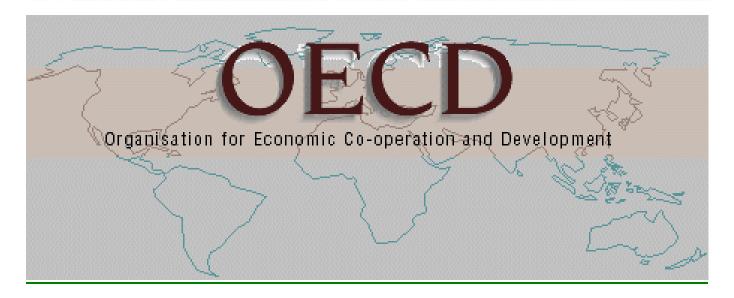# OECD
Organisation for Economic Co-operation and Development

AN INTERNATIONAL OECD STUDY

INFORMATION AND COMMUNICATIONS TECHNOLOGY AND THE QUALITY OF LEARNING

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At their last full meeting at OECD in 1996, education ministers declared their need for advice from the Organisation on how best to implement lifelong learning for all, this as a major task for the current 5-year mandate of OECD educational activities extending from 1997 to the end 2001. Specifically, the ministers included the request that the OECD:

> "…assess visions of the 'school of tomorrow', in particular in the light of new technologies and advances in pedagogy."

In this article, I introduce briefly a major study being carried out in our Centre for Educational Research and Innovation (CERI) that responds directly to this ministerial invitation. This study on Information and Communications Technology (ICT), education and learning is, in turn, organised as part of a broader CERI programme of activities entitled *Schooling for Tomorrow*.

The "ICT and the Quality of Learning" study was launched at an international seminar held at OECD in June 1998, attended by national representatives and experts from 25 of the Organisation's member countries. In many countries now there is intense interest in the potential of ICTs to open up learning and knowledge in new ways to new audiences. Very substantial investments have already been made in education in recent years, especially in hardware and connectivity, in working towards this potential. But, many questions remain unanswered:

- What are the strategic options so that this potential can best be realised and using what knowledge base?
- Why is the high quality educational software market still so under-developed, and how can this be put right?
- How can learning be organised through these technologies so as to "break the mould", allowing both

far-reaching individualisation and new forms of connectivity between individuals and networks?

The study is mainly being carried out through three interconnected sets of activities on: Software Quality, Market Issues, and Research and Evaluation. Each of these areas has its own groups and schedule of meetings as outlined below, and there are periodic conferences that bring together national representatives and experts across all three. The first of these, as mentioned above, was held in June 1998, with subsequent conferences planned for early 2000 and Spring 2001. A project Website has been set up for exchange of information and co-ordination of activities across the different sub-projects, (see: http://bert.eds.udel.edu/oecd/).

Software Quality

We have established a core working group reflecting a range of expertise: curriculum specialists, educational policy makers, teachers, software developers. The Software Quality group has already met in Paris in April 1999, and will come together in the Netherlands in October 1999, with further meetings in 2000.

The starting point for the group is the review of existing work across OECD countries on criteria of quality, the evaluation of software, and the purposes for which they are used. On the basis of this analysis, the Software Quality group will clarify the dimensions of quality, and work towards establishing a framework of principles to inform software development, evaluation and use. Such a framework will contribute to design specifications for new materials, to judgements about software applications, and to the promotion of dialogue between suppliers and users. The group will consider whether subject-specific quality criteria are needed in, for instance, mathematics, science and foreign languages. It will need to consider the quality issues that arise in relation to the myriad forms of ICT use in education with software that is not specifically educational -- Internet and Intranet search, electronic communication and networking, information and document processing, etc.

The work on quality will result in a final report for publication in the CERI *Schooling for Tomorrow* series. It is intended to make a significant contribution to policy and practice in education, and will inform the dissemination conferences on ICT and education in 2001.

Partnerships and the ICT Education Market

An important aim of this work is to raise general awareness, both in the education sector and the private business community, of the massive potential of the educational software market. A further aim is to examine successful public/private partnerships for developing high quality educa-

tional multimedia software. This work is being carried out through dialogue with senior figures in the public and private sectors. Small informal meetings of OECD education ministers occurring every 6 months or so, have included these issues on their agendas of discussion since 1996. A paper on the educational multimedia software market was prepared for the major Ottawa Conference, "*A Borderless World: Realising the Potential of Global Electronic Commerce*", (October 1998). (A follow up conference on E-commerce one year later will take place in Paris this autumn).

A high-level meeting bringing together representatives of the ICT industry and senior education and communication policy-makers was held in London in June 1999, hosted by Oxford University Press. The meeting addressed what can be done to overcome market difficulties and how partnerships can be formed to promote the development of high quality educational software. A further high-level meeting on these issues will be held in New York City, in December 1999, hosted by the American publisher Scholastic Inc.

