Opportunities for Improving Adults’ Basic Mathematical Skills: The Case of Finland

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In this paper we will first outline the general possibilities and institutions for adults in Finland to improve their basic skills in mathematics. The framing deals with the history, institutions and current situation for this kind of adult education. After this, we will focus on two related educational settings for adults. The first setting relates to the instruction available for prisoners with poor basic skills and education in the capital area of Finland. The second instructional context has to do with an educational program called APOP (Adult’s basic studies—the second possibility) which aims at improving basic skills among those 18–59 year-old adults in Finland who have weak educational background. Interviews with few of the involved teachers and students are used to illustrate personal learning and teaching experiences and also for further information of the two educational settings.

Introduction

This paper focuses on the adult education system in Finland and on Finnish adults’ opportunities to improve their basic skills in particular. Our aim is to offer first a general picture of the Finnish adult education system and institutions. Secondly, we will concentrate on the education contexts in which adults today have possibilities to improve their basic skills in mathematics. Here we consider two main settings comprising the instruction available for prisoners with poor basic skills and an educational program called APOP (Adult’s Basic Studies). Data from teacher and student interviews are applied to further illustrate these educational settings and to reflect adults’ personal experiences of education for basic skills in mathematics. We also briefly discuss the current situation of education in adults’ basic skills as well as the need for related education research in Finland.

The history of adult education in Finland is connected to the term “public enlightenment” (Pellinen, 2001). The original goal of this public enlightenment was to improve people’s mental growth and their civic facilities. This goal then turned into the idea and concept of liberal adult education. Later such factors as the need for occupational proficiency, employment and economic growth have strongly influenced Finnish adult education, especially since the beginning of the 1990s (Niemelä, 1999; Pellinen, 2001). The current Finnish adult education is generally seen to represent the so-called Nordic tradition of liberal education (Nurmi, Kontiainen, & Tissari, 1996). Beside the development of personality and support for the life of communities, also such principles as the development of and support given to democratic society, lead to an increase in social cohesion and the creation of opportunities for citizens’ welfare as have been expressed as current principles of Finnish adult education (Ministry of Education, 1999a). The governmental adult education policy is based on the principle of lifelong learning. Such things as the international economic competition, globalization and people’s competence in the changing
working life, the aging of the population, multiculturalism and the learning skills of people with poor educational background are challenges in the present adult education (Ministry of Education, 2008a). In all, adult education has become a significant aspect of Finnish education and developmental policy, of Finnish labour policy as well as of Finnish social policy (Ministry of Education, 1999a). Various factors have influenced the nature of current Finnish adult education, of which the most apparent feature relates to the increase in professionalism. This refers to the expansion and polymorphism of vocational adult education and also to the current penetration of professionalism into the area of more traditional all-round adult education (Pellinen, 2001). The education settings that offer adults opportunities to improve their basic skills in mathematics are tightly connected to the overall Finnish education system and education tradition. Below we will first offer a general picture of the adult education system in Finland. After this we will describe the secondary school contexts for adults to study basic skills in mathematics.

The Adult Education System in Finland

All forms of education and training offered for young people, ranging from comprehensive school and vocational school to university studies, are also provided for adults. An adult can take a degree in basic education (the compulsory comprehensive school of nine year syllabus), in general upper secondary schools (high schools), or in vocational schools. The degree-oriented adult education is arranged in adults’ schools or in adult education centres. The labour market training is procured by the Ministry of Labour for unemployed people (Kyrö, 2006). It is part of active labour politics and involved in vocational adult education (Kumpulainen, 2007). Degree oriented, self-directed studies for personal development and different kinds of complementary training are organized in about 800 schools or universities (Finnish National Board of Education, n.d.). In 2006 about 1.7 million people—that is, half of the 18-64 year-old population—participated in adult education of all types: formal, non-formal, vocational, and education organized by employers (Pohjanpää, Niemi, & Ruuskanen, 2008).

The organization of adult education is not as consistent as the rest of the Finnish education system. As in other Nordic countries, adult education in Finland is divided into adult instruction and liberal adult education. Accordingly, adults’ instruction or training is considered as formal education that is aimed at certification, whereas liberal adult education refers to informal studies without specific educational objectives (Pellinen, 2001). The latter has been characterized by such concepts as informal learning and occasional learning (Ministry of Education, 1999a). Again, from historical and administrative viewpoints, a general distinction in Finnish adult education is made between liberal education, all-round education and higher education, occupational education, and cultural and physical education (Nurmi et al., 1996).

