

Opetusministeriö

Ministry of Education



Information Society Programme for Education, Training and Research 2004–2006

Publications of the Ministry of Education, Finland 2004:14

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OPETUSMINISTERIÖ

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Foreword

The Finnish Government has chosen information society as the theme of one its policy programmes. The aim is to promote information society development by enhancing co-operation between the different partners, by developing citizens' information society skills, by ensuring access for people to fast connections, by promoting the availability of educated and trained labour and by utilisation of information and communication technologies (ICT) in public services and administration. Extensive utilisation of ICT in different sectors of society enhances competitiveness and productivity, social and regional equality and citizens' well-being and quality of life.

The Ministry of Education has fostered the use of ICT in its sector since 1995, when the first information strategy was published. The current information strategy covers the period 2000–2004. The rapid changes in the operational environment poses constant challenges for knowledge and its development.

The current strategy has significantly promoted the use of ICT in education and research. This in turn has generated new demands for developing data security and protection of personal data and privacy, enhancing the quality of and open access to virtual education and materials, and developing copyright legislation to meet the requirements of the information society. These were some of the reasons for updating the strategy by means of a new programme which will support and guide future developments in the Ministry of Education sector. While needing new knowledge and skills, all stakeholders in the education and research sector are also expected to provide support and new innovations for the development of the information society.

The compilation of this programme began with a request for different interest groups to give feedback on the implementation of the 2000–2004 strategy. New measures were formulated for the education sector on this basis. Matters were discussed in depth in the Ministry's information society steering group during the latter half of 2003. The result was the present Information Society Programme for Education and Research 2004–2006.

The actions included in this Information Society Programme fall into three categories: knowledge, content and the operating environment. The implementers in these sectors are members of the information society, teaching and support personnel, pupils and students, and researchers. The programme describes the measures to be taken by the educational administration in cooperation with other stakeholders. In addition, the programme contains recommendations to partners outside the educational administration. For the programme to be implemented effectively, it is important to carry out varied and active cooperation with all those concerned.

Arvo Jäppinen
Director General

Introduction

The Information Society Programme for Education, Training and Research 2004–2006 contains major priorities and actions for boosting the information society development in the education, training and research. It builds upon the information strategies of 1995–1999 and 2000–2004 and complements the Ministry of Education Strategy 2015 and the Development Plan for Education and Research 2003–2008.

The programme is targeted to all players in the education, training and research fields. In a long run, it concerns all citizens as users or producers of information society services.

The programme is implemented by the educational administration and other stakeholders in the field of education, training and research.

The programme is geared

- 1 to develop all citizens' information society knowledge and skills
- 2 to enable educational institutions to use information and communications technology (ICT) in a versatile way in their activities
- 3 to establish ICT-based procedures in education, training and research
- 4 to promote social innovation through the use of ICT.

Background

One objective in the Government Programme is to consolidate Finland's position as one of the leading information societies in the world. The aim is to intensify the use of information society services in business and industry, education, training and research, health care, administration and people's everyday life.

Government adopted an Information Society Programme geared to boost competitiveness and productivity and to promote social and regional equality and citizens' well-being and quality of life through effective utilisation of ICT in all sectors of society. The central government promotes information society development by ensuring access for all citizens to fast internet connections by developing citizens' information society skills and knowledge by taking other education policy action and by investing in R&D.

As the Ministry of Education Strategy 2015 notes, equal educational and cultural services underpin the Nordic welfare society. Providing these services secures the intellectual, physical and economic well-being of the population. Information society must ensure a balance between technological, cultural and social development. Technology will be utilised with a view to an ethically sustainable and advanced society.

Information Society Programme for Education and Research 2004–2006

The aim by 2007

- Finland is an open and secure, networked society with high-level information society knowledge.
- All citizens have opportunities and the basic capabilities to use electronic services (eService) and content.
- Appropriate use of ICT in learning and in teaching is part of everyday school life.
- ICT is used widely and appropriately in research.
- Electronic materials are of a high quality, pedagogically justified, serve different user groups and are available openly.
- Also, electronic materials are comprehensively available for science and research.
- The programme actions are evaluated on a continual basis with a view to development.

Knowledge

the enhancement of information society knowledge and skills of every citizen and player in the information society with a view to gaining access to and using and producing information society services.

Contents

the production of high-quality, educational contents for use in studies and everyday activities and other digital materials for other purposes, such as research.

