily available and accessible to everyone. Teacher training should be developed and supported in the area of educational use of ICTs.

It is still possible to graduate as a qualified teacher in Finland without being able to use ICT innovatively in teaching or being particularly familiar with media skills. According to a report of the OECD's Centre for Educational Research and Innovation (CERI) entitled "New Millennium Learners 2010", those training to become teachers still do not acquire sufficient competence in the educational use of ICT during their studies (Meisalo et al., 2010). Teacher trainers have positive attitudes, but the potential of ICT is tapped resourcefully mainly when doing research. The skills of recent teacher training graduates in Finland vary from institution to institution. In-service teachers also require constant and inclusive support in their work on how to use ICTs innovatively (e.g. Ilomäki & Lakkala, 2011; Kankaanranta et al., 2011).

The national strategic plan further states that teacher training departments and other units providing training for teachers would do well to invest in up-to-date tools that match those of the school environments in which teachers will be working. A working group of the Ministry of Education and Culture proposed that state aid be directed to that purpose in its report titled "The Information Society Development Program for Education, Training and Research 2010". It is important that pre-service teachers be able to familiarize themselves during their studies with learning environments that are part of the daily routine in the schools. Degree requirements and practice teaching should also be reviewed to ascertain whether ICT has been integrated appropriately in all degree programmes.

It is challenges of this nature that have been the focus of the national research project OPTEK (Educational Technology in Schools' Everyday Life Research project). The project is examining and developing innovative solutions and models for the application and use of ICT and electronic media in schools on an everyday basis. The project, financed mainly by TEKES (the Finnish Funding Agency for Technology and Innovation), was launched in January 2009 and ended in May 2011. The first results were published in February 2011 in what was designed as a co-publication with the National Educational Technology Plan, which came out in December of 2010.

RECENT RESEARCH FINDINGS OF THE PRESENT STATE ABOUT THE EDUCATIONAL USE OF ICTS IN FINLAND

The research done in OPTEK project indicates that when ICT is used in teaching and learning, it aids in illustrating, enlivening and enriching content and in enabling distance and mobile learning. The research showed that ICT can support cooperative

learning, reasoning, abstract inference and visual perception. Games and simulations when used innovatively can allow pupils to practice problem-solving abilities and understand authentic and complex phenomena. The aim in using ICT is to enhance and enrich study environments that support skills for the future alongside the physical learning environment and face-to-face interaction which pupils have in the schools (Tella, Multisilta, Ruokamo, & Smeds, 2005; Kynäslahti & Seppälä, 2004; Kangas, Sintonen, & Lundvall, 2008; Vahtivuori-Hänninen et al., 2005; Tuomi & Multisilta, 2011; Sairanen et al., 2011; Lankinen, 2010; Kankaanranta & Vahtivuori-Hänninen, 2011; National Educational Technology Plan, 2010; Kotilainen, 2011; Vähähyyppä, 2010; Rajala et al., 2011; Sallasmaa et al., 2011).

According to a recent study, one favourable development is that rectors have a more positive view of the importance of ICT in the everyday work of the school than previously. They recognize the need for change and are committed to implementing the school's shared visions and a functioning working culture in order to improve pupils' future skills. Yet there are still considerable differences in how ICT is used, although in general opportunities to use it have improved (Kankaanranta et al., 2011).

The use of digital video technology is not difficult to pupils, and it can be learned collaboratively. Collaborative content production motivates pupils to plan, perform, film and edit. In producing content using digital video, a number of different technologies and models can be brought to bear. A study carried out at the University of Oulu observed that this affords children an opportunity to develop their 21st century citizen skills, for example teamwork and interactive skills, as well as information and media literacy (Palmgren-Neuvonen, Kumpulainen, & Vehkaperä, 2011; Kotilainen, 2011).

Mobile social media can easily be used as tools for school projects. Over one-third of the pupils who participated in the mobile learning study felt that it was possible to learn to use a mobile video distribution service; well over one-half preferred mobile learning to traditional ways of working in school. Fun and creativity should not be suppressed; they should be encouraged. Incorporating mobile devices into teaching requires smooth operation of the technology involved as well as the appropriate training and motivating of teachers (Tuomi & Multisilta, 2011).

A study conducted by the Media Education Research Group at the University of Helsinki observed that learning in a variety of spaces, and perhaps even at different times, promotes children's self-directedness: working in a mobile environment places an emphasis on the user's own decision-making, for using the tools, in allowing for new solutions and real-time help, enabling pupils to work using a process of trial and error. Mobility brings pupils flexibility with respect to time and location, because they study physically and virtually in different spaces (Kotilainen, 2011; Mylläri et al., 2011; see also Kynäslahti & Seppälä, 2004; Koskimaa et al., 2007; Kynäslahti et al., 2008).

All of the technology we need for educational purposes already exists. At the beginning of the 2000s, the role of ICT in teaching and learning was very much that of an add-on, something superimposed on ordinary teaching. Now that technology

and media are considered an integral part of the work of the school: it has made it possible to teach less common subjects; it supports experiential learning; and it serves to reinforce cooperation between the home and the school and the partnership they form in a child's education and upbringing. School is seen as an active component of society and a place where children and adolescents learn the skills and competencies that they will need not only in their future studies but also in their personal growth, everyday lives and future work. Underpinning the use of ICT in teaching are considerations of equality, a sense of community and developing a capacity for collaboration and participation. The school works within the immediate community but at the same time it is part of the global world. Using ICT in a multi-dimensional way we can bring the whole world within the reach of school pupils.

CONCLUSION

In the 1990s Finland was one of the leading information societies in the world. In order to develop Finland as an ubiquitous information society, national strategies and guidelines were created. With the new millennium, the first wave of ICT projects came to an end. It seems that there has been a measure of embarrassment within the first wave countries—watching other countries rapidly develop the educational use of ICT, these first-wave countries have been sensitive, even worried, about their position in international comparisons. In Finland, we are in a situation in which we have to think again about national level strategies and governmental programmes in order to develop teaching and learning as well as the whole educational system benefiting from the use of ICT.

We have great potential for doing this. Finland has talented teachers and research-based teacher education with the know-how needed to develop the educational use of ICT. We now have national guidelines for educational use of ICT. We have a brisk national core curriculum, which crystallizes the vision of education for the future and the necessary expertise that will be needed in Finnish society. In the new curriculum the role of ICT is seen to be crucial. ICT is serving as a useful pedagogical tool and learning environment to achieve all of the new goals. Finland has a great opportunity to show what the new teaching, studying and learning environments and the new learning culture of future schools can be when they are at their best.

REFERENCES

ATC21S. (2011). *White paper defining 21st skills.* Retrieved from http://atc21s.org

Cicero Learning ICT report. (2008). Retrieved from http://www.cicero.fi/sivut2/documents/CICERO_TVT-selvitysraportti.pdf (In Finnish)

European Schoolnet. (n.d). *Insight. The study of the impact of technology in primary schools (STEPS).* Retrieved from http://insight.eun. org/ww/en/pub/insight/minisites/steps.htm

Finnish Educational Technology Plan. (2010). *Ubiquitous Information Society Advisory Board. ICTs in schools everyday life project. Final Report*. Ministry of Transport and Communication, Ministry of Education and Culture, Finnish National Board of Education. Retrieved from http://www.edu.fi/download/135308_TVT_opetuskayton_suunnitelma_Eng.pdf

Finnish National Board of Education. (2014). *Perusopetuksen opetussuunnitelman perusteet 2014* [National Core Curriculum of Basic Education 2014, Finland]. Retrieved December 18, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Gardner, H. (2010). *Five minds for the future.* Boston, MA: Harvard Business School.

Ilomäki, L., & Lakkala, M. (2011). Koulun kehittäminen ja digitaalinen teknologia [Developing School and Digital Technology]. In M. Kankaanranta & S. Vahtivuori-Hänninen (Eds.), *Educational technology in schools everyday life II*. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

Kalliala, E., & Toikkanen, T. (2009). *Sosiaalinen media opetuksessa* [Social media in education]. Helsinki: Finnlectura.

Kangas, S., Sintonen, S., & Lundvall, A. (2008). *Lasten ja nuorten mediamaailma pähkinänkuoressa* [Children's media world in a nutshell]. Ministry of Transport and Communication. Media forum of the children and yi. Retrieved from http://www.lvm.fi/c/document_library/get_file?folderId=22170&name=DLFE-4803.pdf&title=Lasten

Kankaanranta, M., & Puhakka, E. (2008). *Kohti innovatiivista tietotekniikan opetuskäyttöä. Kansainvälisen SITES 2006 -tutkimuksen tuloksia* [Towards innovative use of ICTs. Results of the International SITES study]. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center.

Kankaanranta, M., & Vahtivuori-Hänninen, S. (Eds.). (2011). *Educational technology in schools everyday life II*. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

Kankaanranta, M., Palonen, T., Kejonen, & Ärje, J. (2011). Tieto- ja viestintätekniikan merkitys ja käyttömahdollisuudet koulun arjessa [The use of educational technologies in schools everyday life. *Educational Technology in Schools everyday life II*]. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

Korhonen, T., & Lavonen, J. (2011). "Meidän luokan juttu". Tieto- ja viestintäteknologia kodin ja koulun yhteistyön tukena [ICT as a support for school—home collaboration]. In M. Kankaanranta & S. Vahtivuori-Hänninen (Eds.), *Educational technology in schools everyday life II*. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

Koskimaa, R., Lehtonen, M., Heinonen, U., Ruokamo, H., Tissari, V., Vahtivuori-Hänninen, S., & Tella, S. (2007). A cultural approach to network-based mobile education. In K. Kumpulainen & P. Renshaw (Eds.), *International journal of educational research, 46*(3–4), 204–214.

Kotilainen, M.-R. (2011). Mobiiliuden mahdollisuuksia oppilaslähtöisen sisällöntuotannon tukemisessa portfoliotyöskentelyssä [Mobile Learning, user created content and portfolios]. In M. Kankaanranta & S. Vahtivuori-Hänninen (Eds.), *Educational technology in schools everyday life II*. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

Kotilainen, S. (Eds.). (2011). Children's media barometer. 0–8 year-old children's use of media in Finland [Lasten ja nuorten mediabarometri. 0-8-vuotiaiden lasten mediankäyttö Suomessa]. *Finnish Association for Media Education*, *2011*(1), 68–70.

