Finnish Future:
From eLearning to mLearning?

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Abstract
The first part of the article is based on a book "The Challenges of ICT in Finnish Education" (Sinko&Lehtinen, 1999). That book describes results of national research about ICT in Finnish education. The project was divided into five sub-projects: universities (two sub-reports) edited by Jarmo Viteli; kindergartens and institutions of general and vocational education edited by Liisa Huovinen with the assistance of many reporters; lifelong learning, edited by Irene Hein; digital learning materials, written by Pekka Lehtiö. This article, which is aimed at an international readership, is based on the material of the whole project. The second part is introduction about mLearning (mobilelearning). Finland has been called the "experimental laboratory of information society and mobile communication" and as such it provides an interesting test case for exploring the use of information and communications technologies in education. The first results of mlearning activities will be available at December 2000.

Introduction

The rapid development of information and communication technologies (ICT) during the past two decades has had many points of contact with education and training. The development of technology is placing new demands on expertise, and it is also leading to the increased use of information technology (IT) in instruction and learning. As early as in the 1970s discussions of the future of school systems started to pay attention to the opportunities provided by ICT. Now with the approach of the new

millennium, IT is playing an increasingly central role in almost all future planning of schools and instruction. Finland has actively participated in this development. With the help of state and local funding, information technology has been purchased for schools ever since the 1980s. The state has also found many ways to support teacher training in the use of IT, and it has also allocated funds for the production of IT programs. Instruction in the use of IT has also played an important role in teacher training organized by local school authorities.

When Finland devised a special information society strategy in the middle of the 1990s, the use of IT in instruction figured prominently as a key way to accelerate the progress of the information society. Based on the information strategy on training and research prepared for the educational sector under the Ministry of Education, significant additional funding was allocated to schools, universities and vocational institutions in order to purchase information technology and to network schools. Funding was also made available for teacher training. The significance of the special funding allocated to ICT in education is further emphasized by the fact time. These cuts have had a deep impact on Finnish education. In several schools they have meant that at the same time as schools have had to cut down their activities quite sharply in order to save, they have had more money than before at their disposal to purchase ICT equipment.

It is against this background that the need arose to find out how far we have progressed in the application of ICT in education and what impacts these significant economic investments have had. It is also time to start a value-oriented discussion of how strongly the future of the Finnish society-and with it, of education and training- will be linked to the vision of an information society brimming over with technology.

Are We Up To the Challenge

In discussions of the challenges to competence, the solution most often presented is the principle of lifelong learning. As a political stance, the recommendation or demand for lifelong learning does not yet contain an articulated view of the extent to which it is possible to flexibly adapt continuous learning to these new demands. On the other hand, rapid change and the growing demands of working life have raised the idea that organizations should also be viewed as learning and information-producing communities (Nonaka & Takeuchi, 1995).

Looked at from the perspective of an individual, the potential for developing competence is in principle, very substantial. Research in human cognition shows that practicing a certain task over a long period of time results in powerful cognitive adaptation; individuals develop knowledge structures which help them master the information load of that task. Two factors are essential in developing expertise: intentional practice and progressive problem solving. Continuously setting new, challenging problems and operating close to the upper limits of capacity create a foundation for the development of new cognitive skills. Indeed, it is important to develop the ability to move beyond previously learned skills and apply old knowledge to new problems, and thus derive new solutions and practices (Ericsson & Lehman, 1996).

On the other hand, research on both cognitive processes and motivation has shown that a typical human characteristic is also to resist fundamental changes in our ways of thinking. On the basis of recent research in conceptual change it seems apparent that when people meet new learning challenges, they attempt to interpret and master them by using their own earlier theories and beliefs. Learning goes smoothly when it is based on enriching previously acquired knowledge with additional details and more specific distinctions. Learning which demands genuinely new ways of thinking and changing one´s earlier beliefs has turned out to be difficult and often very time-consulting. Thus, trying to teach or learn these new ways of thinking too quickly can lead to systematic misconceptions and superficial learning. People learn to give the correct answers to questions having exactly the same content as those dealt with in the teaching. At the level of their own thinking and beliefs, however, people stick to their previous conceptions even if these are in clear conflict with the new ideas and concepts being learned (Vosniadou, 1997). At present, this phenomenon is clearly seen, for example, in the adoption of ideas concerning teaching and learning. Teachers have rather widely adopted the vocabulary of learning models based on constructivist epistemology, but this is not yet manifest in their interpretations of everyday situations or in the ways they organize learning situations. Learning resulting in profound changes in one´s thinking is not nearly easy to achieve as the proponents of lifelong learning seem to believe.