Operating environment

an open, easily accessible and secure environment which serves different user groups according to their specific needs.

Knowledge in the information society

A solid education, good general knowledge and ICT skills acquired throughout life create the basis for using information society services. Educational institutions provide students with ICT skills. At the workplace employees acquire knowledge and skills they need in work. Outside education and employment, libraries and civic organisations play a key role in providing opportunities for people to learn information society skills.

ICT is extensively used in support of teaching and learning and research. New technologies help

to diversify learning methods and learning environments, back up and guide learning processes and simulate real work environments or processes in a virtual environment. Good knowledge and skills help people to use of information networks and their contents appropriately. Information society entails access to the specialised high-tech knowledge of ICT professionals. During the programme period, measures will be taken to diffuse good practices and support innovative projects which promote creative action and top-level know-how.

Measures by the educational administration

ICT is used extensively in studies and teaching at all levels of education. Basic education provides a grounding for ICT skills, which are deepened at the secondary level, and higher education level. Care will be taken during the programme period to ensure that all pupils and students have opportunities to gain the knowledge and skills they need to operate in the information society. Educational institutions will promote interaction and virtual learning.

- The educational administration will monitor strategies and curricula relating to the use of ICT in education.
- Measures will be taken to increase cooperation between the Finnish Virtual University and the Virtual Polytechnic.
- The operations and resources of adult education institutions will be increasingly focused on studies improving information society skills and use of ICT in education.
- Alongside the formal education system, civic organisations will be supported in providing activities which promote information society skills.

Good overall and pedagogical ICT skills enable the teaching profession to develop their own work and renew teaching methods. Educational institutions and education providers must have access to competent educators and guidance personnel to promote the use of ICT in teaching and learning.

The aim is that by 2007 at least 75% of teachers have the knowledge and skills to use ICT in teaching.

- Teachers' in-service training relating to the use of ICT in education will be continued.
- The use of ICT will be integrated into curriculum-related staff-development and management training.
- ICT will be taken into account in continuing professional education relating to different subjects, integrated themes and fields of education.
- Measures will be taken to ensure ICT training for educational personnel, and its quality will be assessed as part of the evaluation of the teacher training development programme in 2005.
- ICT training materials will be produced during 2004 and 2005 for the Edu.fi portal maintained by the National Board of Education.
- Continuing professional education will support educational institutions in updating their own educational ICT strategies, adopting new procedures and processes and evaluating their own activities.
- Teachers' in-service training financed by the government will support regional and national development projects, with special emphasis on the Virtual School and distance upper secondary school.
- The National Board of Education will devise a plan during 2004 for organising in-service training in educational use of ICT and the specialised know-how it requires.
- Institutions of higher education will continue to enhance the skills needed by educators to be able to use ICT in teaching.

Education of ICT professionals and relevant research will ensure that Finnish know-how relating to information industries and content production is competitive in the international market.

- The Ministry of Education will ensure education and research in information industry fields according to the relevant plan up to 2006.
- Measures will be taken to step up studies in the information industry fields by means of steering and flexible teaching arrangements as part of the general aim of shortening study times and reducing dropout.
- Efforts will be made to increase the proportion of women in education relating to information industries.
- Finland will take part in international working groups and intensify national diffusion of information in order to boost the exchange of information about educational development in Europe.
- Information society research will be focused to support overall knowledge development and promote equal opportunity in society.

Researchers' good ICT skills make for effective use of ICT in research. Research in different fields produces knowledge and creates a basis for the application of ICT in education and research.

- Advanced training in ICT skills in general and skills needed in the researcher's own discipline in particular will be offered as part of researchers' initial and continuing education.
- Research findings relating to the information society will be applied in practice to boost the information society development.
- The development of computational and other research methods based on the newest knowledge will be supported.
- The use and application of ICT in new research fields will be supported.
- The development of new ICT-based research services and practices will be supported, including on-line and centralised computing services.

