PEB Exchange, Programme on Educational Building 2000/12

New Technology and Education in Finland

Ritva Kivi

https://dx.doi.org/10.1787/830666883232

OECD

PEB Exchange Programme on Educational Building

NEW TECHNOLOGY AND EDUCATION IN FINLAND

ICT policy: a new strategy for 2000-2004

On 23 April 1999, the Ministry of Education published a new National Strategy for Education, Training and Research in the Information Society for 2000–2004.[1] This strategy is a sequel to the National Strategy for Education, Training and Research completed in 1995.

On the basis of the review of the previous strategy period, it can be said that the development of the Finnish information society is faring well in international terms. This specifically applies to technological infrastructure. The utilisation of information and communication technologies in educational establishments has, however, been uneven. Moreover, commitment to the strategy has varied a great deal. According to the evaluation, only one fifth of educational staff extensively resort to new technology to support teaching. However, almost all pupils, students and teachers would be willing to utilise new technology in teaching and studying to a greater extent. Although pedagogical utilisation of information and communication technologies has succeeded in pilot projects, the more extensive use of positive experiences has thus far been defective. The majority of information society appropriations have been targeted at equipment acquisitions and network building in educational establishments, universities, libraries and archives. Funding for education, training and research related to the information society has also increased, and the status of research has been strengthened by increasing student intake and the number of teachers and researchers. These investments, however, are insufficient.

As approached in the new strategy period, the development of Finnish high-level know-how must include:

- a greater emphasis on the development of contents and modes of operation;
- an increase in international co-operation in education, training and research;
- an increase in co-operation and co-ordination between the public and private sectors;
- the notion of media development and the impact of its integration into education, training and research;
- providing equal opportunities for all citizens.

The research and education sector will operate through networks. Networking projects will develop and crystallise into virtual universities, virtual schools and versatile research networks.

Creating favorable conditions for learning in Finland

By the year 2004 Finland will be one of the leading interactive knowledge societies. Success will be based on citizens' equal opportunities to study and develop their own intellectual capacity and extensively utilise information resources and educational services. A high-quality, economically sustainable mode of operation in network-based teaching and research will have been established.

These objectives will be achieved through the action programme, the all-encompassing theme of which is the development of a Finnish general knowledge base and learning environments. The majority of the programme will be implemented through ordinary operational development. In order to keep Finland on a steady course in developing the information society, the focal areas of the action programme will require reallocation of resources and well-focused additional funding. The focal areas of the action programme include:

- information society skills for all;
- the versatile use of networks in studying and teaching;
- accumulating digital information capital;
- strengthening information society structures in education, training and research.

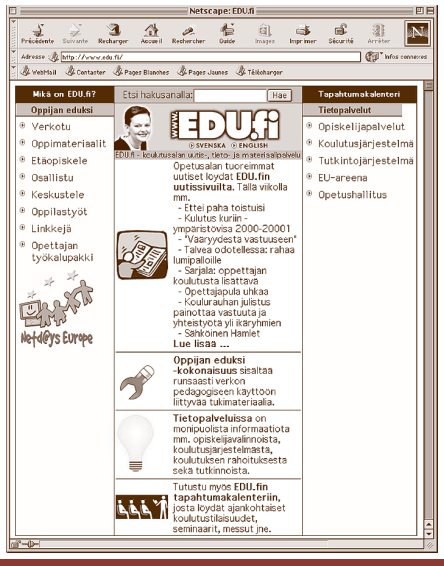
The Finnish school network service "EDU.fi"

EDU.fi[2] is a national service maintained by the National Board of Education. It contains different kinds of classroom resources, information about administrative matters pertaining to education, events and matters connected with schools in general. The EDU.fi pages contain basic information about education, including the Finnish education system, its financing, building of schools and matters concerning legislation. In addition, EDU.fi serves as a news channel through which schools can get the latest and most topical information. This channel also provides information on the European Union and on in-service training for teachers.

1. The strategy can be found on the Internet in English, http://www.minedu.fi/julkaisut/information/englishU/index.html

2. http://www.edu.fi

EDU.fi also contains solid support materials for the pedagogic use of networks and various learning environments for those studying through, for example, distance learning upper secondary school, the virtual academy for adults, Internetix or the open university system.



The Finnish school network service "EDU.fi": http://www.edu.fi

The planning of educational establishments and libraries

Changes in operational culture caused by the developing information society also present challenges for the design of concrete study and research facilities. Some objectives settled in the strategy concerning school buildings and equipment are:

- Schools will have high-quality network connections to other schools and libraries in the municipality and to the information resources and services of other libraries. The computer system used at the school library must be compatible with the municipal public library system.
- The spatial planning of schools and school libraries must be carried out to take into account a variety of working methods.
- The equipment must be placed so as to achieve a maximum utilisation rate and a user-friendly approach.
- Public libraries and the libraries of educational establishments will increasingly serve as places where learning based on information technology is carried out alone or in groups. This will also happen at the workplace. Improved information technology equipment has turned homes into diverse study environments.
- The diverse use of existing school premises and technical resources will be intensified.
- Student apartments will be provided with permanent datalines.
- Experience in new solutions for constructing and equipping educational institutions will be gathered and communicated.
- In the renovation and construction of schools, closer attention should be paid to the needs of the knowledge-based society through education and training and through supporting co-operation between experts in the areas of the physical environment and technical and pedagogic planning.
- The advent of digital radio and television and the technical development of information networks will significantly expand the technical infrastructure for open and distance learning.

