steps

Study of the impact of technology in primary schools

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European Schoolnet

empirica

Education and Culture DG

Lifelong Learning Programme

Rationale of the project

The Study of the impact of technology in primary schools (**STEPS**) was commissioned by the European Commission, Directorate General Education and Culture and undertaken by the European Schoolnet and empirica GmbH between January 2008 and June 2009, with the support of national correspondents, researchers, policy-makers, teachers and pupils in 30 countries.

The overall purpose of the study was to produce a comparative analysis of the main strategies for the integration of Information and Communication Technology (ICT) in primary schools in the 27 EU Member States, Iceland, Liechtenstein and Norway, their impact and future development perspectives. The study aimed to identify the impact of ICT on learning and learners, on teachers and teaching and on primary school development plans and strategies. It sought to identify the main drivers and enablers for effective and efficient use of ICT, and to propose recommendations on the integration of ICT in education for policy makers and stakeholders.

Evidence for the study came from five sources :

- Responses to a survey of policy-makers in each of the 30 countries, completed by National Correspondents nominated by ministries of education or members of the European Network for Information Society Research.
- An analysis of data from interviews with over 18,000 primary school practitioners.
- Reviews of over 50 studies on ICT in primary schools published in the 30 countries.
- Responses to a survey of teachers and head teachers on good practices with ICT.
- Case studies based on visits to 25 schools exemplifying the impact of strategies, including lesson observation and interviews with teachers and pupils.

Results were analysed and compiled into country briefs for each of the 30 countries. Using a common analytical framework, the evidence was further analysed, enabling key findings and recommendations to be formulated.

The full **STEPS** report contains the findings from the study.

In short it can be said that "ICT policies and strategies have had a positive impact on primary schools, teachers and teaching, and learners and learning in the EU 27, Liechtenstein, Iceland and Norway. These improvements include increased access to and use of ICT in schools, higher levels of teacher competence and improved learner outcomes, particularly motivation and competence development. ICT strongly supports education policies and innovative practices but challenges remain for its potential to be fully realised in primary education."

Further information is available at **http://steps.eun.org**.

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Sources of evidence

ICT policy and strategies

In order to identify national strategies for ICT, National Correspondents completed a survey on ICT policies and strategies and their impact. In the survey National Correspondents described and reflected on national and regional policies and strategies for the integration and impact of ICT in primary schools. The following issues were addressed :

- Characteristics of primary school education.
- Organisation of ICT in primary schools.
- Policies and initiatives for ICT in primary schools.
- Examples of good practice.

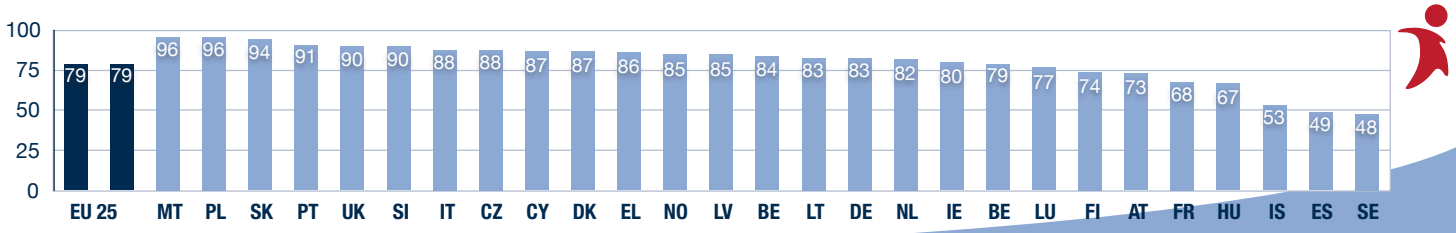
The results of the survey are stored in an online knowledge base, enabling policy makers to compare and contrast policies and approaches. The results were analysed in order to examine policy approaches, impact and enablers and inhibitors across countries, and to identify strategy typologies.

The LearnInd data

Data collected in 2006 for Benchmarking Access and Use of ICT in European Schools was analysed: interviews with 6,449 head teachers and 12,379 class teachers in schools which offer primary education in 27 European countries. Random samples were drawn to be representative of country, school level, region and type of locality (urban, intermediate, and rural). The use of ICT in European primary schools was measured along to the following components :

- Teachers' attitudes and motivation with regard to ICT, including perceived impact of ICT.
- Technical infrastructure in schools, including computer equipment and internet connectivity.
- The use of ICT in class and for educational purposes.
- ICT competence of teachers.
- Barriers to ICT use perceived by teachers.

The data were analysed for each country and across all 27 countries.



Source : LearnInd Classroom Teacher Survey 2006. Percent of teachers disagreeing or strongly disagreeing : Using computers in class does not have significant learning benefits for pupils.