The opportunities for adults in Finland to systematically improve their basic skills fall into the area called liberal adult education, especially until the 1980s. Traditionally, liberal education has been considered as a leisure-time activity or as an activity that is intended to overcome to the flaws in the official schooling system. In addition, it has offered an opportunity called “the second chance” for adults. Today, the general international principle of life-long learning has been emphasized in liberal adult education. Finnish adults’ increased effort and willingness to invest in themselves and their future has created new needs for liberal education (Niemelä, 1999). Liberal education consolidated its position in Finland after 1998 with a new, single law (No. 632/1998) for all organizations offering liberal adult education (Tuomisto, 2003). This law stated that “on the basis of the principle of life-long learning, the task of liberal education is to support the diversified development of individuals’ personality and their capability to act in a community
as well as to promote the realization of democracy, equality and pluralism in Finnish society.” (Tuomisto, 2003, pp. 73–74).

However, the connection between formal and informal adult education has been strengthened and liberal education has become a part of the general Finnish adult education system (Niemelä, 1999). The previous distinction between formal or occupational adult education and liberal adult education is today much less clear, as the same institutions may offer both occupational studies and courses of liberal adult education (Nurmi et al., 1996; Pellinen, 2001). For example, immigrants are often in need of both occupational and all-round education (Ministry of Education, 1999a). Also, adult education involved in updating training has increased and has much occupied the traditional vocational colleges (Pellinen, 2001). Furthermore, adult education has been strongly developed in such contexts as open university, open polytechnics and labour political education after the 1980s (Ministry of Education, 1999b). In particular, the use of self-directed networks and virtual learning environments have strongly increased during the current decade (Ministry of Education, n.d.). Liberal adult education is still at the core of the Finnish adults’ basic education. Studies are offered in folk high schools, civic and workers’ institutions (Municipal Adult Education Centres), different kinds of ideological study centres, study centres of physical education, and also in summer universities (Kumpulainen, 2007). Liberal adult education is completely or partially funded by the educational administration (Kyrö, 2006). Geographically, it covers the whole country, and about 1 million adults, 70% of whom are women, participate yearly in the courses. Municipal Adult Education Centres are the most popular, with 57% of all students in the area. The subjects in these institutions emphasize cultural and humanistic education. Natural sciences including mathematics comprise only 5% of the courses, according to Kumpulainen. In 2004, Finnish adults took 1.6 million courses that were organized by the liberal adult education institutes (Statistics Finland, 2006).

An important feature in Finnish liberal adult education is that every adult student has a personal curriculum. Many of the schools have a boarding school system, whereas others offer distance education for adults. In addition to distance education, common ways of teaching in liberal adult schools consist of lectures, study clubs or circles, short courses, projects, workshops, study trips and networks. For example, the Finnish State Broadcasting Corporation continuously offers voluntary educational courses for adults through television lectures and courses. Thus, there is a lot of variation and a multitude of instructional methods used, but limitations appear in the material of the courses for improving adult learners’ basic skills. Although some vocational studies for adults include courses in mathematics, the most practical way to study basic mathematics systematically is to participate in comprehensive school courses for adults in special APOP programs or in upper secondary schools for adults (i.e., Adults’ High Schools). These two educational contexts for adults’ improvement of their basic skills in mathematics will be discussed in more detail in the next section. Examples of personal experiences in these learning contexts will be described in the following section.

Adults in Finland and Their Lack of Basic Skills: Background to the Current Situation

General discussion about adults’ poor basic skills in literacy or in mathematics in Finland has been mostly lacking and these have not been considered as a significant obstacle to adults’ learning (e.g., Kakkuri, 1993). Adults’ difficulties in basic mathematics skills have been frequently observed in vocational studies, but only during recent years have these perceptions received some attention and resources in our adult education system. Vocational or occupational education makes up the largest part of the Finnish adult education but only a small proportion (2–3%) of adult education is focused on basic secondary school courses. Both cultural and practical factors can be discerned behind the lack of discussion and studies of adults’ basic skills in
Finland. For instance, in their study Nurmi et al. (1996) dealt with adult education experts’ assessment of the state of Finnish adult education. These experts considered mathematics as a rather important subject, but not as important as skills in communication, personality, or skills in learning. Mathematics and computer science were regarded as a little more significant by the experts than the resources actually invested within their main activities. Yet, for achieving future goals of Finnish adult education, only skills for learning were considered slightly more significant than mathematics and computer science (Nurmi et al., 1996).