Kozma, R. (Ed.). (2003). *Technology, innovation, and educational change: A global perspective. A report of the second information technology in education study* (Module 2). Amsterdam: International Association for the Evaluation of Educational Achievement.

Kynäslahti, H., & Seppälä, P. (Eds.). (2004). *Mobile learning.* Helsinki, Finland: IT-Press.

Kynäslahti, H., Vesterinen, O., Lipponen, L., Vahtivuori-Hänninen, S., & Tella, S. (2008, September/October). Towards volitional media literacy through Web 2.0. *Educational Technology*, 3–10.

Lankinen, T. (2009). *Educational use of ICTs* (Interrim report 29.1.2010). Helsinki: Ubiquitous Information Society Advisory board.

Law, N., Kankaanranta, M., & Chow, A. (2005). Technology supported educational innovations in Finland and Hong Kong: A tale of two systems. *Human Technology Journal, 1*(2), 111–116.

Law, N., Pelgrum, W. J., & Plomp, T. (Eds.). (2008). *Pedagogy and ICT use in schools around the world. Findings for the IEA SITE 2006 study*. Hong Kong: The University of Hong Kong, Comparative Education Research Centre.

Meisalo, V., Lavonen, J., Sormunen, K., & Vesisenaho, M. (2010). *ICT in initial teacher training.* Finland. Country report. OECD CERI, New Millenium Learners. Department of Teacher Education, University of Helsinki and School of Applied Education and Teacher Education, University of Joensuu.

Mylläri, J., Kynäslahti, H., Vesterinen, O., Vahtivuori- Hänninen, S., Lipponen, L., & Tella, S. (2011). Students' pedagogical thinking and the use of ICTs in teaching. *Scandinavian Journal of Educational Technology, 55*(5), 537–550. (London: Routledge.)

Ministry of Education and Culture. (2010). *Koulutuksen tietoyhteiskuntakehittäminen 2020* [Education and Research towards information society report 2020]. Parempaa laatua, tehokkaampaa yhteistyötä ja avoimempaa vuorovaikutusta. Opetus- ja kulttuuriministeriön työryhmämuistioita ja selvityksiä 2010:12.

Niemi, H., Kynäslahti, H., & Vahtivuori-Hänninen, S. (2013). Towards ICT in everyday life in Finnish schools: Seeking conditions for good practices. *Learning, Media & Technology, 38*(1), 57–71.

Palmgren-Neuvonen, L., Kumpulainen, K., & Vehkaperä, A. (2011). Oppimisen taitoja liikkuvalla kuvalla – teknologioiden innovatiivista yhdistelyä äidinkielen opetuksessa. In M. Kankaanranta & S. Vahtivuori-Hänninen (Eds.), *Educational technology in schools everyday life II.* University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

Perusopetus 2020 – yleiset valtakunnalliset tavoitteet ja tuntijako. (Basic Education in Finland 2020) Opetus- ja kulttuuriministeriön työryhmämuistioita ja selvityksiä. Ministry of Education and Culture, 2010:1.

Rajala, A., Hilppö, J. Kumpulainen, K., Tissari, V., Lipponen, L., & Krokfors, L. (2010). *Merkkejä tulevaisuuden oppimisympäristöistä* [Some signs of the Future Learning Environments]. Helsinki: National Board of Education.

Sairanen, H., Syvänen, A., Vuorinen, M., Vainio, J., & Viteli, J. (2011). Mobiilisisällöntuotanto esiopetuksessa ja perusasteen alaluokilla: Suosituksia ja havaintoja teknisestä toteutuksesta [Mobile content creation in primary school and pre-school]. In M. Kankaanranta & S. Vahtivuori-Hänninen (Eds.), *Educational technology in schools everyday life II*. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

Salo, M., Kankaanranta, M., Vähähyyppä, K., & Viik-Kajander, M. (2011). Tulevaisuuden taidot ja osaaminen [21st Century skills and competences]. In M. Kankaanranta & S. Vahtivuori-Hänninen (Eds.), *Educational technology in schools everyday life II*. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

Sallasmaa, P., Mannila, L., Peltomäki, M., Salakoski, T., Salmela, P., & Back, R.-J. (2011). Haasteet ja mahdollisuudet tietokonetuetussa matematiikan opetuksessa [Challenges and opportunities of ICT in Math education]. In M. Kankaanranta & S. Vahtivuori-Hänninen (Eds.), *Educational technology in schools everyday life II*. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

SITES. (2006). Retrieved from www.sites.net

Tella, S., Ruokamo, H., Multisilta, J., & Smeds, R. (Eds.). (2005). *Opetus, opiskelu ja oppiminen*. *Tieto- ja viestintätekniikka tiederajat ylittävissä konteksteissa* [Teaching, studying and Learning. ICTs in transdisciplinary contexts]. Academy of Finland, Life as Learning Research Programme, Lapin yliopiston kasvatustieteellisiä julkaisuja 12. Rovaniemi: University of Lapland.

Tella, S., Vahtivuori, S., Vuorento, A., Wager, P., & Oksanen, U. (2001). *Verkko opetuksessa – opettaja verkossa* (Teacher in the net—Net in Teaching). Helsinki: Edita.

Transforming American education: Learning powered by technology. (2010). National Education Technology Plan. U.S. Department of Education.

Tuomi, P., & Multisilta, J. (2011). Mobiilivideot oppimisen osana – Kokemuksia MoViE-palvelusta Kasavuoren koulussa [Some experiences as mobile tools as a part of the learning process]. In M. Kankaanranta & S. Vahtivuori-Hänninen (Eds.), *Educational technology in schools everyday life II*. University of Jyväskylä: Finnish Institute for Educational Research & Agora Center. (In Finnish)

Vähähyyppä, K. (Ed.). (2010). *School 3.0*. Finnish: Finnish Board of Education.

Vahtivuori-Hänninen, S., Lehtonen, M., & Torkkeli, M. (2005). Yhteisöllistä opiskelua, pelejä ja sosiaalisia simulaatioita verkossa [Collaborative learning, games and simulations in the Web]. In

S. Tella, H. Ruokamo, J. Multisilta, & R. Smeds (Eds.), *Opetus, opiskelu ja oppiminen*. *Tieto- ja viestintätekniikka tiederajat ylittävissä konteksteissa* [Teaching, studying and Learning. ICTs in transdisciplinary contexts]. *Academy of Finland, Life as Learning Research Programme. Lapin yliopiston kasvatustieteellisiä julkaisuja 12*. Rovaniemi: University of Lapland.

Vahtivuori-Hänninen, S., Halinen, I., Niemi, H., Lavonen, J., & Lipponen, L. (2014). A new Finnish national core curriculum for basic education (2014) and technology as an integrated tool for learning. In H. Niemi, J. Multisilta, L. Lipponen, & M. Vivitsou (Eds.), *Finnish innovations and technologies in schools: A guide towards new ecosystems of learning* (pp. 21–32). Rotterdam: Sense Publishers.

Vitikka, E. (2010). Pedagoginen ulottuvuus opetussuunnitelman arvioinnin lähtökohtana. [Pedagogical dimensions as a basis for curriculum evaluation]. In E. Korkeakoski & T. Siekkinen (Eds.), *Esi- ja perusopetuksen opetussuunnitelmajärjestelmän toimivuus: Puheenvuoroja sekä arviointi- ja tutkimustuloksia* (pp. 23–39). Jyväskylä: Koulutuksen arviointineuvosto.

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17. PUBLIC INSTITUTIONS AS LEARNING ENVIRONMENTS IN FINLAND

ABSTRACT

The National Core Curriculum for Basic Education 2014[1] has assigned national grade and subject based objectives, so called broad-based learning aims, as well as local curriculum possibilities. There are seven broad-based learning themes that support students' holistic growth and adaptation to the ever-changing society outside the school building. Public institutions offer possibilities for learning, especially in themes such as cultural know-how, interaction and creation, multimodal literacy, participation and a sustainable cultural future. There is a detailed chapter on different learning environments in the curriculum, which schools can use. In the 2010s, there is great demand for talking about digital learning environments, but also physically authentic environments like public institutions, such as libraries, museums, nature and science centres. Public cultural institutions in this chapter are understood to be part of the built environment. The services provided by these are available to all citizens in Finland. These include: libraries, museums, various art institutions, theatres, music institutions and science centres. The expertise of the writers of this chapter is based on museums and libraries as learning environments, so that will be the focus of this chapter. Finland has a broad network of public libraries and museums. The utilization of this network as part of basic education has been relevant for decades. Development work has been carried out in museums and libraries as well as in the field of education. Various projects have been implemented at the state and municipal levels. In turn, individual schools and institutions have conducted successful local collaboration. Learning in public institutions has not been researched either in Finland or internationally to as wide an extent as learning at school or other formal learning settings. However, feedback from teachers and students, evaluations and summations of projects show that studies in different learning environments, such as museums and libraries, are deemed to have a positive impact on learning. They function as learning environments, in particular as support for life-long learning.

Keywords: learning environment, public institution, museum, library, cultural heritage learning

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FINLAND – THE LAND OF LIBRARIES AND MUSEUMS

	Museums (2014)[2]	Libraries (2014)[3]
Number in Finland	152 professionally run museums, with a total of 327 units open year round A total of over 1000 units that define themselves as museums	756 main and branch libraries 142 mobile libraries (12 606 stops)
Clientele per year	Approx. 54 million visitors	Over 50 million library visits 91 million loans e-loans 151 000 Average number of loans 16,8 items/Finn/year[4]
Number of student visitors	Approx. 470 000 students (museums' means of calculation may vary)	No student-based statistics
Comparative figures	Approx. 590 000 students in pre-primary, primary (grades 1–6) and lower secondary (grades 7–9) education annually in Finland[5]	
	317 municipalities in Finland[6]	

According to 2010 statistics, the most frequent visitors to various types of museums and art exhibitions were children aged 10–14, in grades 4 to 8 in the Finnish school system.[7] Humanistic subjects such as history, art, and natural sciences, mainly biology, are the most frequently studied subjects in museums. In the 2004 curriculum, history studies began in the 5th grade in the Finnish school system.[8] The onset of history studies by 5th and 6th grade students was clearly visible in the visitor statistics of the Finnish National Museum, where they have been the biggest visitor group. In fall 2016, history studies will begin at an even earlier age, according to the new curriculum, so museums will need to take this into account.