Sources of evidence

Literature review

National Correspondents identified and reviewed key national studies that provide evidence of the impact of ICT using a sound methodology. A particular challenge was to make findings, mainly in the national language, comparable and accessible in English for a wider audience.

Over 50 studies were reviewed, producing for the first time a detailed picture of research on the use and impact of ICT, as well as enablers and barriers, in primary education in Europe. Findings are presented as they relate to learners, teachers and schools. Individual studies can be browsed in detail in the **STEPS** knowledge base for the aim, methodology, type of ICT and key findings.

The literature review analysis provides a comprehensive overview of the different types of studies analysed (from large scale national studies to small scale pilots and experiments), and discusses the findings for learners, teachers and schools.

School survey of good practice

An up-to-date snapshot of good practices with ICT and the perceptions of the teachers who achieved them came from the school survey, available online in nine languages.

There were four sections :

- Country and school context (e.g. country; size of school).
- About the good practice (issue tackled, subjects involved, type of activity).
- Impact of the good practice (on pupils, teachers and school).
- Enablers and inhibitors (e.g. technology used, success factors).

Some 250 good practices were submitted, at least one and as many as 35 from each of the 30 countries in the study. Most of the respondents were practising teachers or head teachers, talking enthusiastically about their experiences and challenges with ICT at the 'sharp end' of national, regional, local and school ICT policies that constrain or enable their visions for teaching and learning.

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Sources of evidence

Case studies

Examples of good practice at primary school level were documented in order to illustrate the main strategic typologies. Based on school survey responses and recommendations from national correspondents, examples of good practice were identified and contact made with the schools involved. Experts visited the schools, observed lessons and interviewed senior staff, teachers and pupils following an agreed protocol and writing up case studies in a common format.

A fascinating set of over 25 **STEPS** case studies has been produced describing good practices and the factors behind them in 14 countries, ranging from Romania to Portugal, Finland to Slovenia, large urban schools to isolated village schools. The good practices and case studies have been analysed to draw out common enabling and inhibiting factors.

Integrated country reports

Thirty country briefs were produced, each about eight pages, giving a succinct overview of the **STEPS** results for each country in a standard format. Each country brief contains a summary of ICT policy and initiatives in primary schools based on the policy survey, an analysis of the LearnInd data for that country, a summary of the results from national research, and descriptions of good practice in the country and the teachers' view of the enablers, inhibitors and challenges behind them.

"Within a term we were all comfortable in creating activities, the children loved being able to interact and everyone's confidence in all types of ICT increased..."

(from Horndean Infants school UK case study)

Findings

Evidence shows that ICT strategies have resulted in improved learner outcomes (creativity, competence development and motivating lifelong learning), higher levels of teachers' digital competence, increased access to and use of ICT in schools and change and innovation in primary school education.

Challenges remain for ICT's potential to be fully realised in primary education, notably the professional development of teachers and systematic long-term assessment and sharing of effective strategies at all levels.

Learners and learning

1. ICT improves children's knowledge, skills and competences
2. ICT increases motivation, confidence and engagement in learning
3. Assessment can be more sophisticated and individualised

Teachers and teaching

4. Most teachers use ICT and are 'ICT-optimistic'
5. ICT is pedagogically under-used
6. Quality training increases teachers' motivation and their digital and pedagogical skills

Schools and ICT planning

7. Children's access to technology is improving
8. Whole school ICT integration and leadership matter
9. ICT improves administration and access to information

Primary education systems

10. Strategies for ICT tend to feature infrastructure and teachers' digital competence
11. Digital competence usually features in the curriculum
12. ICT responsibilities within the system can be unclear

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Recommendations

Education policy

1. Increase, improve and diversify teacher education and support
2. Build ICT into general educational policies
3. Ensure access to quality equipment and learning resources

Schools

4. Capitalise on learners' ICT competence; reduce digital divides
5. Strengthen pedagogical use of ICT ; develop an open knowledge-sharing school culture
6. Exploit the potential of ICT as a catalyst for change and to fulfil wider educational goals

Research

7. Apply a variety of methods to measure and assess the impact of ICT
8. Shift the research focus towards the learner and the school as a learning organisation
9. Establish a long-term and continuous monitoring system on the impact of ICT in schools

European Schoolnet (EUN)

Rue de Trèves, 61
1040 Brussels
Belgium

Tel. : +32 (0) 2 790 75 75
Fax : +32 (0) 2 790 75 85
Email : info@eun.org

empirica Gesellschaft für Kommunikations und Technologieforschung mbH

Oxfordstr. 2
D–53111 Bonn
Germany

Tel. : +49 (0)228 98530 0
Fax : +49 (0)228 98530 12
Email : info@empirica.com

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