The Finnish schooling system in basic education has been internationally recognized to be highly efficient. Further, there are good possibilities offered by the official Finnish schooling system for special education. Different kinds and numbers of special classes, special teachers and school assistance are nowadays offered within most of the elementary and lower secondary schools for students who have difficulties in learning basic skills in ordinary classroom settings. However, the situation is different, especially for older adults who were at school at the time when their special learning difficulties were not yet well known nor recognized and when opportunities for special education were not organized in Finnish schools (Turkka, 1991). For example, most adults having problems in reading seem to have had traumatic experiences during their schooling (Kakkuri, 1993). Another even larger group of adult students in Finland is currently represented by the continuously increasing number of immigrant adults with poor basic skills and inability to study in regular Finnish classrooms. These difficulties come to the fore in increased life-long occupational adult education and the so-called labour education sustained by employment offices throughout the country. Large differences in adults’ basic skills in Finland have been perceived, especially between younger and older age groups.

Although the adult population participates rather actively in education, there are still regional, socio-economical and educational variations in participation. In the comparison between the different parts of Finland, the southern and more populated area leads in number of students in adult education: about 55% of the 18–64 year old adults living in the south, and 45–50% of adults living in northern Finland study during their leisure time or as a part of their work. In addition, 70% of employed but only 30% unemployed people, and 71% of well educated people but only 35–36% of people with basic or secondary education participate in adult schooling. Women are more eager students than men, with 60% of women and 45% of men participating in organized adult education. Nevertheless, in informal and self-directed studies men are almost as active as women. A typical active adult student is a 24–44 year old female with a university or college degree. By contrast, over 60 year-old lowly-paid males from the northern countryside with weak educational backgrounds are typically left outside the adult schooling system. In 2006 about 54% of adults’ studies were self-directed. The most popular subjects were languages and computer technology (Pohjanpää et al., 2008).

No large studies can be found clarifying the situation of adults’ poor basic skills in mathematics. Instead, one large study considered 1196 adults’ difficulties in reading and writing (Kakkuri, 1993). These adults were mainly 20–39 old students who were involved in professional adult education or labour education, or were studying at that time in folk high schools. Research results indicated that, in all, 23% of the adults had various difficulties in writing, 1.9% of them had difficulties in reading comprehension based on repetition, 27.7% of them had difficulties in reading comprehension based on drawing conclusions, and 24.4% of them had difficulties in evaluative and creative reading comprehension. The difficulties found were the same for males and females, but males performed more poorly in the writing tasks that measured functional writing and in the reading tasks measuring comprehension based on drawing conclusions as well as in the evaluative and creative reading comprehension tasks (Kakkuri, 1993). A related case study further indicated that 25% of vocational school students, 17% of high school students, 3%–
4% of the candidates for matriculation examination, and 28% of prisoners had difficulties in reading. According to Simons (1984) over 70,000 (2%) adults in Finland suffered at that time from difficulties in reading.

Recent Efforts at Improving Adults’ Basic Skills

During the last few years adult education has been developed in order to increase educational opportunities for those in the Finnish population who do not participate in education at all or to a smaller extent. This is also one of the official objectives of current adult education policy (Kumpulainen, 2007; Ministry of Education, 2002). Two established governmental programs, NOSTE (the name refers to upgrading adult skills) and APOP (Adult basic studies), aim especially at improving the level of education and training among the adults with weak educational backgrounds. The NOSTE Programme (2003–2009) is targeted to improve poorly trained adults’ career prospects and satisfaction at work, and also to increase the employment rate and to decrease the labour shortages due to the large number in age groups expected to leave the labour market in the near future. The focus is on 30–59 year old working adults who have no post-compulsory qualifications or who could complete their basic education (Ministry of Education, 2008b). As a co-operative program NOSTE acts with different partners: vocational adult education centres and vocational institutes, adult education centres, folk high schools, upper secondary schools, apprenticeship training centres, business centres, associations, job centres and with social partners. Because NOSTE acts mainly in vocational education, mathematics is not emphasized in it. But, NOSTE has actually facilitated students’ mathematics learning in APOP studies, providing individual tutoring and counselling for students with learning difficulties or with poor learning skills. Also, teachers’ knowledge of learning difficulties has increased and the programme has created collaboration between teachers, psychologists, social workers, employers, and workers in labour offices (Ministry of Education, 2007; Thitz et al., 2006).

