



UNESCO INSTITUTE

FOR INFORMATION TECHNOLOGIES IN EDUCATION (IITE)

High Level Seminar for Decision-Makers and Policy-Makers
from South Eastern Europe

Towards Policies for Integrating ICTs into Education

16-20 February 2004, Bucharest, Romania

SESSION 8

***Software and content issues of ICT
supported teaching and learning***

Presenter: Matti Sinko

Warm-up questions for the session 8

- What are the curriculum areas, which are currently insufficiently covered by relevant learning materials and environments in your country?
- What are the study programmes or curriculum areas, which have most serious lack of competent teachers?
- What are the geographical areas most difficult to deliver educational services?
- What secondary and tertiary and university level study programmes suffer most of low attendance by students?
- What are the top success stories of your distance education service throughout ages?
- How centralised or decentralised is the decision making in producing learning materials?
- What is the role of private sector in content provision for education sector?

What are the guiding principles and policies in choosing and/or designing and producing learning materials for the national education system?

- Who decides on what level?
- How are criteria set?
- What are criteria?
- What is the role of private sector?
- What kind of national preferences are set?
- Who evaluates materials?
- What eventually makes a piece of software good or effective?*

What dictates delivery mechanism?

- Text books still going strong
- Why go e?
 - Benefits of multimedia
 - Delivery over the net
 - Role of Online Communication
 - CDs and DVDs
 - Education Websites
 - Learning object repositories
 - Learning communities
 - Internet
 - Intranets

Market delivery vs. sharing

- Proprietary software
- Provision by tendering
- Shareware schemes
- Open source
- Public-Private Partnerships (PPP)

Complementing views by the expert team

- Small markets: Orfeus and UNI-C in Denmark
- Coordinated but market-driven initiatives in the UK
- International collaboration:
 - The Nordic model and challenges to scale it up on the European level
 - IFIP

ORFEUS

ORFEUS promoted

- development of educational software
- a growing market for educational software
- the application of information bases
- short seminars
- consulting services
- purchase and sales of educational software

UNI-C profile

UNI•C, The Danish IT Centre for Education and Research, is a government institution under the Danish Ministry of Education. UNI•C is the driving force behind the technological development in education and research concentrating on IT solutions for education, research and business. UNI•C has a staff of approximately 300, with offices in Copenhagen, Lyngby and Aarhus.

UNI-C strategy

UNI-Cs mission

is to be a driving force behind the development of an information technology basis for innovation and improvement of education and research in Denmark to contribute decisively towards ensuring Denmark's position in the global information society

It is the objective of UNI•C to be a:

Frontline organization

UNI•C strives to contribute towards the implementation of the IT policy of the Danish Ministry of Education and to continue playing a role as a frontline IT organization for the educational and research sector.

Preferred collaborator

UNI•C endeavours to become a preferred collaborator concerning development and utilization of IT in education and research and to utilize their experience to the benefit of the business sector and Danish society as a whole.

UNI-C and Education

- Sektornet
- Skolekom
- SKODA
- EMU
- Infoguide
- Pedagogical ICT License
- Junior Driving License
- Administrative systems for educational institutions



Responses to the Mega trends



Information and Communications Technologies are:

➤ a methodology to support teaching and learning

and

➤ worthy of study in their own right



National Responses to the ICT challenges vary:

- economic (create a skilled work force)
- pedagogical (improve teaching and learning)
- access to education (e.g. special needs)
- ICT Literacy for all ('life skill')
- participation in global society (bridging the



Equity Issues

- city v rural
- gender
- special needs
- public v private
- ??????



Organisational Issues

- the curriculum
- public examinations
- autonomy
- capacity building for teachers
- teacher deployment
- funding
- coping with change



We are witnessing

- major curriculum reviews e.g. Japan
didactic → heuristic
- questioning of assessment and examination policies
- examination of head teachers' leadership
styles and roles
- revision of teacher education
- redesign of schools
- alternative methods of funding
- significant changes in role of teacher, school.....



What are the consequences
of not introducing and
developing ICTs into the
educational system?

Who are the stakeholders?



Two examples of National Policy Implementation Experiences from England



Responses to the Mega trends



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Who are the stakeholders?