Longitudinal research in the development of learning skills and so-called metacognition (skills in controlling one´s own learning and thinking) show that individual differences in these skills grow very markedly during basic education. While some students develop very sophisticated, efficient and self-directed learning skills, others seem to develop much more slowly, or

not at all. From the viewpoint of lifelong learning, these pronounced and growing differences in strategic learning skills are a serious problem. It seems that a large proportion of students coming out of school have completely inadequate learning skills when viewed in light of the challenges of continuous learning. A similar trend can be seen in the area of motivation. For example, the ways that the educational system tracks students can cause problems for those steered into what are known in Finland as the shorter educational routes, paths leading to lowerlevel vocational rather than university-level education. These students may suffer from a lack of motivation and self-confidence and thus choose not to take up intellectual challenges. This has obvious ramifications for their later educational development, as their information society skills are likely to remain poor.

The goal of education has traditionally been to teach the basic skills in various culturally established and precisely defined fields of science and the competencies needed for basic communication and problem solving. These tasks will remain in the future as well, but in addition there are pressures on education to teach more concretely the skills demanded by the rapidly changing working life and social practices. This presents a serious challenge to traditional forms of education. Transferring learned knowledge into new and wholly different situations seems to require learning processes which explicitly require students to apply the knowledge to practical situations outside school.

It is not realistic to think that institutional education alone could assume responsibility for responding to the expanding and continuously changing challenges presented by current societal developments. And indeed, the majority of learning already takes place outside of schools or specifically-organized teaching and learning situations. From a social and political perspective, this probably means that differences in learning opportunities between individuals will continue to grow. Those with good basic learning skills and much previously acquired knowledge will be better able than other to find information and various learning opportunities. Therefore, in order to ensure social equality, it will be necessary to assess the effects of technology on teaching and learning and to outline future strategies for the educational use of ICT.

In Finland, there is a rather widely-held idea that education plays an important role in ensuring equality and that education should thus try to equalize differences resulting from children´s differing backgrounds and strive to prevent large differences in student achievement. In terms of the

information society, this aim turns out to be even more important, but also increasingly problematic. Can the idea of compulsory education be extended to cover what have been called "information society skills" in the same way it has covered literacy, for example? Are computer skills, to take one example, genuinely comparable to literacy as lasting skills which are basic to an individual´s social acceptability and survival and which the society can require as compulsory skills from all children and youth? We could of course justify such a policy based on the strategic significance of information technology in Finnish society. What makes this problematic, however, is that compared to literacy these skills change much more rapidly, and it is extremely difficult to predict what kinds of technology skills will be essential in working life and for social and political participation in, say, ten years.

How can Technology be Used: Is Teacher Training Up-to-Date?

Teachers must feel safe with computers in order to use IT in their own instruction. This presupposes that teachers use IT in their work and that they are fairly familiar with the school´s technical environment. However, this provides only the basis for working. Further pedagogical training is needed to answer the many questions that come up in the use of IT in instruction. This, in turn, presupposes ongoing research, development and experimental activity.

In general, it is estimated that the total number of teachers using ICT in their work with students is the same in Finland as generally elsewhere: about 20% of teachers use it intensively and in a pedagogically significant way. More superficial or random use is of course much more common, as has been shown above. When asked in a survey done by the Finnish Book Publishers´ Association about obstacles to the school use of multimedia, the teachers mentioned the lack of computers as the first, the lack of money as the second, and the lack of teacher training as the third obstacle.

According to the teacher questionnaires in this evaluation project, inadequate mastery of the technology was the most limiting factor, along with the lack of equipment for the instructional use of ICT. This problem came out at all school levels. The ongoing development of technology and software means that teachers are being challenged to continuously update their skills. It is, however, important to note that insufficient pedagogical mastery of IT use was felt to be at least as big a problem as the inability to use the equipment itself. The fact that teachers learn to use the equipment

and the applications by themselves does not automatically lead to their pedagogically purposeful use.

Teacher training is mentioned as a central concept in the educational information strategy. During the past few years some funding for teacher education institutions has been allocated to a certain extent to equipment and training personnel, but this has not yet had any great influence on the skills of the graduating teachers. Those future teachers who participated in the special courses of instruction technology (15 and 35 credits) have learned good skills, but the proportion of these students to the whole student body is still very small.