APOP, adults’ basic studies, offers the possibility of learning mathematics systematically, starting from the elementary courses for 18–59 year-old adults. This “second chance” is suited to people who lack some parts of basic education, to immigrants who need basic courses, and to some young people who are willing to improve their grades for upper secondary schools. The participating adults are also encouraged to continue their studies from the basics to upper secondary school courses. Adults can take basic studies and general upper secondary studies in Adult High Schools (previously night schools), in adults’ classes in upper secondary schools, or in some of the folk high schools. Some courses are also arranged by Adult Education Centres and by Summer Universities. From 2005 both basic studies and general upper secondary studies have had their own curriculum for adults (Ministry of Education, 2006) that determines the core objectives for teaching and also describes the content of subjects and evaluation. But, unlike the curriculum for regular students, adults’ curriculum recommends taking into account local circumstances, local history, culture and students’ living conditions. In addition, every student prepares his/her individual study programme (Finnish National Board of Education, 2004).

Secondary Schools for Improving Adults’ Basic Skills in Mathematics

Finland has about twenty secondary schools and thirty other kinds of official schools for adults, two of which are for Swedish speaking students. Nearly all of them are public schools maintained by local counties and located around the country. In 2006 there were 103 general upper secondary schools for adults and in all 23,233 adults participated in basic or upper secondary studies. Only 8493 of the students planned to take a degree (lower or higher secondary), whereas others took courses in single subjects, for instance information technology or languages (Ministry of Education, 2006). The same qualifications required for secondary day school teachers also apply to adult schools’ teachers, and they usually have a higher university degree in their main subject.
The ages of the students vary between 16 and 80 years and also students’ educational and occupational backgrounds vary a lot. The average age of the adult students is slightly over 26 years and most are female, with only about 25% males. The number of students studying courses in basic education has been continually decreasing, but after 1990 the adult schools have had more and more foreign students who are taking courses in basic education. In some of the adult schools the number of immigrants may be even between 15% and 25%.

The curricula of the adult secondary schools consist of general educational objectives and of the objectives and syllabi of the Finnish school subjects, including both compulsory and optional courses. But, every adult school has its own curriculum that identifies a list of subjects that can be studied and the number of courses for each subject. Each new student will work out his/her own plan for the studies based on the curriculum of the school and his/her previous studies. For example, as in compulsory secondary schools, a student may choose a brief or an advanced syllabus in high school mathematics. In addition to compulsory school subjects and courses, some adult schools also offer optional courses in such subjects as music, exercise, drawing or data processing. The courses aim to use textbooks and course material designed especially for adults but this is often not possible, as there is a lack of textbooks and material designed for adults studying basic or lower secondary school courses.

Adult schools may have different teaching arrangements associated with such factors as the number of study periods in teaching, continuous subject studies in the form of courses, non-graded studies, subject studies, optional courses, and contact or distance education. The school year in each of the schools is divided into study periods consisting of five to six normal periods and one to two summer periods, with the number of courses ranging from one to more than ten for a subject. Each of the normal study periods takes about five and a half or six weeks. Study during summer periods is optional and these periods take about three weeks. The average number of the subjects studied during a period is three and examinations are normally taken at the end of each study period. There is a possibility to study only one or two subjects in most of the adult schools. For example, lower secondary school courses can be taken in order to improve skills for the admittance to upper secondary school or to some other comparable school. Also, students who earlier have taken only basic courses in a subject may choose to study more advanced courses in the same subject in adult schools. Those who wish to study for vocational education may take the courses they lack in a subject needed for entry. Additionally, students with an upper secondary school (high school) degree may improve their knowledge in some of the subjects and courses.

**Folk High Schools as a Learning Context**

Folk high schools are a part of the liberal adult education in Finland. They are usually supported by ideological organizations but the education programs are very flexible and student-centred. Also, personalized study programs and individual counselling are common. Of Finland’s ninety folk high schools, thirty institutions have the right to arrange APOP studies (adults’ basic education). Usually the same institutions organize extra classes (so-called 10th class after the 9-year comprehensive school) for young students, and six institutions have the right to arrange general upper secondary (high school) education. In 2004, there were 512 students in folk high schools who aimed at graduation from high school (Ministry of Education, 2006) and, in all, 2,617 adults took the Matriculation Examination in 2004 (Statistics Finland 2006). Folk high schools are boarding schools and they are suitable for adults who want to concentrate intensively on their studies. But, they are also an option for youngsters, such as immigrants and people with uncertain living conditions, who leave the ordinary school. Folk high school students’ education background varies. Some of them are very talented, but many of them are in the danger of
marginalisation (Ministry of Education, 2006). Geographically, folk high schools cover the whole country rather completely, confirming the realization of equity in this kind of adult education.