ICT in Education: Facts and Measures in Germany

Katja van den Brink

Centre for Educational Research, University
of Koblenz Landau, Germany &

University of Lisbon, ISCTE, Portugal

Vandenbrink@zepf.uni-landau.de

Pre-Considerations

- Germany: Re-Unification in 1990
- Federal Constitution: 16 Länder with 16 Ministries of Education
- Educational System: Reformation in the 70ies
- Results from the PISA Study 2001

ICT in Germany

- almost each household has a computer
- 30 million people over the age of 14 have Internet access

ICT in Education

- all schools equipped with Internet Access 2001 (1998 only 15 %)
- 40 students per computer (demanded by the EC: 5 – 15 per computer, 44% multimedia computers)
- High speed Internet access for all Higher Education institutions

Federal Government Measures

Programme period 1999 – 2005, i.e.

Internet for All - “IT in Education – Connection not Exclusion” (Women on the Net; access for people with disabilities etc.)

German Education Server (www.dbs.de)

New media in Education: Developing teaching & learning software

Network-based learning

School Sponsoring

Teacher Training

EU Integration

eEurope 2002 European Action Plan with
binding quantitative targets

Länders` Activities

- Different Conditions
- Different measures: media-corners; one computer each class; new teachers are equipped with notebooks; Länder-Servers; hardware4friends; ambassador programme etc.
- Teacher Training and Teacher Education
- ICT as administrative support for learning

Future perspectives of the Government

- Trainings in ICT skills
- Didactical and methodological concepts
- Virtual studying
- Creation of the Notebook University
- Widespread hardware & software of high quality

Conclusions

- Use of ICT in Education varies within the educational institutions
- Varies qualitatively and quantitatively from region to region
- ICT is not widespread used in German schools, universities and other educational institutions
- Still high focus on hard- and software and less on broad concepts



SESSION 4

The role of ICT in Modernizing Education: National Policies, Strategies and Programmes

The French Policy for integrating ICTs into Education: Some main issues

<http://www.educnet.education.fr/eng/>

Presenter: Bernard CORNU

In the past, many successive National plans, based on:

- Hardware equipment
- Production of Software
- Teacher Training

- Main causes of failures:

- Hardware before training
(i.e. hardware without usage, without need)
- Lack of maintenance and technical assistance
- Lack of professionalism in software design
- Teacher training not always appropriate, in methods and in content

Priorities:

Infrastructure, equipment and support:

SDET: Masterplan for work environments; rules to be respected by and recommendations for work environment designers.

User support services

Shared responsibility for equipment and networking with local authorities

Priorities:

Teaching and Resources:

**Content Provision: The Digital Space of Knowledge
(an online set of resources; the « fundamentals »);
« RIP » label;**

**Digital Publishing Scheme for Education;
Usage; scenarios for usage, scheme for usage.**

Prevention of Illiteracy

IT and Internet Certificate (B2I)

Priorities:

Higher Education:

Digital Campuses

Prevention of Illiteracy

IT and Internet Certificate (C2I)

A Portal for ICTs in Education: EDUCNET

<http://www.educnet.education.fr/eng/>

A portal for ICTs in Teacher Training:

http://www.iufm.fr/f_tic.htm



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SESSION 4

***The Role of ICT in Modernizing Education:
National Policies, Strategies and
Programmes***

Presenter: Matti Sinko

What/who are the driving forces in your country advocating the use of ICT in education?

Role of

- Parents
- ICT and telecom industry
- Other industries
- National Government
- Education ministry
- Local authorities
- Schools
- Students
- Public opinion
- Other?

What are the arguments used for going e?

Who are the critics?

- Parents
- ICT and telecom industry
- Other industries
- National Government
- Education ministry
- Local authorities
- Schools
- Students
- Public opinion
- Other?

What are the arguments used against going e?

Romania

A case study

Complementing viewpoints from past experience in various countries

Country	Background factors	Threats	Strengths	To improve	Successes
Finland	Solid economy and high-performing education system	Slow scale up of integrating pedagogical and ICT intensive reforms	Strong infrastructure and public and political support	Curriculum integration and domestic software development	Large scale professional development programmes for teachers
France	Hardware before training	-Lack of maintenance and technical assistance -Lack of professionalism in software design -Teacher training not always appropriate			
Germany	- Slow start - Decentralised education - Unification		- Solid economy - EU pressures	Scaling and speeding up on all fronts	
Denmark				Lessons to be learned from pilots	
Switzerland					
The UK					Lap-top to teachers initiative Lotteri scheme