Teacher education institutes should look for better solutions that will guarantee all students the opportunity to learn basic skills in the instructional use of ICT and the conditions to develop and maintain their own skills independently. On the other hand, teacher training units also have to offer an opportunity for advanced studies in instruction technology. Reaching these goals is still an extensive undertaking, and it is not realistic to think that it can be done merely by adding new elements to the present curricula and by employing more teacher trainers specialized in instruction technology. To reach the goal, it is necessary to refocus the present curriculum and, accordingly, rearrage the structure of permanent positions.

Studies in the use of ICT must also not remain a separate island in teacher education. Instead, they must be integrated into the other theoretical and practical studies in teacher education as much as possible. The impact of teachers´ basic education is felt very slowly. A central strategic tool becomes teacher´s in-service training and independent study. Learning how to utilize IT independently always contains two phases: one has to learn to use the technical tools reasonably fluently and, on the other hand, one has to learn to envisage how one´s own tasks can be carried out better and more easily using these new tools. If sufficient fluency in use is not reached in the user´s opinion, he or she will carry out the tasks in some other ways if given the opportunity, and teacher usually do have these opportunities.

Learning the IT basics takes time, but there is never enough of it. For this reason, in addition to intensive courses, there is a need for tutoring and advising that can be flexibly coordinated with the rest of the work on-site.

The training emphasis depends very much on what kind of technical support is available in schools. If students can be tutored, for example, in some detailed exercise by the media librarian of by school IT support staff, teachers can pay less attention to IT. However, if they have no help of this kind, their own facility with computers is the prerequisite for all such activities. In Great Britain, over 30 million Ecus were reserved in this year´s national budget for training in the pedagogical use of IT. In Finland, the corresponding annual national investment has come to about 1.5 million Ecus, which taking the number of teachers into account is less than one half the British amount. We could also certainly use a bigger sum than we have now. A careful survey of training needs should be done now so that better-focused training can be planned for teachers with different levels of mastery-training in which there would be a sufficient emphasis on the immediate application of the training.

The municipalities have organized further training for teachers, but the resulting pedagogical advantages have been pretty modest. The subject teacher organizations and other training organizations have also been organizing further training. Nowadays the continuing education institutes in the universities take care of a significant amount of the teachers´ further training in IT. They have a clear idea of what the state of research is that deals with learning, and this expertise has been recognized in the fact that they have mostly been given the responsibility for organizing, among other things, five-credit teachers´ pedagogical further training in accordance with the national strategy.

About 1,600 teachers per year were trained in this training program during the years 1996-1998. As about 43,000 teachers are working general education schools, about 11% of the teaching staff participated in this training during these years. This is not sufficient for a clear change in the teaching culture: at least a similar investment is needed in shorter-term training and an additional investment in extensive further training. Furthermore, teacher training is needed in the basic skills of IT, which must be provided mainly by the municipalities.

The impacts of the completed training can only be seen over time. However, even now we can conclude that training alone is not the solution to the complex problem of how to improve a teachers´ pedagogical skills in using IT. For one thing, training alone does not always raise the teachers´ skills to the desired levels. However, training may change beliefs forcefully, and in the long run this may be even more important. Several participants in the national training program commented on its personal

significance from a point of view that did not have anything to do with the development of skills:

> "The training has strengthened my touch for ICT, in other words it gave me the courage to try to participate in something new and even strange."

> "My own distrust of everything that has to do with technology has diminished. I am more prepared to think a little less narrowly."

> I got the courage to touch the computer and to try find ways of using it myself."

In training, it is necessary to forge a better link between studying IT skills and the pedagogical development of one´s own school community.

Why is the Influence of the New Media on Teaching and Learning Still So Small?

As was pointed out, digital learning materials have been around for a long time. Finnish schools have been computerized already for 15 years. All that time, teachers have been trained to use IT in instruction. However, only about 20% of them utilize it extensively in their instruction.

There are certainly many reasons for the limited use of information technology. Lehtiö (1998) gives the following account: first of all, it is significant that technology may become a factor shaping culture, curricula or pedagogy if it is always present. In the schools one cannot yet be confident that it will always be possible to use computers. Still less has one been able to trust that useful learning materials will be available. As a result of 15 years of work, the school use of computers has become a real pet of continuing and further education. Teachers have laudably been made to participate in many different kinds of courses, but not to adopt IT to a great extent in their teaching. The stages in which ICT is being applied in studying and teaching are typical of those found elsewhere in the adoption and use of technology. Moore (1996) has described the spread of the use of technology as follows. First come the innovators, then the early adopters, the early majority, the slow majority and finally those who are opposed.