Public libraries have a notable role in basic education, because school libraries have developed in a very uneven manner in Finland. Some schools have organised their library services themselves. In the spirit of the UNESCO school library manifesto,[9] The Information Strategy for Education and Research for Years 2000–2004 of the Finnish Ministry of Education prioritized school libraries as development areas.[10] It has been difficult for school libraries to independently meet the needs of the modern information society. They have been advised to collaborate with the public libraries within their region.[11]

FROM CULTIVATION TO EDUCATION

Schools and public institutions have a common social duty, which is to cultivate and educate citizens. Schools act within the scope of formal education and the public institutions act in the informal arena, which includes life-long learning. Finland is

one of the rare countries where the law specifies museum functions. The Finnish Museum Act defines the tasks set for museums.[12] The goal of museum operations is to promote the population's understanding and interpretation of their culture, history and environment. Museums have to provide opportunities for accessibility to information by collecting, preserving and documenting material, immaterial and visual cultural heritage in their collections for future generations. Museums are expected to work in close collaboration with surrounding communities.
The Finnish Library Act defines the task of libraries as follows:

> The objective of the library and information services provided by public libraries is to promote equal opportunities among citizens for personal cultivation, for literary and cultural pursuits, for continuous development of knowledge, personal skills and civic skills, for internationalization, and for lifelong learning. Library activities also aim at promoting the development of virtual and interactive network services and their educational and cultural contents.[13]

The Finnish Library Act does not define the relationship between public libraries and schools, but it has traditionally been connected to the maintenance of citizens' literacy, influencing reading habits and encouraging general reading. Cooperation with schools over decades has mainly been field trips of student groups to the closest public library where they have been taught how to use the library, told stories, shown puppet shows and so on. With the development of the information society and with library teaching content becoming more demanding, collaboration has expanded to the realm of municipal and school-specific curricula as well as annual plans of schools.

As media have developed, new dimensions have been added to basic literacy skills. The development of new literacy skills and the information society has entailed changes in the task of libraries: among other things it has started to teach skills for information society and information management as well as media education. In accordance with the overall task of public libraries, they target all age groups, and more often municipal libraries in Finland have started to take on the role of supporting their own regional schools.[14]

The development of Finnish library-school collaboration has become part of the change in social importance, self-understanding and the service profiles of library branches. Through the growing complexity of social structures, technological communication, and service industries, the increasingly important functions of libraries have changed; in addition to providing experiences and information management, libraries must bridge the digital divide, i.e. prevent information marginalisation. At the same time, the service idea of libraries has shifted from the providing of ready-made service products to guidance for independent information retrieval and the use of media and Internet services. Furthermore, libraries have started to train staff in new pedagogical and media skills and to view these skills as criteria when recruiting staff.

Library-school collaboration in Finland is in fact changing from class field trip-oriented assistance to the product development of libraries' pedagogical services. In modern libraries, school services are beginning to be seen as strategic foci of development. There are even deemed necessary for the future social relevance of libraries.

The Finnish Museum Act does not clearly define what a museum's educational role should be. For a long time museums have been regarded as research institutions and education activities have been targeted towards higher education organizations. When museums wanted to develop ways to open up to society and communicate their contents to the public, they first focused on school groups. The Comprehensive School Reform in the 1970's created an impetus for discussion of museums as possible complements for basic education. At the same time, the first educational curators were appointed in Finland. In the beginning, the museum educator's main task was to guide student groups during their museum visits. Museum education activities and public services were more intentionally developed in the 1980's. The first collaboration expert group was founded by the Finnish Museums Association and National Board of Education in 1981. The task of this group was to produce the first visions and goals for school-museum cooperation.[15]

With the expansion of the concept of learning, museum education has taken into consideration students or visitors with special needs. Apart from traditional methods (talking and writing), communicaton that uses all the senses is being used in museum education. Museums now cater to many different public groups instead of just the public. Of these public groups, student groups play a key role, because in this way museums reach larger age groups. Teachers as pedagogical professionals are seen as fruitful collaboration partners. In 2005, the Museum Education Association was founded to support the development of museum educators' professionalism. In 2015, there were over 200 museum professionals. They represent educators from different types of museums and are responsible for a wide range of museum education in Finland. The profession of museum educator has been one of the fastest growing fields in the Finnish museums during the last two decades.

In Finland teachers are able to utilise different learning environments with the same independence as they have when teaching within their classrooms (see the chapters by Toom & Husu, Vitikka et al., Jyrhämä & Maaranen in this publication). The National Core Curriculum does not specify or define which public institutions students should become acquainted with during their nine years of compulsory education. Teachers have been supported and encouraged to use public institutions as learning environments for formal education through several joint projects between institutions and schools. Even though the majority of Finnish comprehensive schools are public schools, schools vary in their characters. However, the will and skill to use local and national public services as part of teaching depends greatly on a school's working culture. At present there are no official Finnish statistics on how often different learning environments outside the school environment are used.

DEVELOPING BY NETWORKING

One of the most extensive networking school-museum projects has been *The Finnish Oak (Suomen Tammi)* between the years 1998–2008. It was a project arranged by the National Board of Education, the National Board of Antiquities and the Ministry of the Environment. The project supported the development of collaboration models between formal education and cultural heritage experts. The main goal of the project was to get to know the other members' expertise and to use it for cooperation. New models were sought out for promoting progressive inquiry learning. This collaboration network developed the content and methods of cultural heritage education. It also developed cooperation between cultural institution workers and teachers by organizing multi-professional meetings, supplementary training and by producing literature for the field. For instance, between 2005–2008, it organised 34 educational events and 22 seminars for multi-professional groups. Also, 8 books and 3 electronic handbooks were published. In all, there were over 2500 participants: teachers, art and museum educators, environment educators and students.[16] In 2006 *The Finnish Association of Cultural Heritage Education* was founded to continue the project's aims. Today, the association coordinates projects promoting tools for municipal authorities to create educational cultural paths, environmental and cultural sustainability education, children's local heritage education and world heritage education as well as media education in museums co-ordinated by the Finnish Museums Association.

The *Broadband of Culture* is a teaching, learning and studying program. In it the National Cultural Institutions of Finland serve a learning environment for cultural heritage education. The program includes all central culture organizations such as archives, libraries, museums, theatres, opera and literature societies. The Broadband of Culture helps students understand that national cultural institutions are the property of the entire nation and everyone has right to use them.[17]

One of the most noteworthy of all the bilateral projects between schools and art museums has been the *Give us arts right now! – multi-cultural project in the years 2007–2009.* The Community Relations and Development Unit of the Finnish National Gallery coordinated the project. There were projects all over Finland in which school's language and cultural groups worked in partnership with cultural actors. The aim of the projects was to encourage the public to make use of the inspirational and experimental atmosphere of the culture organisations. During these projects, there was deliberate consideration of what children and young people of different cultural backgrounds can get from cultural institutions, while at the same time assessments were made of what they themselves bring to contemporary culture and its interpretation. Cultural institutions examine the cultural diversity of their own activities and build bridges between the schools' multi-cultural realities.

Besides multiculturalism, another challenge for contemporary schools in Finland is media education (see the chapter by Vahtivuori-Hänninen & Kynäslahti in the same

publication). In order to support our schools in this endeavour, the Finnish Library Association started up a series of projects in 2006 in which library professionals were trained in media education know-how and skills. A result of the *Children, media and libraries* projects was the creation a regional educators' network in different parts of the country, material for media education and media education Web service for the libraries. The regional teachers of media education trained by the project taught library professionals in their own area. Library professionals acted as guides in library media education topics for teachers, students and students' parents.[18]

The Finnish Museums Association noticed the need for media education in connection with increasing digitalisation of cultural heritage in museums. A two-year project was launched in 2013 to study scale and form of the media education in Finnish museums. The result showed that media education is sometimes difficult to distinguish from on-going museum education.[19] Museum education uses different kinds of methods with the assistance of technology. Even though the new technology or equipment do not turn museum education into media education itself, the media educational goals have to be defined separately. The project produced three media education models, which were piloted in museums.[20] The media education is used as actively in public institutions as in the classroom of the future.

The projects have striven to resolve the challenges caused by different types of learning environments. The challenge has been combining different working cultures as well as finding a common language. One big goal has been reached in many projects when the partners started to understand the opportunities offered by the others and also the possible limitations. The core of successful cooperation is always a learning organisation.

STRUCTURES AND PRACTICES IN DIFFERENT LEARNING ENVIRONMENTS

Individual projects usually provide only some teachers and students the opportunity to utilise different learning environments for a certain period of time. In order to ensure equal and continuous opportunity you need to create permanent structures and practices. The last two library strategies of the Ministry of Education and Culture have aimed to create this for libraries.[21]

Education of information management in comprehensive and upper secondary schools is to be built up by making use of the existing library network and know-how. According to this strategy, virtual, targeted school library services will be developed alongside local public library services. Should these schools not have professional staff for the development of library services, the Ministry of Education and Culture recommends that the municipality organize for the services to be provided by a pedagogical information specialist for one or several regions to use. The service could also be purchased from, for instance, a public library. This type of activity will prevent overlapping of work done by school and public libraries.[22]

Cultural Paths to Enrich Learning at School

Over the past ten years so-called educational culture paths have been developed in cooperation with education and cultural sectors at the municipal level. The goal is to offer every student in basic education one, two or three study visits to places of interest in the surrounding communities during the school year. The culture paths make use of museums, libraries, theatres, dance, music and art institutions, sports facilities and cinemas. The basis for the culture path activity is always the National Curriculum, but it is applied according to local circumstances and school-specific curriculum. The aim is to make a model for a cultural heritage learning path for each student at the municipal level. Project *Culture Leap* at the Finnish Association of Cultural Heritage Education was promoting this work in 2015–2016.[23] The program on the municipality level will be independent of individual factors such as the location or size of the school. A programme coordinated by the education or culture sector will help teachers by producing instructions on the Web such as practical advice for the visit or providing material for using before and after the study visit. One of the most progressive cultural paths is *Art Arc* in city Tampere.[24] The initiators of the culture paths have been teachers who saw the need for coordinated cultural heritage education in schools. The culture paths strongly emphasize the connection to formal education. One of the projects spearheaded by the government for 2015–2018 is increasing the accessibility in culture and art for young people. This means in practise creating more culture path activities in municipalities and cities in the near future.