Mathematics Studies in Raudaskylä Christian Folk High School

Raudaskylä Christian folk high school has permission to grant a degree in general education. This rather large school is located in the northern Finnish countryside. In addition to APOP and Adult High School, it offers general upper secondary education, the 10th class of the comprehensive school, and folk high school for youngsters with special needs. Also, the school organizes vocational schooling in co-operation with other institutions and programs (e.g., Open University). Mathematics is taught in APOP education, in Adult High School, and as a part of youth education. As part of our research, the mathematics teacher of the folk high school, Jaana, said that her mathematics classes include high school courses (both short syllabus and advanced mathematics), courses for 10th class students, and courses for the APOP group. The students consist of both youngsters and adults, but the APOP group is only for adults. The present APOP group started two years ago with only four students in the group, with ages varying between 21 and 54 years. Jaana also said that she adjusted the curriculum especially for adults within the APOP group studies, whereas the youngsters had their own curriculum.

Experiences of Mathematics Learning in Folk High School Context

We interviewed an adult student, Aune, and her mathematics teacher, Jaana, in order to make visible how the learning process works in the folk high school context. At the time of the interview Aune had already finished her studies, taking the high school degree in 2006. The interview took place at her home, in a friendly atmosphere. Jaana was interviewed by email, but we had a chance also for informal discussion with her and an opportunity to visit her APOP class. Aune is a 65-year old female pensioner. She had studied the basic comprehensive school curriculum at a time when it was not yet compulsory for all Finnish citizens. Later she took courses in a vocational school of business. She was 57 years old when she started her studies in the APOP program, aiming to also have the high school degree.

I waited and waited … and promised to my children that I would continue my studies. … I had high enthusiasm for studies.

In order to be able to pass high school, she took basic secondary courses in mathematics and Swedish in the APOP program over six months, along with her high school studies. Some of the APOP students attended the basic school classes due to their lack of education, but some studied only due to their intrinsic interest in studying; yet others planned to take later high school courses. The last applied to Aune’s intentions. She found mathematics challenging and not at all easy. During her elementary courses she had a job in other city and utilized the travel time to study mathematics.

When I travelled in the train I immediately opened the book and began to do exercises; as well I studied every evening in Helsinki. I worked hard. I had ahaa-experiences and ‘that can’t be true, I got it’!

Aune had also an opportunity to get nearly private teaching as she was not able to participate in regular classes. She found this chance marvellous. Her teacher prepared her extra examinations and extra exercises.
Jaana worked very hard for me; she explained and advised me. She demanded of me to do the exercises and told me that they help me to understand them. And I learnt. I was terribly enthusiastic.

Aune found the encouragement she had from her teacher highly important, especially in studying mathematics where “it is important to learn well the basics.” The textbook was again the same as in the ordinary comprehensive school, but Aune saw no contradictions in using a children’s book. Her teacher prepared some material by herself in order for it to be more suitable for adults. Even though she did not have any particular fears or negative attitudes towards mathematics, Jaana said that the adults often had either negative or positive views of mathematics or about themselves as mathematics learners. Their personal relation to mathematics was rarely neutral. She had taught mathematics for two APOP groups and both had needed a lot of encouragement in the beginning. On the other hand, some adults found themselves to be good learners and they had previous good experiences in mathematics. Adults usually tended to emphasise skills in counting without paper and pencil, and rarely did the adult students say that they were good at making conclusions or solving problems on paper. Some of the APOP students had experienced mathematics as a boring subject but as adults they had found how interesting it was.