ICT in Education– Lessons from Finnish Experience

IITE Balcan Seminar

February 2004

Matti Sinko

msinko@sadc.int

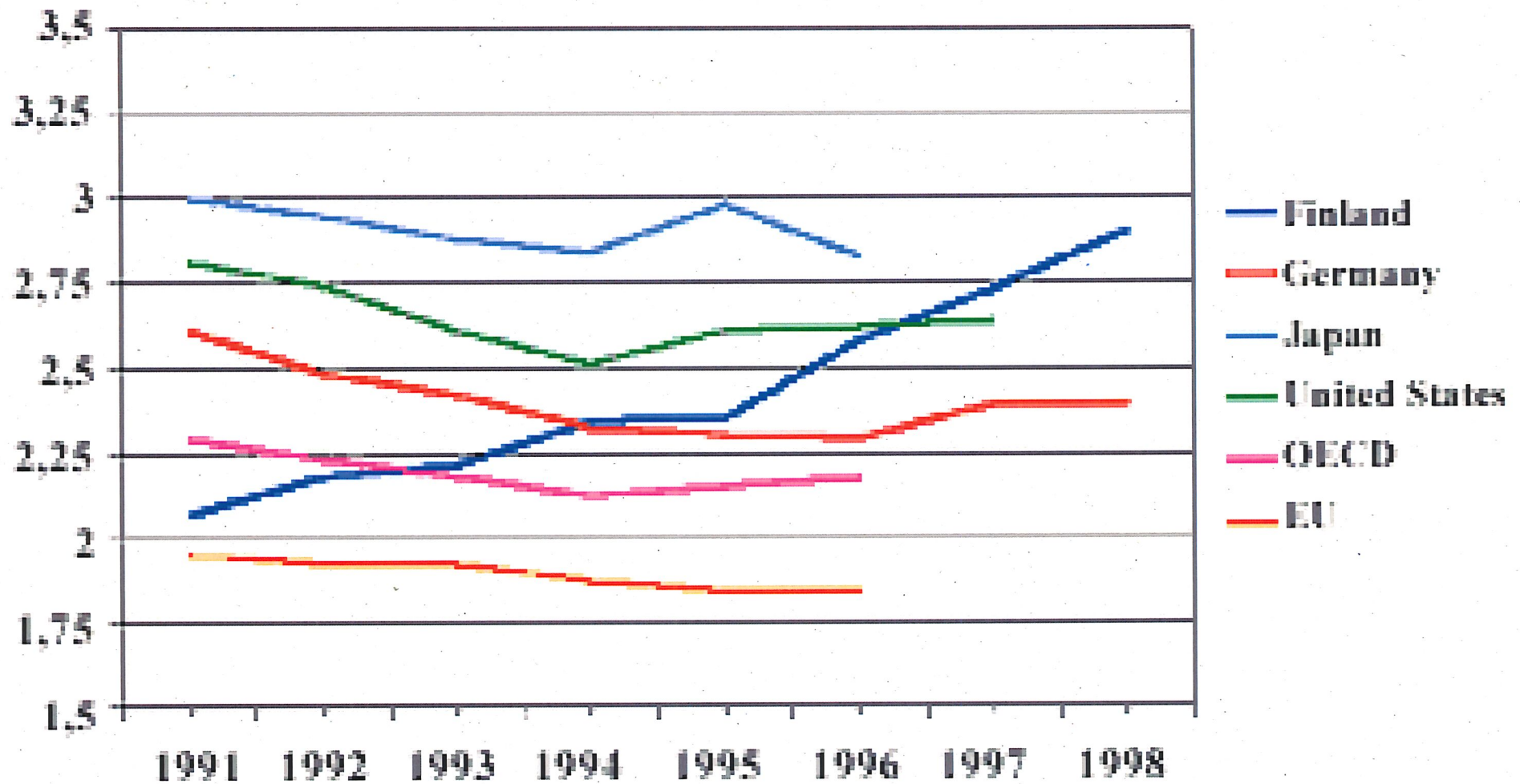


Rationales for Finnish National Information Society Strategies of 1990s and beyond

- anticipating global technological, economical and political changes
- securing competitiveness of the Finnish economy in the changing world, hence
- restructuring the national economy
- restructuring the whole societal infrastructure
- preventing social exclusion and disintegration

Trends of R&D Investments

R&D EXPENDITURE as % of GDP



Factors of Finnish Success Story

- trimming the liberalised economy
- membership in the EU
- information society strategies
 - investing in R&D, especially in hi-tech
 - investing in ICT industries
 - investing
 - in education
 - in training of ICT professionals and
 - in ICTs in education
 - liberalising telecommunication
- NOKIA as the flagship