The Pedagogical Practices of Vantaa City Library

An active model for the integration of public institutions and schools is that used by the city of Vantaa,[25] where the library service had already created its school collaboration strategy in the year 2000. One of the goals is to strengthen and formalize cooperation by making access to library services part of the municipal and school-specific curricula. As a result of this strategy, the development of libraries' school cooperation became an executive team level responsibility. A new type of expert was recruited into the team; a pedagogical information specialist who apart from having a higher-level degree in library and information services also has pedagogical studies and experience in teaching and school activities. In the beginning, the city library had two coordinating and planning pedagogical information specialists. Furthermore, each library unit had a person responsible for the region's school cooperation. Library representatives took part in drawing up the libraries' part in the municipal curriculum for 2003–2004. At the same time, a system was created in which each library unit is responsible for education of information management and the promotion of active reading in the schools in its region. In this model, this service is guaranteed to at least all of the first, fourth and seventh grades in Vantaa

schools. In reality, student groups from other grades also make regular visits to Vantaa libraries, or library professionals visit to teach them in their classrooms.

Strategic development has led to the productization of pedagogical services in Vantaa city library. In this way the library's role as a pedagogical actor in the city's educational practices have become visible and accepted. It is also notable that library experts have participated in drawing up Vantaa city's reformed *Education Policy Programme* (2011). There have been projects to study how library services can be integrated with electronic learning environments in Vantaa schools.

To an individual teacher it is essential that the administrative structures support reaching the targets set for teaching. In this field there is always work to encourage and assist teachers' flexiblity to utilize different learning environments. The curriculum reform of 2014 has made progress for this in many points. Heritage learning, cultural education, even educational culture paths, environmental education, and so on, are mentioned in conjunction with several subjects, broad-based themes, as well as in the general aims of the curriculum. Nevertheless, individual teachers have many opportunities to teach whatever subjects they wish in places other than classrooms. Public institutions in Finland had started to produce material and tailor-made services that support curriculum as early as the 1970s. A broad-minded example can be mentioned as a curiosity, a study visit to The Finnish National Ballet that was integrated into physics lessons.

PUBLIC INSTITUTIONS – BOTH OBJECT AND SOURCE OF LEARNING

An individual teacher can approach public institutions from two different perspectives.[26] First, public institutions can act as an object to be studied, including the building itself and the functions or tasks of the institution for the general public. In this case the goal is to learn about institutions that maintain Finnish cultural heritage. This is the goal, for example, in the municipal cultural paths as well as in the *Broadband of Culture* programme. Secondly, due to their content, public institutions are sources of information. Public institutions can be seen as equal tools for learning as books or e-learning environments.

Studying in public institutions fulfils one of the general new goals in the core curriculum: phenomenon based learning. Different institutions provide several types of original information. Art, history or nature museums offer different aspects of phenomena. In addition, libraries and archives bring their own perspective. All this provides practice in information collecting skills and constructing knowledge from different sources. However, all these places may also have cognitive, emotional and skill-based resources. Public institutions encourage and teach students to learn-to-learn. They also provide good opportunities for integrated teaching. The National Board of Education encourages learning in museums and libraries because of their possibilities for variation in educational methods compared to classroom education. There is always an effort to combine knowledge and skills with the learner's everyday experiences. Learning environments outside classrooms are natural places

for phenomenon-based learning, examples of this being the authentic artefacts in museums or contact with the original sources of information with the assistance of experts. Many things that are introduced in schoolbooks are concretised in public institutions.

From the teacher's perspective, it is also essential that teachers can make use of the institutional expertise in teaching. On the other hand, teacher's pedagogical and didactic professionalism is highly appreciated by the institutions. Learning in public institutions is best realised by utilizing several environments and by using collegial and multi-professional expertise.[27]

RESEARCH INTO PUBLIC INSTITUTIONS AS LEARNING ENVIRONMENTS

There is not much research either in Finland or internationally on the impact of learning in public institutions based on goals set by the national or municipal curricula. However, written and oral feedback from various projects shows that the co-operation, networking or integration of institutions and schools at different levels can have a positive impact on both the institutions' and schools' educational work. The impact of learning has primarily been studied inside institutions and classrooms; little work has been done on the impact these settings have on each other's effects on the process of education.

Three evaluation reports have been written for the OECD *Centre for Educational Research and Innovation,* an international publication on innovative learning environments in Finland in 2009. One of the evaluation reports pertains to the cultural path of the city of Kuopio in central Finland.[28] Two other reports deal with students' democracy education and a village school as part of its historical environment. The focus of the reports was to study how the activity supports OECD 21st century skills: creativity, critical thinking, communication and collaboration., Design-oriented pedagogy, DOP, also stresses 21st century skills learned in different culture and nature environments. A study of museum objects as learning objects has been done at the University of Eastern Finland.[29] Studying in different environments has an impact in particular on one's identity and metacognitive skills. This might be the reason why it is quite a challenge to measure individual learning outputs outside classroom.

Learning in museums has been internationally researched since the 1980s, starting in England and the United States by, among others: Hooper-Greenhill, Hein, Falk & Dierking, and Foutz.[30] Nicole Gesché-Koning[31] has compiled a bibliography of museum education literature from the year 1952 to the year 2006 within CECA.[32] In the 2000s, the research work was broadened to include Australia, other European, South American and Nordic countries.[33]

There have been signs of interest into research concerning the complexity of formal and informal learning in Finland. One example of this is a research project funded by the Minister of Education and Culture in the years 2008–2010, titled *Learning Bridges – Learning and Teaching in the Intersection of Formal and*

Informal Learning Environments at the University of Helsinki.[34] At the beginning of 2011, a five-year research project called *OmniSchool*[35] was started at the Research Unit for Teaching and Learning at the University of Helsinki. The mission of the project is to support the agency of learning environment developers within the context of academic research. The project carries out the idea of "omnipresent" learning. It creates an interactive network for learning environment developers as well as develops new learning culture and participatory pedagogies that help cross boundaries between the school and surrounding society.

FUTURE PROSPECTS FOR PUBLIC INSTITUTIONS AS LEARNING ENVIRONMENTS

Finland is a small, organized and fairly homogenous country. This is why we have good prospects for bring society into schools and vice versa. Our school network and our public services are geared to be accessible to all Finns, regardless of geographic location or socio-economic background. Increasing multiculturalism and the principle of economic efficiency pose challenges, but they are also creating new perspectives and ways to act. Both schools and public institutions are in a position where they cannot develop their services solely from their own starting points. Their resources need to be pooled. Funding systems also need to be developed in collaboration across administrative borders.

Both schools and public institutions need to build up networks and benefit from each other's multi-professional know-how in their educational roles. The high level of academic education of public institution workers and both primary school and subject teachers in Finland is a good base to continue the work (see Niemi's Chapter 2).

The knowledge of Finnish subject teachers in their disciplines can help in the search to find a common language to use with the experts of various fields in institutions. The development of collaboration will, however, require teacher training in the use of public institutions, instruction in information management and updating skills.

Teachers need to be informed about the digital materials and their applications provided by public institutions. These materials are meant to make cultural heritage more accessible in all parts of Finland. For example, a national search service, Finna.fi, provides free access to material from Finnish museums, libraries and archives. Finland's National Board of Antiquities published 700 photos in Flickr especially for educational use in celebrating Finland's upcoming one hundred years of independence in 2017. The material is free for teachers and students to use in innovative ways in education. The public institutions have to join digital services like EduCloud Alliance,[36] a national cloud service for schools. However, digitalised material and Internet environments are not the same as real places, things and artefacts.

Solutions are needed for challenges such as how to make the actual visits of large school groups more flexible and how to make schools' schedules more flexible so they can incorporate visits as a natural part of education.

The lack of formal university education for educators in public institutions can be seen as differing among educators in museums, libraries and archives. There is a need for developing the qualifications for educators in outdoor learning environments. This lack has already been noticed internationally by CECA, which is working to create standards for museum education.

The most important part of cooperation is having the same goal: to support children and young people in their individual growth and development. Public institutions as learning environments feed student interest in their cultural heritage and strengthen their identities. Training for the use of different sources of information and critical thinking fosters active citizenship. The use of public institutions as learning environments in basic education encourages students to use them after the formal education has been completed. In this way, during basic education one can support the idea of life-long learning and the concept of the ubiquity of learning.[37] A school is not a unit separated from society. The school is one of the agents, which should be well nurtured by different learning environments.

NOTES

1 Perusopetuksen opetussuunnitelman perusteet 2014 (National Core for Basic Education 2014).
2 Kivilaakso & Laakkonen (2014).
3 In this chapter library institutions mean municipal public libraries.
4 Libraries.fi, Finnish library services (2015).
5 Statistics of Finland (2015).
6 The Association of Finnish Local and Regional Authorities AFLR, (2015).
7 Official Statistics of Finland, OSF (2010).
8 National Core Curriculum for Basic Education (2004).
9 UNESCO School Library Manifesto (1998).
10 The Information Strategy for Education and Research for Years 2000–2004 (1999).
11 Kekki, Sulin & Wigell-Ryynänen (2009).
12 The Finnish Museum Act (1992); ICOM code of Ethics (2006).
13 Finnish Library Act (1998).
14 Library Strategy 2010. Policy for Access to Knowledge and Culture (2003).
15 History of Guidning (2010).
16 Järnefelt (2009).
17 Lampinen (2010).
18 Sallmén (2009, 2010).
19 Tornberg (2015).
20 Kinanen (2015).
21 Library Strategy 2010. The Policy for Access to Knowledge and Culture (2003), Kekki et al. (2009).
22 Library Strategy 2010. The Policy for Access to Knowledge and Culture (2003).
23 Kulttuurivoltti [Culture Leap] (2015).
24 Art Arc, City of Tampere (2015).
25 The fourth largest city in Finland, 213 250 inhabitants (31.8.2015).
26 Tornberg & Venäläinen (2008).