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These high-level discussions are being supported by targeted studies, including an analysis that has resulted in a chapter in the OECD book *Education Policy Analysis 1999 Edition*, "ICT in Education: Trends, Investment, Access and Use", published this fall.

Out of this dialogue and analysis, we will grasp more successfully the contours and potential of the relevant markets. We will have clarified principles of best practice for public/private partnerships, and contributed to the promotion of such partnerships through the high-level meetings. These will be incorporated into a final report for publication, and will naturally constitute an important aspect of the dissemination events planned for 2001.

Research and Evaluation

Research and evaluation represent the most complex, resource intensive part of the study. There are now strong demands world-wide for informed answers to a wide range of questions about the impact of ICT on teaching and learning. As countries invest heavily in this direction, the main evaluation questions are less "is it worth it?" (since the technologies have become permanent aspects of school life in many places), and more "how can ICTs be used most effectively?". The complexities of evaluation to which this shift gives rise, are rendered still more complex *inter alia* both by the rapidity of change and by the importance of out-of-school use of ICT. Such complexity notwithstanding, there is an acute demand for a well developed international knowledge base in this field.

A network of National Research Experts has been established that will serve as the main channel of liaison with each country. To this core network we are seeking the wider involvement of experts, practitioners, learners, and policymakers. A basic aim for the work in this area is that of review and exchange, whether of evaluation methodologies or of substantial findings on different themes. To this end, the project Website referred to above will prove a valuable medium specifically to provide bibliographic data, lists of national contacts, information exchange forums, reviews on key subjects, and other general information on the main areas of new research being conducted as part of this study.

There are two main areas of new research to be carried out in the participating countries and organised by the OECD. First, there are *case studies of schools*, where ICT has acted as an integral element of radical change towards their becoming learning organisations. A first small planning meeting on design and methodology took place in Paris, May 1999. Once the countries have clarified their participation, the fieldwork will take place around mid-2000 so that national reports and a major synthesis can be produced for the main dissemination conferences in 2001. This aspect of the work is being closely co-ordinated with the parallel IEA SITES study, in particular its Module 2 project of case studies of innovative use of ICT in classrooms.

Second, there are *experimental studies of ICT impact on learning*. In this case, the focus will be classrooms and the impacts of interest will be defined particularly in terms of student self-study abilities. There is considerable interest in these forms of advanced impacts, which have clear significance for lifelong, rather than short-term gains relating to drill-and-practice. A first small planning meeting on design and methodology took place in California in July 1999. Once the countries have clarified their participation, the fieldwork will be undertaken in 2001 after careful piloting.

A meeting of the network of National Research Experts is taking place in September 1999, in Futuroscope, Poitiers, France, to consider in particular these two research projects. At this time, we can consider how far certain other issues - such as teacher attitudes, professional development, and student/learner viewpoints - should also be incorporated into our reflections in this area of the study.

This part of the OECD study will make a significant contribution to the burgeoning international knowledge base on ICT and learning. It will result in substantial new empirical analyses based on co-ordinated national research exercises. These, in turn, will inform the high-level dialogue on policy and practice to take place in the latter stages of the study.

Conclusion

These three areas of work are interlocking; the clarifications and analyses of one directly feed the other two. Some of the work cuts across all these issues. For instance, the chapter for the 1999 *Education Policy Analysis* on trends, investment, access and use, serves all three. Equally, we have organised or been closely involved in conferences that draw together these different areas.

One was a major policy conference organised by the Irish and UK governments in association with OECD in Dublin in May 1999, on "Dissolving Boundaries: ICTs and Learning in the Information Age". This was attended by officials, teachers, and experts from over 20 OECD countries, with an agenda shaped around our three-part framework. In December 1999, there will be an International Round Table in Philadelphia, USA, on the equity dimensions of ICT use and learning. This Round Table is being jointly organised by the National Center on Adult Literacy and the International Literacy Institute, based in the University of Pennsylvania, and the OECD. Similar such events may well come up next year and beyond. And, we are planning our own major dissemination conferences for this study to take place in 2001.

In adopting this three-part programme, the aim has been to achieve not only a mix of focus but of the stakeholders to be engaged and of methodologies. In this way, we expect this new OECD work to make a substantial contribution to international understanding of the impact of ICT on teaching and learning across a broad sweep. And, as this is located within the umbrella of CERI's broader work on *Schooling for Tomorrow*, its outcomes will be related to the analyses of educational futures and learning innovations being carried out in parallel. In this way, we expect this ambitious programme to respond to the tasks set for us by the ministers of education in 1996 in clarification of major issues confronting schooling as we move into the 21st century.