ICT and social exclusion (the digital divide)

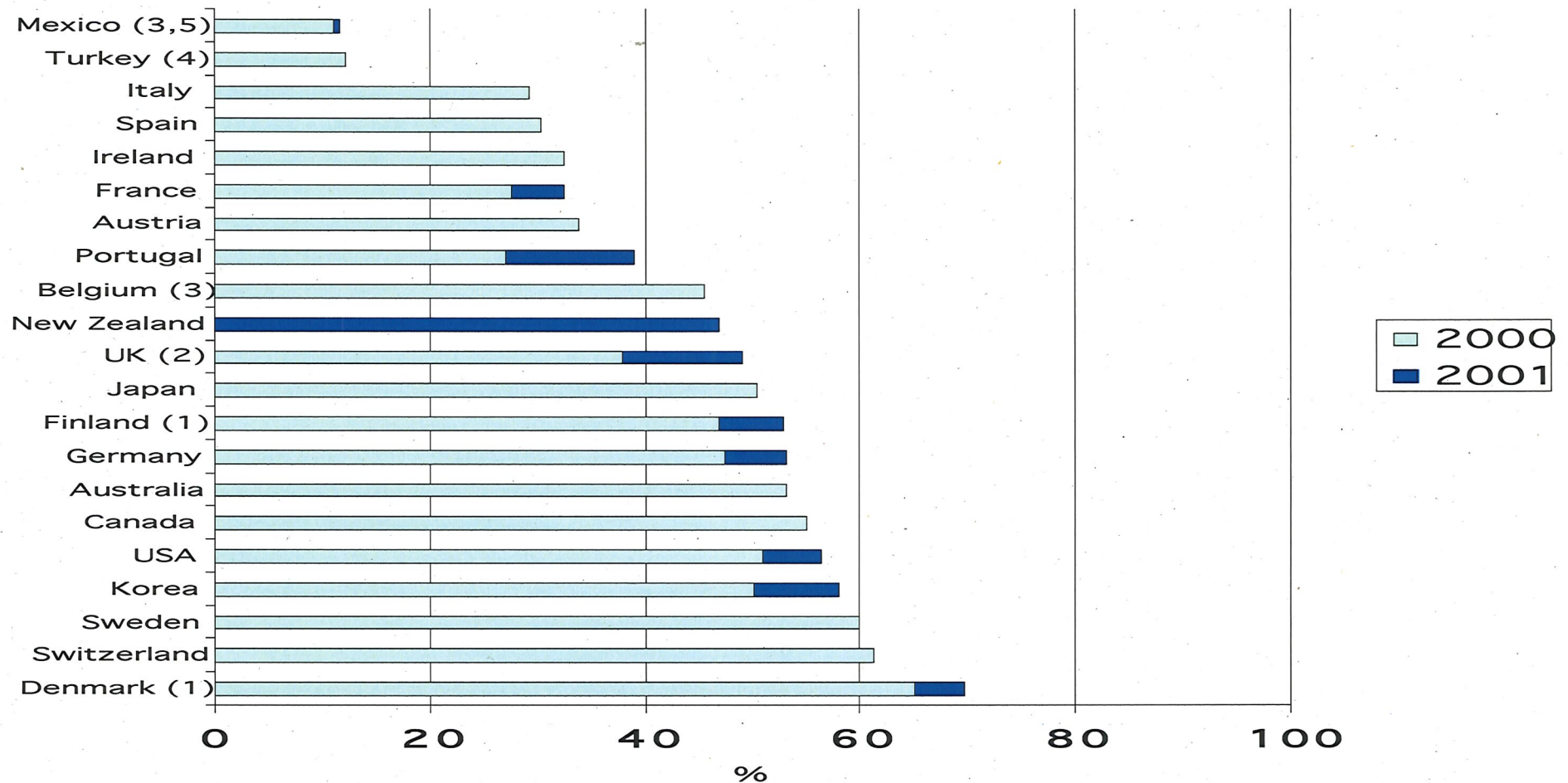
Havees

young
male
wealthy
southern & urban
well-educated
technology & science-
oriented

Have-nots

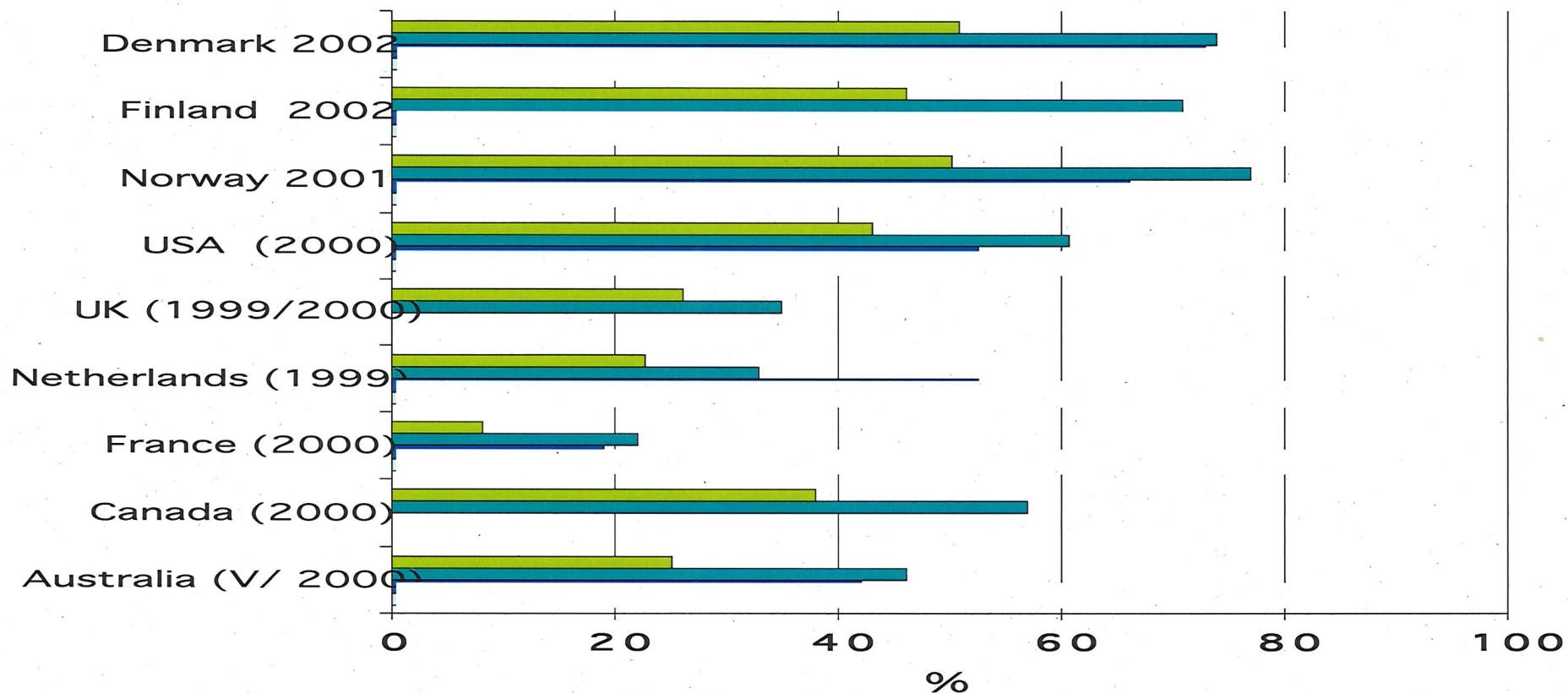
elderly
female
low-income
unemployed
living in remote areas
non-academic
humanities-oriented

Households with access to a PC of all households (%) in selected countries



Source: OECD, Measuring the Information Economy 2002.