[27] For example, Hakkarainen, Lonka & Lipponen (2004); Kumpulainen, Krokfors, Lipponen, Tissari, Hilppö & Rajala (2010).
[28] Mikkola, Rajala, Tornberg & Kumpulainen (2011).
[29] Vartiainen, H. (2014).
[30] Hooper-Greenhill (1994, 1995, 2007); Hein (1998); Falk & Dierking (2000); Falk, Dierking & Foutz (2007).
[31] Gesché-Koning (2007).
[32] CECA, Committee for Education and Culture Action, is a sub-committee for International Council of Museums (ICOM). The committee focuses on museum education and learning in museums.
[33] See more for examples: Kelly (2007); Illeris (2006); Ljung (2009); Insulander (2010); Rogers (2006) or CECA conference publications.
[34] Kumpulainen et al. (2010); See also Rajala, Hilppö, Kumpulainen, Tissari, Krokfors and Lipponen (2010).
[35] OmniSchool (2015).
[36] EduCloud Alliance (2015).
[37] Kumpulainen et al (2010).

REFERENCES

Art Arc. Culture program. City of Tampere. Retrieved November 8, 2015, from http://www.tampere.fi/taidekaari/esittely/english.html

EduCloud Alliance. (2015). Retrieved November 8, 2015, from https://portal.educloudalliance.org/

Falk, J. H., & Dierking, L. D. (2000). *Learning from museums: Visitor experiences and the making of meaning.* Walnut Creek, CA: Alta Mira Press.

Falk, J. H., Dierking, L. D., & Foutz, S. (Eds.). (2007). *In principle, in practice: Museums as learning institutions*. Lanham, MD: Alta Mira Press.

Finnish Library Act, 4.12.1998. Retrieved April 26, 2011, from http://www.fla.fi/flj/news/libact.htm

Finnish Museum Act, 3.7.1992/729. Retrieved November 8, 2015, from http://www.finlex.fi/fi/laki/ajantasa/1992/19920729

Gesché-Koning, N. (2007). *Museums and education ICOM-CECA publications 1952–2006*. Groeninghe: ICOM Education 20.

Hakkarainen, K., Lonka, K., & Lipponen, L. (2004). *Tutkiva oppiminen: järki, tunteet ja kulttuuri oppimisen sytyttäjinä* [Progressive Inquiry Learning: Brains, Emotions and Culture as Activator for Learning]. Porvoo: WSOY.

Hein, G. E. (1998). *Learning in the museum*. London: Routledge.

History of Guidning. Pedafooni 2B. (2010). Helsinki: Museopedagoginen yhdistys Pedaali ry.

Hooper-Greenhill, E. (1994). *The educational role of the museum. Leicester readers in museum studies*. London: Routledge.

Hooper-Greenhill, E. (Ed.). (1995). *Museum, media, message*. London: Routledge.

Hooper-Greenhill, E. (2007). *Museums and education: Purpose, pedagogy, performance*. London: Routledge.

ICOM code of Ethics. (2006). Retrieved April 21, 2011, from http://icom.museum/fileadmin/user_upload/pdf/Codes/code2006_eng.pdf

Illeris, H. (2006, March). Museums and galleries as performative sites for lifelong learning: Constructions, deconstructions and reconstructions of audience positions in museum and gallery education. *Museum and Society*, *4*(1), 15–26.

Insulander, E. (2010). *Tinget, rummet, besökaren: Om meningsskapande på museum.* Doktorsavhandling. Institutionen för didaktik och pedagogiskt arbete. Stockholm: Stockholms universitet.

Järnefelt, H. (Ed.). (2009). *The Oak of Finland 2005–2008.* English summary in the end of the book. Retrieved April 29, 2011, from http://www.edu.fi/download/124538_raportti_2005_2008.pdf

Kekki, K., Sulin, H., & Wigell-Ryynänen, B. (2009). *Opetusministeriön kirjastopolitiikka 2015. Yleiset kirjastot. Kansalliset strategiset painoalueet* [Library Policy of the Ministry of Education and Culture. Public Libraries. National Focus Areas in the Strategy]. Opetusministeriön julkaisuja 2009:32.

Kelly, L. (2007). *Visitors and learners: Investigating adult museum learning identities*. Sydney: University of Technology.

Kinanen, P. (Ed.). (2015). *Museot ja mediakasvatus* [Museums and Media Education]. *Suomen museoliiton julkaisuja 68.* Helsinki: Suomen museoliitto.

Kivilaakso, E., & Laakkonen A.-M. (Eds.). (2015). *Finnish museum statistics 2014*. *National Board of Antiquities*. Helsinki: Multiprint.

Kulttuurivoltti [Culture Leap]. (2015). *Suomen kulttuuriperintökasvatuksen seura* [The Finnish Association of Cultural Heritage Education]. Retrieved November 8, 2015, from http://www.kulttuuriperintokasvatus.fi/kulttuurivoltti/

Kumpulainen, K., Krokfors, L., Lipponen, L., Tissari, V., Hilppö, J., & Rajala, A. (2010). *Learning bridges – Toward participatory learning environments.* Helsinki: Yliopistopaino.

Lampinen, M. (2010). *Kulttuurin laajakaista 2004–2009* [The Broadband of Culture 2004–2009]. Raportti. Retrieved April 29, 2011, from http://www.kulttuurinlaajakaista.fi/site/?lan=1&mode=tiedotteet&tiedote_id=40

Libraries.fi, Finnish library services. (2015). Retrieved November 8, 2015, from http://www.libraries.fi/

Library Strategy 2010. Policy for Access to Knowledge and Culture. (2003). Publications of Ministry of Education 2003:9.

Ljung, B. (2009). *Museipedagogik och erfarande*. Doktorsavhandling. Institutionen för didaktik och pedagogiskt arbete. Stockholm: Stockholms universitet.

Mikkola, A., Rajala, A., Tornberg, L., & Kumpulainen, K. (2011). Kuopio Culture Path Program. In *Innovative learning environments*. Paris: OECD/CERI.

National Core Curriculum for Basic Education. (2004). *National core curriculum for basic education intended for pupils in compulsory education*. Vammala: National Board of Education.

Official Statistics of Finland (OFS). (2010). [e-publication]. Retrieved March 12, 2011, from http://www.tilastokeskus.fi/til/pop/index_en.html

OmniSchool. (2015). Retrieved November 18, 2015, from http://omnischool.fi/

Perusopetuksen opetussuunnitelman perusteet 2014 [National Core Curriculum for Basic Education 2014]. Finland: National Board of Education. Retrieved November 8, 2015, from http://www.oph.fi/saadokset_ja_ohjeet/opetussuunnitelmien_ja_tutkintojen_perusteet/perusopetus

Rajala, A., Hilppö, J., Kumpulainen, K., Tissari, V., Krokfors, L., & Lipponen L. (2010). *Merkkejä tulevaisuuden oppimisympäristöistä* [Signs for Future Learning Environments]. Vammala: Opetushallitus.

Rogers, R. (2006). Whose space? Creating the environments for learning. In C. Lang, J. Reeve, & V. Woollard (Eds.), *The responsive museum. Working with audiences in the twenty-first century*. Hampshire: Ashgate Publishing Limited.

Sallmén, P. (2009). Mediakasvatusta vai mediasivistystä kirjastosta [Media Education or Media Cultivation in the Library]. In S. Verho (Ed.), *Mediakasvatus kirjastossa* [Media Education in the Library]. Espoo: BTJ.

Sallmén, P. (2010). *Lapset, media ja kirjastot*. *Hankkeen kokonaissuunnitelma ja osioiden kuvaukset* [Children, Media and Libraries. Project description]. Unpublished copy by the Finnish Library Association.

Statistics of Finland: Pre-primary and comprehensive school education. (2015). Retrieved November 8, 2015, from http://www.tilastokeskus.fi/til/pop/kas_en.html

The Association of Finnish Local and Regional Authorities AFLR. (2015). Retrieved November 8, 2015, from http://www.localfinland.fi/en/Pages/default.aspx

Tornberg, L. (2015). *Ensiksi tahtoa, sitten osaamista & välineitä. Selvitys museoiden mediakasvatuksesta 2014* [First good will, after this skills & technology. Report of Media Education in Finnish Museums in 2014]. Finland: Suomen museoliiton julkaisuja. Retrieved November 20, 2015, from http://www.museoliitto.fi/doc/Selvitys_museoiden_mediakasvatuksesta_2014.pdf

Tornberg, L., & Venäläinen, P. (2008). Kulttuuriperinnön opetuksesta ja oppimisesta [Teaching and learning cultural heritage]. In P. Venäläinen (Ed.), *Kulttuuriperintö ja oppiminen* [Culture Heritage and learning] (Suomen museoliiton julkaisuja 58). Jyväskylä: Gummerus Kirjapaino Oy.

UNESCO/IFLA School Library Manifesto. (1998).
Vartiainen, H. (2014). *Principles for design-oriented pedagogy for learning from and with museum objects* (Dissertations in Education, Humanities, and Theology. No 60). University of Eastern Finland, Finland.

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18. LUMA CENTRE FINLAND

Joy of Science for All – Bringing Science, Math and Technology Together

ABSTRACT

The Finnish youth's competence in mathematics and natural sciences is top-level among the OECD countries. However, it has been found that 15-years-old youths' level of interest towards these subjects is quite low according to the PISA results. The LUMA Centre Finland serves as a collaborative network between universities, schools, associations and the business sector. One of its main goals is to support the interest towards science, technology, engineering and mathematics (STEM) among children and youth on all levels of education, from early childhood education to higher education. The operational mode of the centre is based on the latest scientific knowledge on education. It provides a versatile selection of activities for children and youth as well as their teachers. Almost all services and events are free of charge for the participants. The content and implementation of all activities has been designed to support and maintain the interest towards the subject. At present, a research on the effectiveness of the activities is being done within the centre. Feedback has been gathered from all the activities, and accordingly the goal to guide children and youth towards the joy of learning has been reached

Keywords: science education, mathematics education, developing science and mathematics education, teacher in-service training

AROUSING AND SUPPORT OF INTEREST

Despite the fact that Finnish high-school students perform well in science and mathematics (OECD, 2010), their interest rate towards these subjects is among the lowest in the OECD countries (Arinen & Karjalainen, 2007). In order to encourage pupils and students to study natural sciences in high school and institutions of higher learning, efforts should be made to arouse and support their interest towards these subjects at the earliest possible stage. Accordingly, the main aim of the LUMA Centre Finland (LUMA stands for the Finnish terms for natural sciences and mathematics) is to arouse and support this interest by different activities. Finland needs more enthusiastic and skilled professionals in the various fields of natural sciences.