In Moore´s figure there are gaps to show the difficulties that come about when technology is marketed to a new group using the same principles as with the previous group. The innovators work with the new technology because they are interested in technology per se and in its possibilities. If

they accomplish interesting results, along come the early adopters, who have some vision of how to use technology and what benefits it may offer. Very often numerous consultants and trainers belong to this group that earns money by selling visions. The most troublesome place of discontinuity in the spread of technology –Moore´s chasm- is between the early adopters and the early majority. Talking about new things is not the profession of the early majority, but they do something else and they don´t want to take risks with uncertain or non-functional technology. However, the real mass markets start with them. Many new inventions never cross this chasm. Slow adopters start using technology reluctantly and as the last group those against may not necessarily start at all.

Obviously the in-depth use of ICT in instruction is just now emerging from Moore´s chasm in Finland and reaching the early majority stage. The obstacles, according to Lehtiö (1998) are still great between the opportunities and the practical use of information networks and digital media. For on thing, with the information networks becoming more numerous, the amount of available material is horrendous. And where there is a lot of information, finding it becomes a problem. In everyday life at school, the problem is still on a more general level: Do teachers have access to computers to help them prepare their instruction, surf the nets and select material? One has to also keep in mind that only 10-15% of the teachers know IT well enough to be able to copy pictures off web page, save them properly, move them to various folders in the network and again when needed, take them into use.

Another difficulty is that nearly all the material is in English and not in the students´ mother tongue. Even though it supports the students´ language mother tongue. Even though it supports the students´ language studies, its extent or purpose is in no way self-evident. The teachers who apply IT also know that the students´ IT skills vary greatly. When it comes to the students´ independent work, one prerequisite is that a sufficient amount of computers in the net are at their disposal, computers that can be reserved for this purpose for just the lesson when the teachers need them. Traditional forms of schoolwork have developed without IT, and often the introduction of technology brings only a small advantage to the work of the teacher or the student. On the other hand, adapting methods of using IT to traditional teaching techniques is pretty easy, but it does not yet give sufficient justification for investing in it. The special pedagogical significance of IT lies in the fact that it makes possible many learning environments which are interesting from the learning point of view but whose arrangement without IT is difficult.

Recent learning research has developed a new way of understanding higher-level learning as the result of the learners´ active individual and collaborative efforts. According to the results of the reports made in connection with this project, the teachers are starting to be rather conscious of these new ideas and opportunities for enhancing learning. However, the problem is that the discussion of concepts of learning has offered only a few concrete suggestions of how these thoughts could be implemented in practice. It seems that the field of Finnish education is only now looking for ways in which the changed concepts of learning could be taken into account in instruction and in studying. It is to be assumed that with this process IT is also going to be used innovatively in the same way as it is now being used in individual experiments.

The possibilities for IT are coming up in a pedagogical environment where learning is no longer a separate activity that is enclosed within school walls, but takes place in active interaction with life outside the school. This means participation in national and international exchanges of ideas, connections with expert and work cultures in various fields, and in collaboration with other students. IT becomes pedagogically important when the students themselves try to find out about complex phenomena through their own inquiry and experimentation. When used correctly, information networks have shown themselves to be excellent tools for information acquisition and the social construction of knowledge, argumentation and discussion. Without ICT it would be much more troublesome to publish teachers´ and students´ own learning materials, research reports and other information. In the case studies we have collected here, one can find real examples of high-level pedagogical activity. The great challenge in the years to come will be to help other schools develop their own innovations. IT itself does not produce this kind of progress, but it is a useful tool in the development of the pedagogical practices that can better respond to the new learning demands of the information society.

Recommendations

This extensive report confirms earlier international and domestic observations that the introduction of ICT to support instruction and studying may produce significant results. Getting to know the most important technical equipment in society and working life is itself an

important challenge, one which, in any case, however, opens much more extensive prospects.