Recommendations to partners

1. In education and studies, favourable conditions will be actively created for the utilisation of ICT by implementing strategies for educational use of ICT.
- Local authorities, municipal education consortiums, other education providers and maintaining organisations
2. In teacher training, care will be taken to provide teacher trainees with sufficient knowledge and skills for utilising ICT and electronic materials in education and in school-home interaction.
- Polytechnics and universities
3. The organisations maintaining educational institutions must focus their staff-development training to enable teaching and other personnel to maintain and upgrade their ICT skills.
- Local authorities, municipal education consortiums, other education providers and maintaining organisations, polytechnics and universities
4. Educational institutions and the organisations maintaining them must reserve sufficient resources and otherwise enable educators and guidance and support personnel to carry out activities required for the use of ITC in education and for information strategy work.
- Local authorities, municipal education consortiums, other education providers and maintaining organisations, polytechnics and universities
5. The job descriptions of personnel in educational institutions must be updated in response to the new procedures.
- Labour market partners, local authorities, maintaining organisations
6. Research institutes must see to it that their personnel have up-to-date skills in using ICT.
- Research institutes
7. Public libraries must have a sufficient number of professionals with pedagogic competencies (pedagogic information officers) to translate information management skills into citizenship skills.
- Local authorities, maintaining organisations
8. With a view to developing public libraries as environments for independent study, measures will be taken to ensure that they have rapid telecommunications connections and sufficient hardware.
- Local authorities, maintaining organisations
9. Local authorities must promote the creation of resource points open and accessible to all citizens for instance in schools, libraries and corresponding open-access public facilities.
- Local authorities
10. Civic organisations will actively develop the ICT skills of their own personnel and work in cooperation with other organisations to develop citizens' ICT skills.
- Civic organisations, associations

Content

Responding to information society challenges entails not only extensive knowledge and skills, but also quality learning materials for education and studies, comprehensive information materials, and appropriate electronic services for the use of citizens. Efficient distribution channels will assure equal access to information.

Education, training and research need digital content available on the net, such as virtual learning materials, research findings, information materials and review data. Software, databases and electronic library and archival material are an important part of content.

Measures by the educational administration

The production of digital materials for teaching and learning will be promoted. Open-access to quality materials will ensure equal access to reliable information. Especially material produced with public funds will be made openly available for all.

- By the end of 2004, the National Board of Education will devise quality criteria for virtual learning materials used in basic and upper secondary education and training.
- During 2004, the units developing virtual higher education will draw up quality criteria for materials to be published in the portals of the Virtual University and Virtual Polytechnic.
- During 2005, universities and polytechnics will devise quality assurance procedures for educational materials produced in higher education networks.
- A uniform classification will be devised for materials produced for educational and research use; this will be based on former standardisation work.
- Measures will be taken to promote knowledge about copyright in content production.
- Care will be taken to ensure that copyright agreements are concluded concerning electronic materials used in education and research.

Electronic services, such as library and archival materials, virtual publications and other electronic research materials will be used flexibly in education and research. Citizens' need for electronic materials will also grow in the near future.

- Electronic library services will be developed and expanded to make them available to all citizens.
- Virtual publication of research reports and theses will be favoured and publication practices will be developed towards openly accessible virtual research data.
- The preservation and accessibility of research materials will be developed.
- The digitisation of library and archival materials will be supported with a view to creating and expanding electronic services.

Recommendations to partners

1. Plans will be devised at the local level to study the use of information society services from the citizen's perspective. A strategy devised on this basis will integrate local library and education strategies with local decision-making. Cooperation between local authorities will be encouraged.
 - *Local authorities, municipal consortiums, district and provincial organisations*
2. The relevant ministries will jointly formulate principles for developing public and private content production during the programme period.
 - *Ministries*
3. The Finnish Broadcasting Company YLE will be encouraged to develop versatile services and programmes in response to citizens' educational and cultural needs.
 - *The joint YLE-Ministry of Education working group*
4. The information retrieval services at libraries will be developed to also cater for the needs of education.
 - *Local authorities, maintaining organisations*
5. Publishers are expected to take care that digital learning materials are available.
 - *Publishers*

Operating environment

The operation of the information society entails a modern information technology environment and open networked procedures. The operational environment is a technical entity, on the one hand, and a network and community of citizens, on the other. The technical environment comprises terminals, networks and servers and relevant services. The aim is an open, compatible architecture enabling long-term development, electronic and other information society services.

Adopting the necessary technology entails that communities and networks have preparedness for responding to changes in the operational environment. The aim is to create user-friendly, safe and uniform action models for the use of citizens, educational institutions and other organisations with a view to a compatible and accessible operational environment. Another aim is to facilitate cooperation between the public and private sectors and mutual use of services.

Measures by the educational administration

Necessary hardware, software and support services needed will be developed for use in education and research. Technical support services will primarily use ICT professionals. Data security will be secured in services and in their content.