H. Niemi et al. (Eds.), Miracle of Education, 267–275.

The LUMA activities have been planned and designed according to previous studies on interest and its support. Interest towards the subject has positive effects on learning (Krapp, 2002; Ainley et al., 2002). Various studies state that these effects have to do with the quality and quantity of learning. Accordingly, the students' interest towards natural sciences, mathematics and technology has a significant effect on learning results (Osborne et al., 2003). According to Shiefele et al. (1992), the effect of interest is more significant in the learning results of natural sciences than that of other subjects.

The concept of interest is defined as a phenomenon that comes up in the human interaction with one's environment (Krapp, 2002). Interest is an integral part of natural motivation, but it is not essential in all forms of motivation (Deci, 1992). Unlike other parts of motivation, interest is always targeted towards a certain matter or object (Krapp et al., 1992). Activities triggered by interest are pleasurable (Krapp et al., 1992). If the activity is especially pleasurable, it is possible to experience flow state, during which the individual engages fully to achieve the goal. When a student is interested in something, one forms a close relationship to the subject and learning leads to in-depth learning, and the ability to apply the acquired skills and knowledge to new situations (Lavonen et al., 2005).

Interest can be divided into two main branches: individual interest and situational interest created by the environment. The personal interest can be seen as stable and it is often linked to increasing knowledge and positive experiences. The situational interest is linked to a certain activity and is experienced by several people at the same time (Krapp et al., 1992). Individual interest is often seen more favourable on learning results than situational interest, but arousing individual interest in a class room environment has special challenges compared to situational interest. There can be over 20 students in a class; each of them having their more or less differing individual interests, therefore catering for everyone's individual interest is demanding and time-consuming for the teacher. The alternative is a lesson that supports situational interest that acknowledges the interests of every student equally (Hidi & Andersson, 1992).

Typically, individual interest is aroused slowly but it is often long-lasting. Individual interest can be classified as latent or actualized (Hidi & Andersson, 1992). Latent interest can then be re-categorised into emotion or value-based interest. Emotion-based interest is linked to the positive feelings connected with the subject matter. Value-based interest has to do with the personal significance created by the subject. The central factors in actualized interest are the interest towards the content and will to learn for the sake of the subject itself (Schiefele, 1991).

Situational interest is aroused often quickly by an impulse created by the environment and it equally may or may not have an effect on the arousal of long-lasting interest (Hidi & Andersson, 1992). The turn from situational interest into individual interest requires three steps: the catch-facet of interest has to develop into hold-facet after which the level of lasting individual interest can be acquired (Krapp, 2002). For learning, it is important to maintain interest. The interest can

be maintained, if the content of education is purposeful for the student's goals and values in the long run (Mitchell, 1993).

The student's interest towards natural sciences, technology and mathematics can be aroused with an active learning environment (Hidi & Renninger, 2006). The concept of learning environment is used to describe a place, facility, community, procedure or material that advances learning. Learning environment can be either a physical or a virtual space (Manninen & Pesonen, 2007). The strength of the activities in the LUMA Centre Finland lies in versatile and student-oriented learning environments.

LUMA CENTRE FINLAND

LUMA Centre Finland is an organised umbrella network of the following regional LUMA centres operating in conjunction with universities or university consortiums:

- Central Finland LUMA Centre (University of Jyväskylä)
- LUMA Centre Aalto (Aalto University)
- LUMA Centre Lapland (University of Lapland)
- LUMA Centre of Central Ostrobothnia (Kokkola University Campus Chydenius)
- LUMA Centre of Southwestern Finland (University of Turku)
- LUMA Centre of the University of Eastern Finland
- LUMA Centre of the University of Helsinki
- LUMA Centre of the University of Oulu
- LUMA Centre Päijät-Häme (Lahti University Campus)
- LUMA Centre Saimaa (Lappeenranta University of Technology)
- LUMA Centre Vaasa (University of Vaasa)
- LUMA Centre Åbo Akademi
- Tampere LUMATE Centre (University of Tampere and Tampere University of Technology)

The LUMA Centre Finland strengthens and promotes their collaboration on national and international level. The goals of the LUMA Centre Finland are to reach a high level of knowhow in STEM among pupils, students and teachers and to ensure a sufficient number of STEM professionals all across Finland. The purpose of LUMA Centre Finland and its member centres is to

- inspire and encourage girls and boys aged 3–19 to study and get involved in mathematics, science, IT and technology and to apply for further education in STEM fields all across Finland
- promote awareness among the parents of children and youth about the significance of studying STEM subjects and the professional opportunities they provide
- support education research and the lifelong learning and education of future and current STEM teachers
- increase the visibility of STEM subjects in society via events and the media
- support the research-based development of STEM teaching

LUMA Centre Finland operates in accordance with an annual plan of action and a national strategy verified by the Board of the Centre in co-operation with its various interest groups across Finland.

LUMA CENTRE FINLAND SUPPORTS TEACHING, LEARNING AND INTEREST

The goal of the centre is to support the learning and teaching of STEM on all levels of education, from pre-school education to higher education. The aim of the all activities to arouse and support the children and youth's interest towards these STEM subjects. The teacher's role is extremely important in developing a positive attitude towards natural sciences and mathematics in children and youth. Therefore the centre puts emphasis on the lifelong learning of teachers. The base for the lifelong learning is created already during the training of pre-service teachers. The LUMA activities have been integrated into the training of subject teachers. LUMA Centre Finland also provides in-service training for teachers. There are also possibilities for networking and self-development through the centre's online services.

The teacher education is strongly integrated into the operations of the centre. The vast and versatile library services, material banks, and online services help teachers already on pre-service stage to find materials and resources to support their prospective careers. The pre-service subject teachers have an active role in producing teaching materials and ideas to benefit all teachers of STEM subjects in Finland based on the latest research information.

During their studies, the LUMA Centre Finland provides the pre-service teachers of natural sciences and mathematics with an excellent opportunity to practice interaction with pupils and students. The centre arranges science clubs, camps and classes for children and youth the year round. The guides of these activities are pre-service teachers. Authentic experiences of regular sessions with student and pupil groups are valuable in acquiring skills to guide and direct groups of children and youth.

STEM labs – Authentic and Active Learning Environments to Support Children, Youth and Teachers

LUMA Centre Finland supports pre- and in-service teachers as well as the children and youth's interest towards natural sciences and mathematics with special STEM labs. The labs provide the teachers with an opportunity to bring their students to conduct laboratory experiments and activities in the authentic facilities. The labs can also be used to organise in-service training for teachers, and they also support subject teacher training by providing the pre-service teachers with the possibility to practice instructing activities for visiting groups. All activities in science classes are free of charge for the visitors. Thus, each school in the region has an equal opportunity to participate in the activities.

ChemistryLab Gadolin as an Example of the Versatile Learning Environment Supporting Learning and Interest

ChemistryLab Gadolin within the University of Helsinki is an active learning environment that offers versatile services for schools and educational institutes in all levels. Its main function is to offer active study visits for student groups with possibilities to do experimental chemistry in an authentic university laboratory, and familiarize themselves with the possibilities of molecular modelling with computers, meet scientists and visit their laboratories, and get information on the field of chemistry, and possibilities to study it during the general presentation and tour on the campus. The study visits are free of charge for student groups. ChemistryLab Gadolin is open for children and youth of all ages, and the content of visit is planned with each group, according to their individual educational goals.

ChemistryLab Gadolin's goal is to support the learning and teaching of chemistry and increase interest towards the subject, and raise awareness of the vast possibilities in the field of chemistry, provide information on education possibilities and careers and give positive experiences of chemistry education.

ChemistyLad Gadolin operates in close collaboration with different organisations. The University of Helsinki, industries, schools, and educational institutes work together to reach the mutual goal. ChemistryLab Gadolin was named after a Finnish chemist Johan Gadolin (1760–1852).

The educational goals of ChemistryLab Gadolin are based on the Finnish National Core Curricula, supporting the content of chemistry lessons on different levels with the latest research information on chemistry learning and teaching to increase know-how on chemistry, and develop chemical education.

The aim is to support relevant and sensible teaching, learning and studying of chemistry in different groups of pupils, students, teachers and collaborative partners. By creating positive learning experiences, chemistry is promoted in positive and versatile ways, and the image of chemistry is made more appealing.

To reach these goals, the workshops for all visits are tailored according to the group's needs. Several laboratory and modelling workshops are designed individually to suit each visitor group. The aim is that the activities combine the up-to-date research, versatile applications of chemistry and their importance to the infrastructure, and information on career options in the field of chemistry.

Different learning environments meet in ChemistryLab Gadolin. Learning takes place in authentic facilities of the university. In addition to actual learning environment, Gadolin also offers virtual learning environment. Computer-based modelling and animation programmes visualize the micro level chemistry in a meaningful way and the web-based learning platforms support learning. Meeting scientists and interacting with them is one example of the social side of the learning environments ChemistryLab Gadolin offers.

Webzines and Virtual Learning Environments

LUMA Centre Finland publishes webzines of which *LUMA.fi* is published in Finnish and partly in English for teachers, parents and others who are interested, *Jippo* in Finnish for children, and *Luova* in Finnish for youth as well as the *MyScience* in English.

The aim of the webzines is to support teaching and learning of STEM subjects, and provide activities. They function as interactive forums where children, youth, and their teachers can communicate and get their own articles and ideas published. The social environment within the webzines encourages the readers to engage in natural sciences and mathematics.

Over the years, the webzines have reached tens of thousands of children, youth, and teachers. In the webzines targeted for children and youth, the most popular content is formed by try-this-at-home scientific experiments and tasks that are published on weekly basis. The interactivity can be seen in answers and comments on each website, and online discussions induced by the topics.