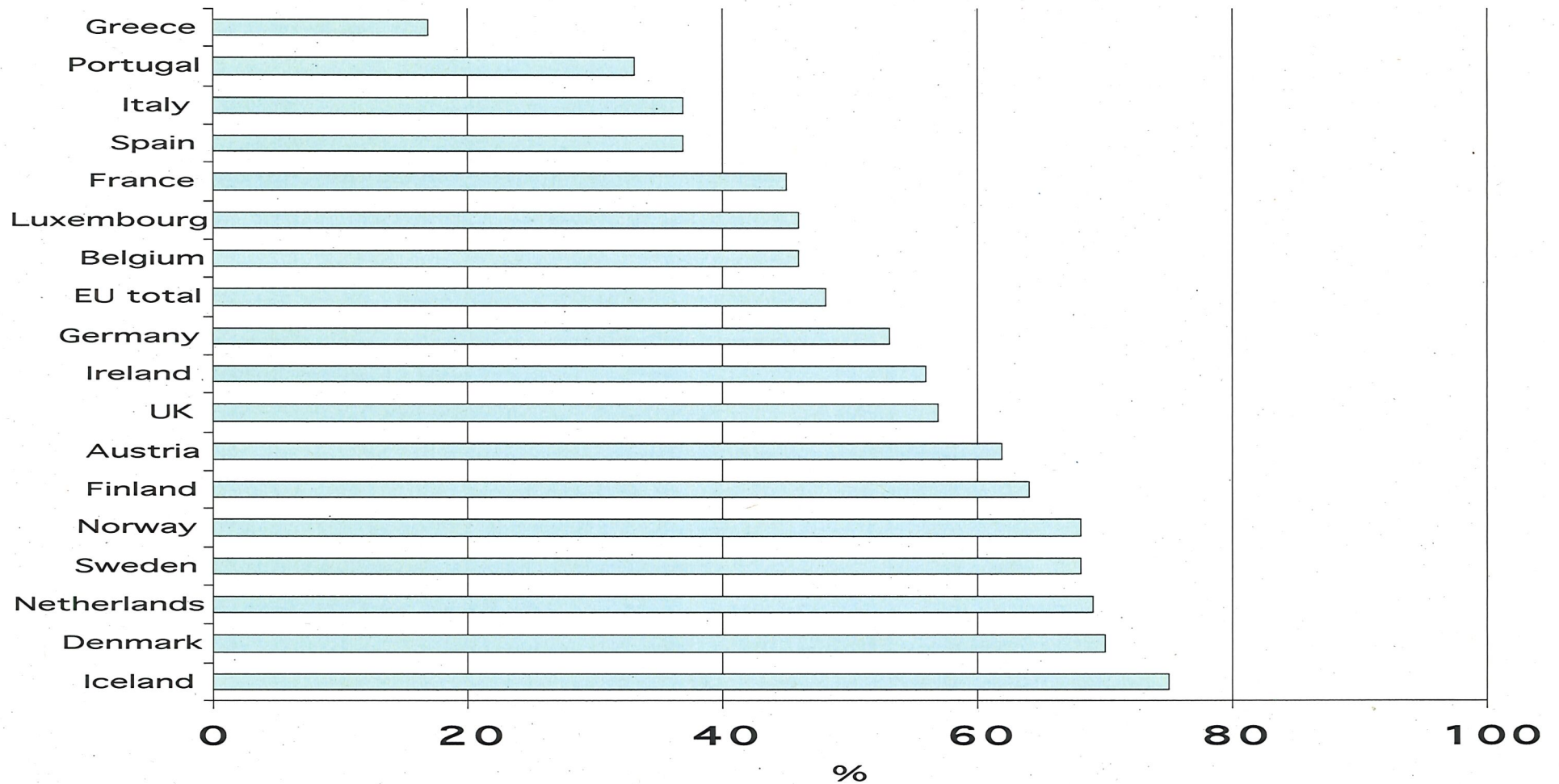
Penetration on PCs and Internet in homes with and without children in selected countries



■ Internet, household with children ■ Internet, no children in household

Source: OECD, Information Technology Outlook 2002 and National Statistical Institutes in the Nordic Countries.

Internet users in EU countries of the population over 15 (%) in 2001



Source: Flash Eurobarometer, n:o 112 Internet and the general public.

2001: All schools on the Internet

- ◆ primary 100 %
- ◆ lower secondary 100 %
- ◆ upper secondary 100 %
- ◆ vocational 100 %

Students per Computer

Level	Students / PC 1999
Primary	12-13
Lower secondary	11-12
Upper secondary	9-10
Vocational	5-6
HE	2-50

Obstacles to the use of ICT according to university administrators

Teachers' lack of time	4.1
Teachers' ICT skills	4.1
Teachers' reserved attitudes	3.7

teachers

Teachers' lack of time	3.7
------------------------	-----

students

Student workstations	3.5
Students' lack of time	3.4

(Scale: 1= poor...5=excellent situation)

ills)