Aune also trusted in her ability to count in her head, which had been important when she worked in business. And, that helped in her studies. In high school mathematics courses she had some difficulties as she couldn’t ask or get any help due to the big size of the groups (15–20 students) and fewer classes. She had to study more on her own. For Aune, studying mathematics had benefited her both economically and by producing joy for her. She hoped that by studying mathematics she could help her grandchildren with their homework. At that time Aune was not studying but planned to do so the following year, with more advanced mathematics high school courses. Also, she had an idea for gathering together a group of adults with help from the local Adult Education Centre, in order to arrange a mathematics course or two. Aune believed that

Such a subject as mathematics, there is something in it …

**Prisoners Studying Secondary School Mathematics**

In this section, we will focus on a specific context for Finnish adults to improve their basic skills in mathematics, namely, adult education in prisons. The social learning context in prisons differs in many ways from the other educational settings in liberal adult education. Although the secondary school curricula are very much the same for prisoners as for other adult students, there are aspects that create a very different context for the adult learners in a prison (Byrne, McElligott, & O’Hara, 2008; Frezzotti, Lastaria, & Mortola, 2000). The opportunities for prisoners’ studies derive from the Finnish tradition and the principles of captivity consistent with the so-called neoclassical ideology of imprisonment (Autio & Hautamäki, 1991). One of these principles involves the idea that disadvantage caused by imprisonment should be diminished as much as possible. Prisoners should be offered chances to encounter the society outside the prison after their release (Ministry of Justice, 1983). Another major regulative principle is that a prisoner is under an obligation to work unless she/he is exempted because of studies, illness or some other reason. According to the current Finnish legislation, captivity consists of labour and vocational education or voluntary studies. Those prisoners who study can be fully or partly exempted from labour if “the studies are considered useful for prisoners in liberty” (Law: RTA 3:8 §, 1 mom.).

**Learning Contexts in Finnish Prisons**

The education offered in prisons is part of the general Finnish education system. It is governed by the general Finnish policy on adult education and the same objectives, decisions and
developmental schemes determine the objectives and organization of the studies in prisons. The general goals of this education are to give prisoners the kind of facilities, skills and attitudes that will create and increase their possibilities to participate equally in the industrial and cultural life of the Finnish society and in democratic decisions, and that will promote the development of a balanced personality as well as positive social relations. Furthermore, all instruction should aim to increase students’ interest in their possibilities of development and education (Ministry of Justice, 1977, pp. 15–17). Since prison labour is often considered by prisoners as unpleasant, studies of various subjects may help them ease their frustration (Byrne et al., 2008; Cohen & Taylor, 1986; Frezzotti et al., 2000).

Prisoners may be given permission to undertake either part-time or full-time studies and studying is one the few prisoners’ privileges. Students in Finnish prisons receive a small amount of money for general purposes, less than what is paid for prison labour. They also receive some money for the materials needed or else the prison provides the materials. Many of the Finnish prisons cooperate with other educational institutions and their teachers usually also work in regular adult schools. Normally, the lessons take 40–45 minutes and there are between one and twelve students in the study groups (Autio & Hautamäki, 1991). There is also a rule (Enactment for Correctional Treatment, 431/75, p. 45) according to which prisoners should have support and guidance in their studies as much as possible and their achievements should also be overseen. This implies that various kinds of advice and supervision are offered in Finnish prisons.

The results of a study by Autio and Hautamäki (1991) dealing with Finnish prisoner students indicated that most of the prisoners had a kind of a neutral or anxious attitude towards studying in a prison. This reflected the main general problem of low motivation for studying in prisons. Many of the prisoners studied also had negative school experiences. The study showed that 71% of the prisoners lacked full basic education, 73% lacked vocational education, and 25% were unemployed before coming into the prison. In all, 56.7% of the students took courses in basic education, 36.7% took upper secondary school courses, and 6.7% took both. Most of the prisoners had studied for more than six months and 36.7% had been in prison already more than once. The prisoners who studied were also slightly younger than the mean age of all prisoners, according to Autio and Hautamäki. In most cases the instruction was offered in one place and one room, and there were few chances to apply the subjects studied. The atmosphere played also a significant role in the prisoners’ experiences of studying.

Our example of improvement of prisoners’ basic skills involves one of the largest adult secondary schools in the Helsinki area that also offers basic school subjects and courses for prisoners. The school (Mäkelänrinne Upper Secondary School for Adults) offers a secondary school education for adults, leading to the certificate of lower secondary degree or upper secondary education with the final examination. The curriculum and lower secondary school courses in mathematics for prisoners are very similar to the regular curriculum for other adults, but only six mathematics courses are compulsory for them in order to take the degree in basic (lower secondary school) mathematics. These include calculation, equations and percentages, geometry and real numbers, trigonometry, statistics, and functions. It is also possible to take a short syllabus in mathematics with two compulsory courses of algebra and geometry. In addition, prisoners may take the brief upper secondary school syllabus with five mathematics courses dealing with mathematical problem solving and statistics, mathematical analysis, probability and geometry, mathematical models, and mathematical research methods. The brief mathematics syllabus for prisoners begins with a clinical mathematics course (articulating course) including the main subjects of basic school mathematics. All the mathematics textbooks used are the same as for all other secondary school students. Finally, all the mathematics courses (except the clinical course) are assessed by a final examination.
Experiences of Mathematics Education in a Finnish Prison