Strategies need updating at all levels

The National Strategy for Education and Research in the Information Society must be updated.
The report shows that both the Ministry of Education´s information strategy for education and for research has proven to be important in guiding education policy after the recession. To some extent it may have even helped to overcome the recession itself. Initiated by the then Minister of Education, Olli-Pekka Heinonen, the preparation of the new strategy was started in the winter of 1999 and has just been published. Also, an English translation will be available on the web at the ministry´s URL: http:www.minedu.fi, as well as in print.

Municipal strategies should be updated.
In addition to the national education administration, the municipalities overwhelmingly play the most important role in funding and maintaining primary, secondary and vocational institutions. Therefore they must do what is necessary to assure that all those involved will carry out the national strategy. Furthermore, in the near future the municipalities will have to improve their ICT resources to the levels set for their school and civic education activities. They will also have to *establish* these activities, i.e., they will have to transform them from projects to permanent practices. There are already at least some satisfactory examples of such municipal strategies, and their dissemination should be continued and strengthened.

In addition to providing an adequate technical infrastructure, municipal ICT strategies for school and civic education must also cover the pedagogical approaches to content. The strategies also have to be formulated so as to be applicable at the school level. Good examples can certainly be found in great numbers on every educational level.

University strategies must be sharpened.
Even though strategic thinking has been taken farthest in polytechnics and universities, it does not seem to cover ICT instructional use in every single university. Development of the pedagogical use of ICT in the universities is random at present. The universities have important strategic significance in all training involving the development of ICT use. University investment in this development takes place through both research and teacher training. Current teacher training does not provide enough skills for the effective application of ICT in their work. A lot must be improved,

especially in the pedagogical studies of subject teacher training. Furthermore, there are remarkable differences between teacher training units in how well they prepare future teachers to meet the demands of the information society. Other challenge and demands of working life must be taken into account in higher education better than now. ICT can be utilized in a significant way to deepen the interaction between education and working life.

One Cannot Manage Without Technology or Support

The results of the evaluation confirm that the level of the IT infrastructure is not yet sufficient when thought of as a pedagogically wellbased use of technology. The equipment purchases and the denser and more extensive networks swallow up so much tax money that the targeted quantitative level is difficult to reach and maintain.

Transforming libraries into mediatheques

Libraries are off to a surprisingly good start in orienting themselves to the demands of the information society, and they have used new ICT to that end. The Internet has significantly transformed the very concept of a library. The availability of massive amounts of information on the Internet is increasing to need for information professionals, despite the fact that whose need information can nowadays independently access the sources of information more directly than before. Expertise is needed, however, among other things for improving the quality of searches and for constructing and maintaining databases and WWW-based information services meant for end users.

Curricula must be improved

Education is more than teaching and learning with an emphasis on technology. Instead, when analysing the impact of technology on teaching and learning one must ask how we can broaden our viewpoint to embrace a more extensive interpretation of the information society in which the emphasis is on the qualitative changes in work, getting information, social participation and everyday life. Although the availability of sufficient appropriate technology is important when analysing its impacts, it is even more essential to know what purposes technology is being used for and what the teaching and learning dispensed with its help are like.

The curriculum is nowadays understood to be a more dynamic concept. The schools´ own curricula have become ever more important in addition to the national curriculum guidelines. In some area even personal curricula are being devised. Not nearly everywhere does the curriculum take a clear stand on the instructional use of ICT as a target or a tool of instruction.

Teacher training must be increased and made more precise

When the students and the teachers start having equipment within their teach, the teachers´ mastery will become more and more decisive for the outcomes. Teachers at all levels need much more technical know-how and pedagogical expertise. However, the learning needs of teachers are now diversifying so forcefully that more precise information about them is needed so as to improve the effectiveness of teacher training. The impact of the training can be strengthened by supporting the transition from theory to practice by making training a permanent part of the pedagogical development work in the school.

Development Must be Made Permanent: The Dissemination and Scaling Up of the Results

In order to develop, the instructional use of ICT presupposes long term networking activities with a fixed purpose. Schools can not develop in isolation from others who are faced with the same challenges. A more profound reform presupposes rather significant research and development investments. Therefore, research on ICT instructional use must be included in a national strategy and in basic funding. Finland has to be able to maintain a research and development program comparable to those found in other parts of the Western world.

Along with the big virtual school and university projects, one has to continue making small-scale autonomous improvements in all schools. The new communication technology makes possible the necessary networking, in which ideas and results are conveyed and new innovative practices are spread. Public funding for this kind of small-scale development could be mainly devoted to maintaining the high quality of network contents.