Knowledge and Skills of Teachers

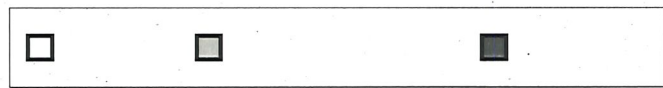
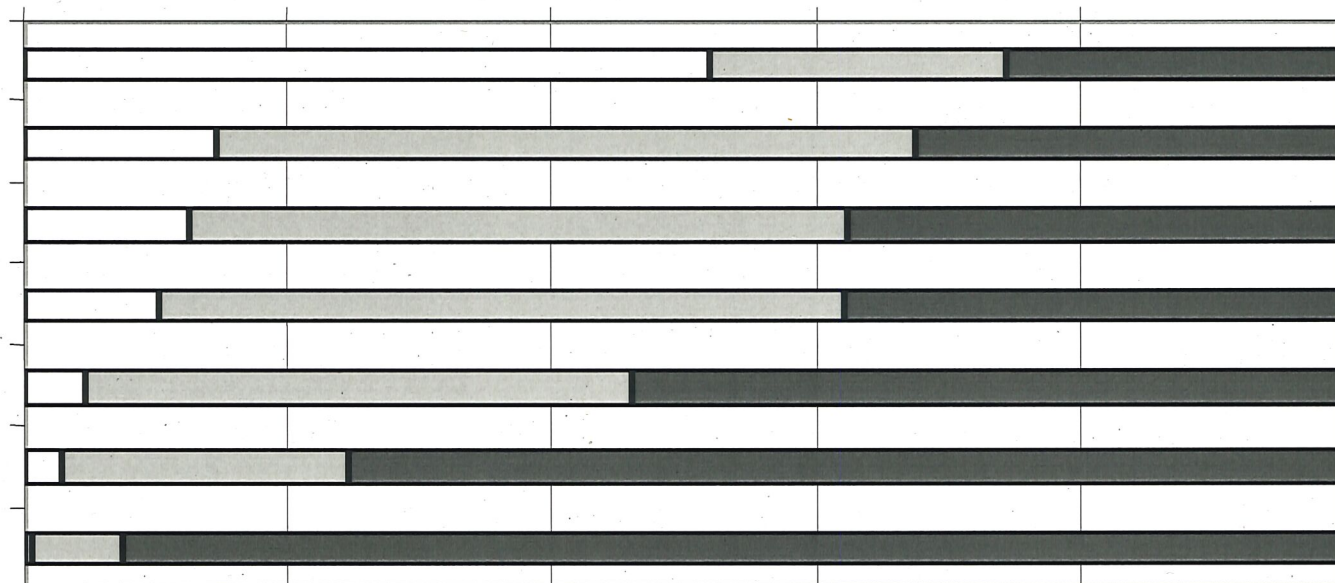
- One out of four teachers only feel confident with their present ICT skills and with their pedagogical competence to use ICT
- Two out of three teachers would like to get more training and more support in ICT and in ICT based teaching and learning

ICT skills of students (10-18): "I have good skills in..."

	<u>1996</u>	<u>1999</u>
• word-processing	35 %	45 %
• installing software	25 %	32 %
• downloading from web	15 %	35 %
• emailing	6 %	50 %
• web-browsing	12 %	56 %
• copying files	9 %	42 %
• graphics	-	9 %
• desk-top publishing	3 %	3 %

Use of ICT in schools according to students in 1998

Use of IT in different subjects (%) 0 % 20 % 40 % 60 % 80 % 100 % Languages Mothe



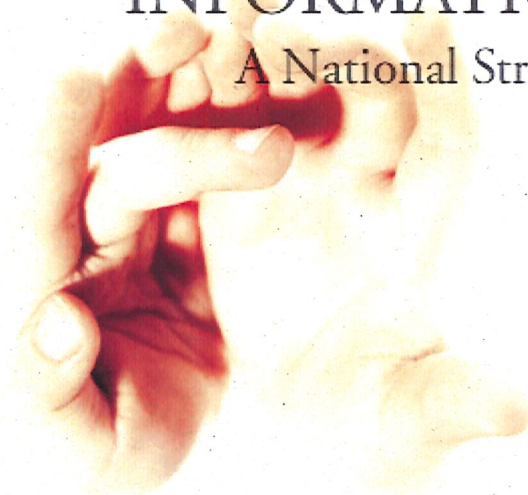
Usage of PC in schools during the autumn 1996 and 1999 (%)

Year	0-15	18	7652

Current strategy

Finnish Ministry of Education (1999)

EDUCATION, TRAINING
and RESEARCH in the
INFORMATION SOCIETY
A National Strategy for 2000–2004



<http://www.minedu.fi/minedu/publications/online.html>

Vision

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

Finnish Ministry of Education (1999)