Here we will report some findings of a few case studies and data from individual interviews dealing with experiences of mathematics education in the large prison mentioned above. A mathematics teacher and a student counselor working with the prisoners were interviewed to gain further information and their perspectives on the current situation of mathematics instruction in prisons. The interviews took place in this prison and they were tape recorded and then transcribed. A little later we administered a short questionnaire to a prisoner. Due to the restricted access to the prisoners under the prison regime, our questions were in the form of a written, open-ended questionnaire and the prisoner was asked to write down his answers in as much detail as possible. The main issue was to get his personal experiences and feedback on the quality and features of studying mathematics in a prison. The student was a 30 year-old male, called here Pekka. He had been already in prison for five years and had few more to serve.

Pekka had been an excellent student in all the courses he attended and he graduated from the upper secondary school of the prison with the best possible qualifications. He would also have liked to have done the advanced syllabus and mathematics courses administered in upper secondary school. As they were not offered for prisoners, he was a little disappointed that he could take only the shorter upper secondary mathematics program. He would have wished to have more challenging problems to solve and the possibility of spending time in solving and thinking out these problems. After studying the upper secondary school courses and the short mathematics syllabus, Pekka further applied for permission to study courses in the open university and he was successful. He has been consistent in his studies and has also worked very hard in these courses. When talking about the reasons for studying in prison, his answer was clear and direct:

When you are in prison you have a lot of time to spend doing nothing and thinking. You waste it and often you end up crazy. I like to put my head into something, and since I have been given the opportunity to study, I do my best.

For him it seemed fundamental to keep his mind occupied in order to survive, an important factor to avoid falling into the degradation of self-esteem or depression. In all, mathematics was easy for Pekka and he remembered the topics and issues from his early school years. He considered himself to be lucky because he only had few problems where he needed the teacher’s help. But there were also some problems or inconveniences that he faced while studying mathematics. The first was that the instruction was addressed to all studying prisoners, regardless of their level of mathematical knowledge. He wished that his class could have been divided into two separate groups according to the students’ levels since the instruction proceeded too slowly for him and the more advanced students. The qualification needed for the courses were also rather low and he told us about how even the least advanced students passed the tests. Another issue related to the quality of the applied instructional material. There was a lack of learning materials and challenging problems to be solved. Pekka would have liked “extra material to consult” in mathematics. On the other hand, he considered that the textbooks used were not adequate for the kind of adults who had not studied for years.

A teacher’s perspective on mathematics education in prison was gained by an individual interview with a female qualified teacher, called here Anna. The interview took place after a class, in the prison facility reserved for teaching. Anna had 15 years experience as a teacher and she had been mathematics teacher to Pekka. She considered her job as a mathematics teacher in prison as a much easier job than teaching children. In working with adults there was no need for discipline and duties such as contacting parents and pushing the students to be responsible. However, she indicated that her own university education was of no use in adult education and
everything she had learned was by experience. During all the years she had been a teacher in prison, she had realized that one of the main problems is the poor reading and writing skills of the prisoners. This is not the case for all the prisoners but it is a quite common, though. According to Anna, this interferes with the mathematics lessons.

During the mathematics courses in the prison, she did not give any homework since it is most likely that the prisoners would not complete them. Her approach to teaching mathematics was more abstract than applied to real life situations. Her major was in philosophy and, therefore, numbers had to be abstracted to certain extent. She did not like relating things to real life, since “sometimes it was made too easy and therefore confusing.” This was a little contradictory as, according to Anna, students in the prison liked it when she used more concrete materials for learning, in addition to the textbook. Also, Pekka considered the instructional methods of his teacher quite successful. Anna agreed with Pekka on the lack of extra materials and the need for more adequate mathematics books for adults. The only extra materials they had available was a pack for learning fractions and probability, and sometimes she used the Excel statistical program to create diagrams and graphs in her teaching.