Jippo science webzine also supports elementary school teachers by providing them with material for scientific and mathematical tasks and experiments. These tasks have been designed based on the Finnish National Core Curriculum.

The latest innovation in the field of LUMA Centre's virtual learning environments is virtual science club for children and families. Non-formal science education at homes is new and very little studied area (Eshack, 2007). LUMA Centre's virtual club is a result from design-based research that was conducted in 2013–2015. Virtual clubs are independent on time and place. Families can choose the most suitable time to perform the club activities at homes or other environments. Virtual clubs offers the parents with pedagogical support to help children experiment and learn. Parents are also provided with information about phenomena and parents interest and motivation is supported to ensure that they will continue the club with children.

Camps and Clubs – Interdisciplinary Learning Environments for Children and Youth

STEM camps and clubs are informal learning environments. Informal learning environment refers to all learning environments outside the school environment, i.e. libraries, museums, meetings with specialists, camps, and clubs. Activities in informal learning environments can be used to increase interest towards natural sciences and mathematics among children and youth (Bell, Lewenstein, Shouse, & Feder, 2009).

From the start, LUMA Centre Finland has organized popular afterschool clubs and summertime camps for children and youth.

The clubs for children are organized in school or university premises, and one session is held typically once per week for six weeks period, lasting 1 to 1.5 hours each time. The clubs are free of charge and they are guided by subject teacher

students. Contents are based on the latest research information and the clubs are designed to support the basis of the National Core Curricula. The approach to content is often made innovative and interesting to the children and youth by means that studies have shown to be effective, e.g. information and communication technology (Lavonen, 2008).

LUMA Centre Finland also arranges free club gatherings for the youth. The aim of these *Dyna-meets* clubs is to present the latest research information on STEM, support interest in these subjects, and give information on studying and career options and arrange opportunities to network with like-minded peers.

Information and communication technology is strongly visible in LUMA activities for children and youth. Using different computer-based visualizing and animation tools is common during the clubs and camps. The participants of science camps have also told about their experiences in webzines' camp blogs. Virtual learning platforms are also used in some of the activities, for example in pondering different tasks before the science camp.

The activities in the camps and clubs provide interdisciplinary approaches to STEM and other subjects as well. These approaches include mathematics of art and chemistry in cooking. LUMA Centre Finland has long traditions in linking different public spheres and museums to the teaching of science and mathematics. In 2008, the centre published a series of concrete ideas to link museums and art and cultural education to STEM. The series was published in the centre's e-mail newsletter for teachers.

FINAL WORDS

LUMA Centre Finland has established many activities and events targeted to children, youth, and their teachers. The activities of the regional LUMA Centres cover the whole of Finland. The webzines reach a number of those interested in natural sciences and mathematics nationally and internationally. LUMA Centre Finland's efforts to increase interest and joy of learning have paid off. This can be seen in the popularity of different forms of activities and in gathered written feedback. In the future, LUMA Centre Finland will focus is operations particularly in the research of operational models that have been noticed to be effective. The functionality of STEM labs, clubs and camps is already being studied. Also, the effects of LUMA activities on the lasting interest towards STEM among children and youth will be mapped. The operational mode of LUMA Centre Finland is constantly being developed according to the latest research information in order for it to support the children and youth's interest towards STEM and lifelong learning of the STEM teachers in the best possible way.

The aim of the LUMA Centre Finland is to answer the challenges of constantly evolving information society: teacher has to stay up-to-date with the latest applications of the classroom technology and find best ways to use them to support teaching. To achieve this, the centre has invested in high quality in-service education

and teaching materials in which information and communication technology have a significant role in supporting the lifelong learning of teachers. In the future, a variety of videos, simulations and animations suitable to teaching will be produced and published in LUMA Centre Finland's webzines.

LUMA Centre Finland will constantly develop its functions towards ensuring the joy of learning and achievement in children and youth, because they are the future.

REFERENCES

Ainley, M., Hidi, S., & Berndorff, D. (2002). Interest, learning, and the psychological processes that mediate their relationship. *Journal of Educational Psychology, 94*(3), 545–561.

Arinen, P., & Karjalainen T. (2007). *PISA 2006 ensituloksia 15-vuotiaiden koululaisten luonnontieteiden, matematiikan ja lukemisen osaamisesta.* Helsinki: Finnish Ministry of Education.

Bell, P., Lewenstein, B., Shouse, A. W., & Feder, M. A. (Eds.). (2009). *Learning science in informal environments: People, places and pursuit.* Washington, DC: The National Academy Press.

Eshach, H. (2007). Bridging in-school and out-of-school learning: Formal, non-formal, and informal education. *Journal of Science Education and Technology*, *16*(2), 171–190.

Gilbert, J. K. (2006). On the nature of "Context" in chemical education. *International Journal of Science Education, 28*(9), 957–976.

Hidi, S., & Renninger, K. (2006). The four-phase model of interest development. *Educational Psychologist*, *41*(2), 111–127.

Krapp, A., Hidi, S., & Renninger, K. A. (1992). Interest, learning, and development. In K. A. Renninger, S. Hidi, & K. Krapp (Eds.), *The role of interest in learning and development* (pp. 3–25). Hillsdale, NJ: Erlbaum.

Lavonen, J. (2008). Learning and the use of ICT in science education. In P. Demkanin, B. Kibble, J. Lavonen, J. Mas, & J. Turlo (Eds.), *Effective use of ICT in science education.* Edinbourgh: University of Edinbougrh, School of Science.

Lavonen, J., Juuti, K., Uitto, A., & Meisalo, V. (2005). Attractiveness of science education in the Finnish comprehensive school. In A. Manninen, K. Miettinen, & K. Kiviniemi (Eds.), *Research findings on young people's perceptions of technology and science education. Mirror results and good practice* (pp. 5–30). Helsinki: Technology Industries of Finland.

Manninen, J., & Pesonen, S. (2007). *Oppimista tukevat ympäristöt: Johdatus oppimisympäristöajatteluun*. Helsinki: Finnish National Board of Education.

OECD. (2010). *PISA 2009 results: What students know and can do – Student performance in reading, mathematics and science* (Vol. I). Paris: OECD. Retrieved from http://dx.doi.org/10.1787/9789264091450-en

Osborne, J., Simon, S., & Collins, S. (2003). Attitude towards science: A review of the literature and its implications. *International Journal of Science Education, 25*(9), 1049–1079.

Pilot, A., & Boulte, A. (2006). The use of "Contexts" as a challenge for the chemistry curriculum: Its successes and the need for further development and understanding. *International Journal of Science Education, 28*(9), 1087–1112.

Schiefele, U. (1991). Interest, learning, and motivation. *Educational Psychologist, 26*(3&4), 299–323.

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EPILOGUE

How to be Prepared to Face the Future?

How to best ensure a high quality of education is an urgent topic in most countries. For decades, learning and education have typically been concepts considered in terms of the educational sciences and psychology. Now they are more and more political concepts. A high quality of education is seen in many forums as a key factor for the national economy, global competiveness, and the welfare of society. Discussions in the OECD have also highlighted how high qualities of education and health are related and how active citizenship is linked to education (OECD, 2010). The message from the OECD researchers is, "The evidence to date suggests that features of the educational experience may be very important in the formation or destruction of personal resilience and that this resilience is an important element in the capability of individuals to achieve good health outcomes or manage ill-health."

UNESCO (2004) claims that access to good-quality education as a human right and supports a rights-based approach to all educational activities (Pigozzi, 2004). The UNESCO report (2004, p. 30) advocates:

> Although opinions about quality in education are by no means unified, at the level of international debate and action three principles tend to be broadly shared. They can be summarized as the need for more relevance, for greater equity of access and outcome and for proper observance of individual rights. In much current international thinking, these principles guide and inform educational content and processes.

The European Union has published numerous documents and declarations on the importance of high quality learning and has the emphasized the key role teachers play in this (Commission of the European Communities, 2007). In 2010, the European Commission published the document "Improving Teacher Quality: the EU agenda" that summarizes the priorities for improving Teacher Education that were defined by Ministers of Education in the Council Conclusions of November 2007, 2008 and 2009. It emphasizes the activities of teachers as high quality professionals and school leaders as key aspects of Europe's strong pedagogical mission.

The Finnish educational system has been successful when measured using almost any type of indicator. Investments have been at a moderate level but they have

H. Niemi et al. (Eds.), Miracle of Education, 277–283.

produced excellent outcomes when compared to investments made in many other countries. This book has introduced educational policy and practice in schools as well as teacher education. The chapters have described what has been done so far. The big question is how Finish society and education can keep high quality learning in schools and also have excellent and committed teachers in the future. The system has been developed over the last 35 years, and Finnish society has changed very much from those early years when the national comprehensive school system with its strong emphasis on equity was conceived and implemented.

As a conclusion to the chapters in this book, we are looking at the main challenges the Finnish educational system will face in the coming years. We will reflect on them from three specific perspectives: (1) How to promote a common and equal society through education; (2) How to use evaluations as tools for educational improvement; and (3) How to support life long learning in teaching professionals.

A COMMON AND EQUAL SOCIETY THROUGH EDUCATION

The concepts *equal* and *equity* are often used with the following meanings: Equal refers to an ideal and aim that people should have the same rights as each other without consideration of their sex, status or race. Equity is a policy-making concept that embodies the quality of being fair and reasonable in a way that gives equal treatment to everyone. The Finnish educational policy has aimed to operate under an umbrella that encompasses both meanings. The educational policy has systematically reinforced practices that provide equal opportunities for different learners.

In the future, Finnish society will face several challenges related to ensuring current high quality learning opportunities for all learners as Finland becomes a multicultural society. It is important to ensure that everyone will have equal opportunities for education and learning. Aspects related to multicultural education, for example, mother tongue teaching, religious education, and location of multicultural pupils in all the schools in a city, are continuously considered in Finnish educational decision-making.

Another threat is the diversity in the provision of education, by the municipalities who are responsible for the quality of education at the local level. There are big differences in their financial bearing capacity, and this has clear consequences for educational services. Diversity and different learners have to be taken into account by identifying and supporting them at the early stages of their difficulties. Important tools are organizing special needs education at local schools and classrooms, and offering multi-professional support in schools through pupil welfare groups (consisting of a principal, special education teacher, school psychologist, school nurse and school social worker). Finnish schools subscribe to an inclusive policy for organizing special needs education. The aim is to organize support for all learners – not by making problem students repeat classes, but by keeping all the youngsters with their peers as they progress through the educational system.