Foci of the strategy

- Information society skills for all
 - Proliferation of Information society skills
 - Intensified teacher education
 - More and better ICT and New Media professionals
- Extensive on-line education system
 - net based learning environments
 - virtual university & virtual school
- Enhancing provision of electronic learning materials
 - in special attention of the entire government
- Strengthening of support structures

Coverage

- All formal education
 - Primary and secondary
 - Vocational
 - Tertiary level
- Lifelong learning
- Research
- Public libraries (educational functions)
- [A parallel strategy for content production]

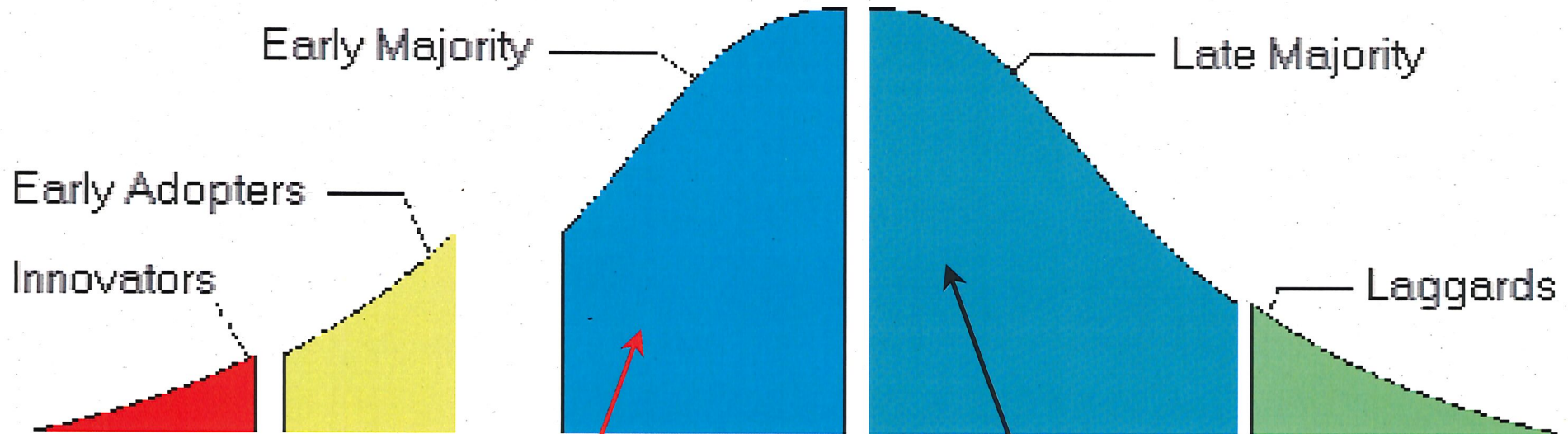
Funding and mobilisation

- Ear-marked in the national budget ca 45 M Euros / year *
- Substantial contributions from
 - local authorities
 - public technology funds
 - EU programmes
 - private sector
- Annual implementation plan

*Average extra funding 1996-2000 M Euros 45 / year.

Is ICT still emerging to or already transforming of Finnish education?

ICTE & Moore's Chasm



If measured by quantitative use

if measured by pedagogical value & education achievement

Mind the gap!

New teaching & learning Perspectives

- Self-Regulated Learning
- Approaches to Learning

Self-Regulated learning with ICT

- dfg

E-Portfolio Example

<http://elwa.ilu.uu.se/IKTiS02/maria/door.htm>

Advantages 1

- Provide insights into learning processes and related changes
- Emphasis is on change or growth in the process at multiple points in time
- Tool to foster communication and accountability to teachers and other students
- It allows to see the students as individuals – each portfolio is unique

Advantages 2

- It provides a basis for future analysis and planning
- It promotes a shift in ownership
- It promotes collaborative work
- It offers a more complex evaluation
- It covers a broad scope of knowledge and information from many different sources

Disadvantages

- Less reliable or fair than quantitative ev.
- Very time consuming for teachers
- Development of criteria can be difficult
- Unclear goals and criteria can lead to an unorganised collection
- Difficult to analyse the data

Policy makers decision

- Support the pedagogy behind the concept (teacher training)
- Provide compatible soft/hardware (also by fundraising?)
- School curriculum: less is more - focus on interdisciplinary learning; within the subjects: focus more on knowledge construction of concepts and learning strategies than on facts and numbers

Conclusions

- Portfolio as alternative if teachers know the concept and the potential
- Policy support is necessary for implementation new forms of learning and teaching