The student counselor for prisoners, called here Belinda, was interviewed in her office at the prison. She had 10 years experience as a social worker and 5 years experience as a student counselor. Part of Belinda’s role was to interview the prisoners who were interested in attending classes and to learn of their educational backgrounds. According to her experience, most of the prisoners had been problematic young people during their basic education. Belinda was also in charge of providing the students with the materials they needed and she gave them all that they asked for: books, calculators, pencils, etc., but no additional materials were mentioned. Belinda offered some figures on the current state of education in Finnish prisons. Between five and ten percent of the inmates lack basic education. Almost half of them were gypsies. Sometimes the prison had prisoners who could not read. Generally, “there was nothing to offer for them” but occasionally some private lessons were arranged for this kind of prisoner students. The educational system seemed to have a gap in this sense. However, even though prisoner students often had difficulties in reading and writing, they tended to manage when they studied mathematics. According to Belinda, only 20% of the students who received education in prison finished their studies and graduated from the basic school. The reasons for quitting their studies related mainly to the movement of prisoners from one prison to another, or to their withdrawal from the classes due to being caught doing something not allowed (such as using drugs or other improper conduct).

Discussion

Education and adult education is promoted as one of the core features of the 21st century. Life-long learning and development of new skills are considered as important factors for individuals’ employment and their level of income, as well as for sustaining the competitiveness of companies in the global marketplace and for the success of the nations in global competition (Field & Leicester, 2000; Niemelä, 1999). According to the committees of the Ministry of Education (2002), adult education in Finland currently (2003–2012) focuses on continuing vocational training, on opportunities for the self-development of adults, on improving adult education in universities and polytechnics, and on the co-operation between different organisations. Virtual learning and teaching environments are developed as well as people’s skills of acting in an information-based society (Ministry of Education, 2002). The knowledge and skills required in modern jobs have changed and people have more difficulties in anticipating their personal lives and careers in the labour market. This also means that individuals are to take more responsibility for their personal and occupational futures (Niemelä, 1999). Also, the increase in work-based
learning and adult e-learning will imply more independent and self-directed adult learning and education.

The future is most difficult for those adults who have the weakest basic skills and the lowest basic educational background. According to the committees of the Ministry of Education (Ministry of Education, 2002), specific attention will be paid to poorly trained adults’ opportunities for education in Finland and also to their opportunities to complete a secondary school degree. Since the beginning of the 21st century many changes have occurred in Finnish adult education, particularly in the area of liberal adult education. The emphasis is on occupational adult education but also on improving the level of all citizens’ post-secondary education. This tendency is also reflected in current adult education as adults’ level of education is weaker than among the youngsters in Finland. In addition, special attention is given to those adults who have the weakest education and who attend educational programs the least often (Ministry of Education, 2002). This has given rise to various programs for adults who want to improve their basic (secondary level) education and skills including mathematics. The situation for these adults in Finland is better now than a few years earlier and there has also been some recent discussion about adults’ difficulties in basic skills.

**Conclusion**

In relation to these kinds of recent efforts, we have offered some examples of the programs and experiences in improving adults’ basic skills in Finland. In both education contexts introduced, we pointed to difficulties such as the lack of instructional materials for adults’ studies of basic skills, both generally and in mathematics. On the other hand, we could see that Finnish adults who have failed in their previous school education, or who did not have or take the chance to do the secondary school studies earlier, may still have both good opportunities and the high interest and capacity to do so later in life. The important question is how we will also get the least educated (and often older) adults to attend these kind of offerings and to overcome the disadvantages of exclusion (OECD, 1999). Improved basic skills in mathematics and literacy offer significant tools for these adults’ empowerment. Their better skills in mathematics and literacy not only help them more efficiently understand and act in the modern society but will also increase their self-confidence and quality of life in general. These features are reported largely in previous ALM conference proceedings and they also appeared in the experiences of those Finnish adult students interviewed here.

The fact is also that more information should be collected on the gaps in adults’ basic skills and in their skills for learning that decidedly prevent them from fully participating in the training needed for meeting future work and job requirements; and also from their active citizenship in this modern and highly technology based environment. This is an area of education research that needs much more attention and resources than what has been received up to the present. Despite of the previous official reports of the committees of the Ministry of Education, interest in adults’ poor basic skills in Finland is just about to begin. And, this is the issue that we aimed to stress in this paper. On the other hand, the current lack of research on adults’ poor basic skills as well as on their poor learning skills will offer an unexplored field of Finnish adult education research. Accordingly, our hopes and aims are that more research and information on these issues in connection with Finnish adults will be available in the future.

**References**