EVALUATIONS FOR IMPROVEMENT

The Finnish evaluation policy has been enhancement led, which means that evaluation is a tool for improvement. We have used summative and formative evaluation modes and techniques to obtain feedback and information about effectiveness of teacher education, learning outcomes of schools and the well-being of teachers. We do not have standardized achievement testing, value added teacher scoring based on student progress, an inspectorate, or probation for teachers. The whole system is based on the idea of teachers as high quality professionals and trust in their work. This approach is totally opposite of that used in any other country. A consequence of this policy is that the teaching profession is very popular and one of the most attractive academic programmes in universities (VAKAVA Statistics, 2014).

Finland wants to promote evidence-based educational policies and practices. We participate in international comparative measurements, for example PISA, AHELO, TIMSS, and SITE. Policy-makers and practitioners need valid and relevant scientific research as well as other evidence sources on which their decision-making can be based. Evidence is also created by practitioners: through their reflection and sharing of experiences. They need open and analytical minds to produce valid outcomes and communities, which support their knowledge creation. Educational situations and decisions are always very complex phenomena and the data from these situations should also be gathered from multidisciplinary and multi-professional perspectives.

> For decades, the Finnish orientation toward teacher education has been to the development of a research-based professional culture. The critical scientific literacy of teachers and their ability to use research methods are considered to be crucial. Accordingly, Finland's teacher education programmes require studies of both qualitative and quantitative research traditions. The aim of these studies is to train students to find and analyze problems they may expect to face in their future work. Research studies provide students with an opportunity to complete an authentic project, in which students must formulate a problem in the educational field, be able to search independently for information and data related to the problem, elaborate on them in the context of recent research in the area, and synthesize the results in the form of a written thesis. They learn to study actively and to internalize the attitude of researchers as they do their work. (Niemi & Jakku-Sihvonen, 2006, pp. 36–37)

In order to achieve these goals, the Finnish principals and trainers should have the competence to produce, assess, and use evidence from their work. These abilities should be guaranteed in their professional education and in-service training. Teachers need evidence in order to promote student learning; principals need the latest research and best evidence for long-term strategic planning for their schools and in order to fulfill their role as pedagogical leaders. Principals are responsible

for creating suitable working conditions for teachers and empowering them to work as high-level professionals. The aim is that teachers should be able to internalize a research-orientated attitude towards their work. This means that teachers should take an analytical and open-minded approach to their work, that they should be able to draw conclusions based on their observations and experiences and develop teaching and learning environments in a systematic way.

SUPPORTING THE LIFE-LONG LEARNING OF TEACHERS

Although Finnish teachers are seen as high–quality professionals and their research-based MA-level teacher education gives them tools for professional development throughout their career, they still need support for their work and various possibilities for in-service teacher education. Teachers need to develop their knowledge of subjects and teaching methods as well as teaching materials and equipment in order to teach effectively and support the learning processes of their pupils. Teachers also benefit from in-service education related, e.g., to learning difficulties, curriculum processes, multicultural education, and pedagogical leadership at schools. The range of both topics and methods in professional development courses should be wide and innovative. Technology-enhanced in-service teacher education in the form of a collaborative learning process with teaching peers would provide several competencies for teachers at the same time (cf. Darling-Hammond & McLaughlin, 1995). The topics and methods should also be generated from the direction of teachers, not only top-down from ministries and departments of education. In-service teacher education should offer such knowledge and skills that would be directly transferable to classroom work with pupils (Lipponen & Kumpulainen, 2010; Lortie, 1975/2002).

In Finland, we do not have a comprehensive in-service teacher education system for teachers, but rather we have many institutions, like open universities, centres for continuing education, folk high schools, teacher trade organizations and unions, etc., that organize courses and further education for teachers. Finnish teachers participate very actively in these and are very enthusiastic to develop their professional capacities. Teachers also educate themselves professionally by participating in various pedagogical development and research projects organized by university researchers, the National Board of Education, or the Ministry of Education and Culture and local schools. These are often very fruitful collaborators for all the participants. There are also a number of Finnish teachers, who apply to universities to carry out doctoral studies in education or in subject-related pedagogy. Typically they are interested in investigating some specific topic from their everyday teacher work and, thus, strive towards a PhD degree (Toom & Pyhältö, 2010, 2011). They use doctoral studies as an academically emphasized route of in-service teacher education. After gaining a doctoral degree, the teachers may move to educational expert tasks, but many of them also stay in schools and continue their work as teachers. The future aim is to

build a personal continuum to all teachers that cover all the phases: pre-service TE, induction and mentoring of new teachers and in-service training.

CONCLUDING THOUGHTS: THE IMPORTANCE OF SOCIAL COHESION

One feature in western societies is the breaking down of social security. Social networks no longer give citizens the same feeling of security. People feel isolated in western societies and are not as active as citizens. The challenges that arise from the changing structure of society are a major source of problems for many societies in our times. In many societies there are citizens who don't share any common thoughts; the ideological dimension of society is very heterogeneous. People do not have common values and their conceptions of democracy, welfare and citizen tasks are very different. In changing situations, social cohesion has been pointed out as one key factor that should be rediscovered. But we should also reflect on new interpretations of social cohesion. Wickham (2003) emphasizes the importance of 'social cohesion' and distinguishes between its vertical and horizontal aspects. By vertical aspects, he means inequalities of income, wealth and power. By horizontal social cohesion, he means a sense of mutual trust and responsibility between members of society (Wickham, 2003, p. 103). In Finnish society it is very important to develop ways in which social cohesion between citizens can be raised. Schools are central to this development. School should be opened to all members of society. Schools could also serve as places where people of different backgrounds meet each other. Nowadays, in Finnish schools there are lots of different activities that bring people together and give them a sense of social cohesion. For example, many schools organize co-operation between the schools, parents, other educational partners and stakeholders. According to old saying, the entire community should be involved in educating a child. Social cohesion is a vital part of education.

Currently, the main features of Finnish pedagogy are: (1). The expansion of learning environments: Learning also occurs in places other than normal school classes these days. (2). Active participation in learning: Learners are nowadays active in their learning processes. (3). Pedagogy has shifted to a more study-based approach in which participation is one key element. (4). Learning is no longer based only on teachers' activities, nowadays many forms of learning happen in real life situations, e.g., in libraries, museums, streets and networks (Kumpulainen et al., 2010). The new places, positions and ideas of learning require much more co-operation and social connections between learners. Learning in different places can be a very important factor for improving social cohesion.

We, as authors, perceive that the Finnish Ministry of Education and Culture still places emphasis on the fact that the welfare of society is based on education, culture and knowledge: The importance of education in Finnish society is huge. Finnish society tries to take every opportunity to develop every aspect of society as a learning society. This means that society emphasizes that all citizens should have

an opportunity to direct themselves to the bridges of learning. The educational sector in Finnish society continuously strives to develop different ways in which different learners can improve their potential to learn. Educational systems are not static states, but rather they have to be developed continuously. In Finland, it especially means identifying those aspects and factors that might threaten the realization of equality and equity in learning and education. Teacher education is a key element for changing society towards a learning society. In Finnish society, we will keep teacher education at a very high-level, because we realize how educating new teachers impacts society. The social cohesion of students is emphasized in teacher education: they usually have a lot of group work, pair work and co-operative tasks in their education.

The Finnish school system has developed in strict connection with Finnish society. Many values and ideals of society were first developed in schools. The equality of citizens despite their parents or parents' economical status is one of the leading ideas of Finnish schools. Schools should improve children's maximum capacity for learning and furthermore, provide them with the necessary skills for their learning in the present and for their future, and give them the joy of learning together in a multidimensional society.

REFERENCES

Commission of the European Communities. (2007, August 3). *Improving the quality of teacher education*. Communication from the commission to the Council and the European Parliament, Brussels.

Darling-Hammond, L., & McLaughlin, M. V. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan, 76*(8), 597–604.

European Commission. (2010, April). *Improving teacher quality: The EU agenda*. Directorate General for Education and Culture. Lifelong Learning: Policies and programme, Brussels.

Kumpulainen, K., Krokfors, L., Lipponen, L., Tissari, V., Hilppö, J., & Rajala, A. (2010). *Learning bridges – Toward participatory learning environments*. Helsinki: Cicero Learning.

Lipponen, L., & Kumpulainen, K. (2010). Acting as accountable authors: Creating interactional spaces for agency work in teacher education. *Teaching & Teacher Education, 27*(5), 812–819.

Lortie, D. C. (1975/2002). *School teacher: A sociological study*. Chicago, IL: University of Chicago Press.

Niemi, H., & Jakku-Sihvonen, R. (2006). Research-based teacher education in Finland. In R. Jakku-Sihvonen & H. Niemi (Eds.), *Research-based teacher education in Finland: Reflections by Finnish teacher educators* (pp. 31–51). Turku: Finnish Educational Research Association.

OECD. (2010). *Improving health and social cohesion through education*. Paris: OECD.

Pigozzi, M. J. (2004). The ministerial viewpoint on 'quality education'. *Quarterly Review of Comparative Education, 34*(2).

Toom, A., & Pyhältö, K. (2010). *Challenges in becoming a Ph.D. in teacher education*. Paper presented at EARLI Biennial SIG Meeting 2010, Kirkkonummi, Finland.

Toom, A., & Pyhältö, K. (2011). *Developing scholarly identity – Becoming a PhD in teacher education*. Paper presented at EARLI Biennial Conference 2011, "Education for a Global Networked Society", Exeter, UK.

UNESCO. (2004/2005). *Education for all: The quality imperative*. Paris: UNESCO.

VAKAVA Statistics. (2014). Retrieved from http://www.helsinki.fi/vakava/hakijamaarat.html

Wickham, J. (2003). Understanding technological and organisational change. In P. Conceição, M. V. Heitor, & B. Lundwall (Eds.), *Innovation, competence building and social cohesion in Europe* (pp. 101–121). Cheltenham, UK: Edward Elgar Publishing.

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