- Support services in educational institutions will be enhanced by means of staff-development training geared to upgrade the competencies of technical and pedagogic staff. The National Board of Education will draw up a plan for the implementation of staff-development training by the end of 2004.
- The applicability of freeware to use by educational institutions will be studied.
- Care will be taken to ensure the security and accessibility of ICT work environments in educational institutions.
- Measures will be taken to develop the monitoring of information society developments and procedures with a view to anticipating future needs in the education sector.
- Data security will be enhanced through the implementation of the recommendations the National Information Security Strategy.

The national networks for the use of ICT in education will be made a permanent part of basic operations. The networked procedure entails that responsibilities are re-determined, the administration reorganised, the financing models developed and operations restructured.

- Development plans will be devised for the Virtual School (for basic education, vocational training, adult vocational training and liberal adult education projects) by the end of 2004
- Upper Secondary Distance Learning will be made an established part of basic activities in upper secondary schools.
- The Finnish Virtual University will be established on a permanent basis by the end of 2006 to act as a developer of networked universities and as a service provider.
- The Virtual Polytechnic network will be established on a permanent basis during the programme period.

Sufficient telecommunications, appropriate hardware and software and skills in their use are a precondition for both social equality and successful operations. User-friendly development promotes the adoption of ICT-based services and information systems.

- Fast and secure internet connection will be extended to all educational institutions by the end of 2005.
- The National Board of Education will support educational institutions in strengthening their ICT infrastructure.
- A study will be undertaken concerning the information systems of university and polytechnic administrations by the end of 2004.
- The information systems of universities and polytechnics will be developed through the promotion of electronic transactions and performance.
- All activities will promote the development of well-functioning and accessible electronic services.
- The supply of traditional study and administration services will be secured alongside electronic services during the programme period.

Research needs a state-of-the-art ICT environment and centralised information network services, computing and database resources and necessary expert and support services.

- Sufficient resources will be secured for centralised scientific computing services, and the national supercomputer will be replaced by 2006.
- The services of the higher education and research network (Funet) will be developed and the network will be upgraded to meet the need.
- New ICT services (e.g. video links, wireless networks) will be developed and expanded for the use of researchers and other experts.
- Matters relating to data security in government agencies and state institutes will be discussed in performance negotiations with the Ministry of Education.
- The educational administration will participate in international development projects relating to information networks and scientific computing.

Recommendations to partners

1. Producers in the ICT field will create common technical standards.
- *Finnish Information Society Development Centre (TIEKE)*
2. The public sector must promote user-friendly, open and compatible ICT in internal and external activities.
- *Government and local authorities*
3. In coordinating the administration of information society activities, the Ministry of Education will intensify cooperation with other ministries responsible for information society matters.
- *Ministries*
4. Local authorities must secure citizens' access to facilities where they can use ICT in electronic transactions and independent study.
- *Local authorities*
5. Information and advisory services independent of hardware producers must be available to citizens to help them with the acquisition of hardware and telecommunications.
- *Ministries etc.*
6. All libraries must have up-to-date library and information systems and adopt standards devised for information transfer and electronic transactions.
- *Local authorities, maintaining organisations*
7. Local authorities and other education providers will hire sufficient numbers of professional as technical support for the maintenance of information networks and computer systems or otherwise provide these services.
- *Local authorities, maintaining organisations*

Implementation of the programme

The responsibility for implementing the Information Society Programme for Education and Research 2004–2006 rests with the Ministry of Education's Department for Education and Science Policy and other educational administration. The programme steering group is composed of the Department's Executive Group. The programme will be financed from core and separate funding appropriations in the Ministry of Education main class and the partners concerned.

The Ministry will be assisted in the implementation of the programme by an Advisory Board consisting of experts from three areas:

- knowledge
- content
- operational environment

The Advisory Board will promote and monitor the execution of the programme and propose a *vision for 2015*. The Advisory Board will be composed of representatives of organisations responsible for programme action and for the recommendations.

The programme secretariat will be made up of officials of the Ministry of Education and the National Board of Education, which will be responsible for its action. The secretariat will coordinate the implementation and monitoring of the programme at the Ministry of Education and National Board of Education.

The programme partners will continually evaluate the implementation of the programme and their own activities. The concept of constant change requires an educational and participatory stance in monitoring and evaluation. The results and impact of the programme will be reported annually. The tools and procedures used in evaluation will be reviewed regularly. A service will be available on the Ministry of Education net site providing open, commensurate information relating to the Information Society Programme for Education and Research 2004–2006.

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