In an open learning environment, learning is active and communal, and utilises a variety of media. Openness is also linked to the opportunity for networking in learning situations, the mobility of learners, and partial independence of time and place. Options support the self-directed learning and motivation of the student.

Virtual school and distance learning

Learning must take place in a setting which as far as possible corresponds to the future operational environment. This requires strong utilisation of information and communication technologies and an aptitude for network-oriented studying.

Because of the long distances and the small population, educational establishments in Finland are relatively small and scattered far from each other. This increases the cost of education. Information networks offer new opportunities to support small educational establishments as an alternative to closing down schools. Virtual studies also make it possible to support the education of Finnish children living abroad. Information networks bring study opportunities closer to the people, increase flexibility and options also in units with a small number of students, and help increase co-operation between various groups of educational establishments. Virtual studies are possible from the lower stage of the comprehensive school to upper secondary schools and vocational institutions. Ever-diversifying wireless communication is also strongly utilised. These are the foundations of the Finnish virtual school, which will combine the advantages of high-quality contact and distance education.

Heinävaara Elementary School, © Reino Tapaninen

The main aim of the virtual school project, which has started in 2000, is to develop and implement a study system based on open and distance learning for upper secondary school pupils, comprehensive school pupils and vocational school pupils, a system which is independent of students' place of study or residence. In the long run it will enable the completion of courses of different depth and grades, and even degrees. The project aims to solve technical, pedagogical, social, administrative and statutory problems involved in the adoption of new forms of studying. The project will also help every school to develop its activities towards virtual school. The fundamental purpose of the virtual studies is to develop and introduce co-operative interactive open learning environments and teaching methods. The prerequisites for this are systematic research and development and effective application of the results, not only in virtual studies but also in learning material:

- A network-based user interface will be launched with tutoring, counselling, study material and educational services serving the whole educational system.
- Networking by teachers will be supported.
- A multi-disclipinary research and development network of learning environments producing and supplying high-quality educational services will be established. The prerequisites for network activities will be created so as to facilitate new entrepreneurial activities, new services in operational organisations, new products and new intellectual rights. Teacher education units are expected to substantially capitalise on the innovative development of information and communication technologies.

The use of ICT in schools

Finnish school curricula require that all pupils be provided with basic skills in information technology

ICT STATISTICS FOR FINLAND

Computer situation in educational institutions in 1999 (min. 386 level PCs or equivalent):

	Number of institutions	Students per PC	Students per PC 2000 target
Comprehensive primary schools	31 000	12 – 13	10
Comprehensive secondary schools	16 000	11 – 12	8
Upper secondary schools	12 000	9 – 10	6
Vocational institutions and polytechnics	34 000	5 – 6	3 – 5
TOTAL	***93 000***		

Percentage connected to networks in 1999

Comprehensive primary schools	90%
Comprehensive secondary schools	90%
Upper secondary schools	95%
Vocational institutions and polytechnics	100%

in comprehensive school. Information technology does not, however, have its own specific subject, but the main principle is rather to integrate it with other subjects. Elective or voluntary courses for acquiring skills in the use of computers may also be offered to students in comprehensive secondary school, upper secondary school and vocational institutes.

In the new strategy for 2000-2004 the local ICT strategies in education will be integrated into curricula. Through the evaluation and development of curricula, educational establishments will now have new tools enabling them to meet new educational challenges. Creativity, problem solving and co-operation will be emphasised in the activities and development strategies of educational establishments. Towards the end of the strategy period, media literacy will become a part of general education.

The Finnish National Fund for Research and Development (SITRA) in 1998 at the request of the Parliamentary Select Committee on the Future carried out an evaluation project entitled Information and Communications Technology in Teaching and Learning. The purpose of the project was to evaluate the current situation regarding ICT and to ascertain the most important development challenges which should be met in order to utilise the technology more effectively in teaching.

The research analysed the level of expertise and utilisation of information technology by comprehensive and upper secondary school teachers. It also analysed the pedagogical beliefs associated with the use of information technology for teaching. The analysis of the research material showed that there was a wide divergence in the teachers' level of expertise in information technology and only a small proportion of the teachers had a wide ranging command of the use of various ICT equipment. In the sample studied, most of the teachers did have a good command, however, of some information technology application, and regarded ICT as an appropriate tool. The research also showed that most of the teachers had a computer available for use both at home and at school. Almost half of the comprehensive secondary and upper secondary teachers who answered used information technology daily in the preparation of their own teaching. Only about 20% of the teachers used ICT in their own teaching daily, but as many as 60% used it at least once a week. Currently the most commonly used applications of information technology are word processing, World Wide Web services and e-mail. Although the teachers who participated in the research have already adopted information technology as a tool, they feel in need of a great amount of ICT support, particularly regarding pedagogical support and training in the use of information technology in teaching.

The questionnaire for educational institutions ascertained how the students utilised the Internet. The Internet is most usually used as a means of retrieving information (84% of the schools that answered). Almost half of the schools had their own Web page, but this was mainly to present the school, because only 20% of the schools published material produced by the students on the networks. Increasing the variety of teaching methods using networks is in its infancy, as only 10% of the schools reported that they used networks for sending and returning student assignments and for student guidance. Networks already have a clear significance in the administration of schools as 50% of the schools used networks for this purpose.

Ritva Kivi's article was also published in the 86th issue of Administration et éducation, the review of the French association of educational administrators (AFAE). See page 26, *Bâtir pour apprendre*.

Article contributed by:
Ritva Kivi
Chief Technologist
Educational Communications and Technology
National Board of Education
PL 380
00531 Helsinki, Finland
Fax: 358 9 7747 7826
E-mail: ritva.kivi@oph.fi