New digital learning material is bringing about changes in the publishing of learning materials. Markets for new materials must be created. Public authorities can help stimulate initial demand by increasing the present

amount of funding now reserved for the school purchase of learning material. Another way to support the supply is to fund the publishers´ product development by advance orders. Thirdly, public organizations (the National Board of Education, the Finnish Broadcasting Company, national museums, etc.) can themselves produce nationally important but commercially perhaps unaffordable materials with public funding. All of these means have been used, and they must be used in the future, too. Of the WWW-based learning material services, the management of the so-called educational object economy was described above. Its Finnish application is well-suited for development by the National Board of Education. Commercial publishers should also be made to come along. Establishing the educational object economy distributes the development pressure over an extensive area and offers an environment for step-wise and cumulative development work in which the threshold to join is reasonably low. This approach makes it possible to link the debate over materials directly to the materials and their development.

Towards equality in the Finnish information society

The basis for self-directed learning and the purposeful use of technical tools is being created as early as in learning experiences during early childhood. Pre-school and the first stages of elementary school have a great influence in this respect. Through experiences that resemble play without any pressure to achieve, the utilization of technology becomes a habit of working and learning. Based on this, the evaluation project conforms to the rationale in the pre-school curriculum made by the National Board of Education (1996): "It would also be good if the children could familiarize themselves with the use of the computer as early as pre-school." With research and development activities, one has to guarantee that pre-school and initial learning have high quality programs and activity models that support the learning conditions and that take both genders equally into account.

The opportunities to utilize IT are very unevenly divided among Finnish citizens. Young, well-educated men in the Helsinki metropolitan area have the best opportunities, while those living in outlying areas, women, people who are less wealthy, and the elderly have less access to IT. People should be able to use ICT more and more as a tool against alienation and, for example, to alleviate the problems that come with being unemployed. Being able to use ICT in working places, schools and libraries adds in a significant way to the use opportunities at home. Furthermore, in the future it will be with their help that people can resist the polarization of the

information society. The young, as well as others, must be able to use the schools´ IT resources outside of school hours. The schools must be made into more open learning centers than is now the case.

The IT services of the libraries must be increased and kept free for the users, or at least so inexpensive that use will not be inhibited by the fee. In many places students serve as assistants in the maintenance of the schools´ IT. Such practices are really worth developing further and should be taken advantage of more extensively. The youngsters´ growing expertise in IT could also be utilized to meet the needs of the community outside the school. More could also be done to help their IT workshops meet the needs of schools and libraries. The educational offerings of civic institutes must increase the opportunities of various citizen groups to receive training in using the Internet.

Virtual school and university projects must be developed in such a way that studying in open universities, distance upper secondary schools and study groups in free popular education can be functionally realized in network form. Public data bases and materials that are based on research and on the actions of authorities must be arranged so that citizens can access them as easily as possible. For instance, some services of university libraries should be available for everybody, not only for people within the universities.

On the education levels, even in extramural learning, the contents which are being sought for and used with technical equipment will have a decisive role in determining the development of the Finnish information society. The threats are the trivialization of learning and weakening of the special characteristics of small cultures that are taking place through the multinational production and distribution of contents in the global net.

mLearning Possibilities and Obstacles

This part of my presentation I'll describe the latest development activities in the area of mLearning (mobile learning). As shown below Finland is a real mobile communication nation. Now we have started our first research activities to find out how mobile communication could be utilised in education.

Finland is a hungry mobile phone community. Currently Finland is the most on-line nation in the world. Finland have more Internet connections

per capita than any other country and it is leading in the area of cellphone users per capita, some 71 cellular phones per 100 inhabitants. One interesting aspect of mobile communication is Short Messages. Shy Finns seems to prefer to communicate with each other via text messages than by voice. In 1999 about 650 million short messages was send, year 2000 the amount will rise over billion among 3 million cellphone owners. One message contains 0-160 marks, using their own language (compare to "chatting"). Most active are the 13-15 old, both boys and girls and their communication is emotionally loaded messages contains private, intimate material. The 'textmessage person' differs a lot from the real personality of the sender. High penetration especially among young people of mobile communication devices offers us an excellent future laboratory to create and test the possibilities of mobile communication in education.

The concept of mLearning is yet very unknown. On 15th of September 2000 the Google provided 40 links to mLearning and 29.900 to eLearning. That is one reason why you will get deeper information about mLearning during the conference.

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