

KNOWLEDGE MAP: CURRENT PROJECTS AND PRACTICES

GUIDING QUESTIONS:

- What do we know about how ICTs are being used for teaching and learning?
- What do we know about how ICTs are currently being used in education in developing countries?
- What is known about donor investments in ICTs as part of their support for education?

CURRENT KNOWLEDGEBASE

*What we know, what we believe
— and what we don't*

How ICTs are currently being used in schools



This Knowledge Map is an excerpt from the publication, *Knowledge Maps: ICTs in Education: What Do We Know About the Effective Uses of Information and Communication Technologies in Education in Developing Countries?* produced by the Information for Development Program (infoDev).

■ **ICT use is increasing**

In general, uses of ICTs in education in both OECD countries and LDCs are seen as increasingly widespread and continuously growing. That said ...

■ **ICTs are typically used only for brief periods each month**

In general we know that there is limited contact time per month using ICTs by both teachers and students, and even less time spent with reliable internet access, even in OECD countries. Contact time with ICTs and teacher- and student/ICT ratios vary widely.

■ **ICT use in schools in the United States is not great**

Even in the United States, in the areas where one would expect to see the largest potential gains—students acquiring information, demonstrating and communicating content understanding in specific school subjects—ICTs are used only rarely. Reasons for this include scheduling issues inhibiting access to ICTs, lack of congruence between curriculum demands and ICT use, and lack of convenient access to ICTs.

■ **Most common uses in the United States can be grouped into four categories**

In the United States, frequent computer experiences occur primarily in four contexts: computer education (basic ICT literacy); business/vocational preparation; exploratory uses in primary school; and word processing and presentation software.

■ **Very little is known about just how (and how often) ICTs are used in LDCs**

While there is a great deal of knowledge about how ICTs are (and are not) being used in OECD countries, there is not much data on how ICTs are being used in schools in LDCs.



- **Content filtering has important impacts**

Even where Internet access is reliable, content filtering affects access in important ways. Where internet access is available, it is often limited in frustrating ways for teachers and students, by content filters designed to protect students from inappropriate material. Where filters are not available, there is a greater reluctance to access the internet in school because of fear of exposure to inappropriate material.

- **Teacher use lags behind student abilities**

Students use ICTs in much more sophisticated ways than teachers. In OECD countries, students themselves are figuring out ways to take advantage of the communication potential of ICTs for learning in a self-organized, ad hoc manner that correlates closely with their own personal uses of ICTs in their daily lives. Communication tools and applications (such as chat, e-mail and SMS) appear to be under-utilized in education environments.

- **Use by teachers and administrators outside of school under-studied**

There is little knowledge of teacher and school administrator use of ICTs outside of school, and how this relates to in-school use of ICTs.

Landscape of initiatives

- **ICT in education programs in Asia-Pacific are fairly well mapped**

ICT in education initiatives in developing countries in Asia-Pacific have been well mapped and recently documented by UNESCO's Bangkok office. ICTs are being used quite extensively throughout the region in education activities.

- **ICT in education programs in Africa have been mapped to a decent extent**

In Africa, Schoolnet Africa and Imfundo (through its KnowledgeBank) have done a decent job of cataloguing ICT in education initiatives in Africa, although most data appears to be a few years old. It is notable that, even in some of the most challenging environments, such as those found in the first twelve countries participating in the so-called Fast Track Initiative (FTI), most of which are in sub-Saharan Africa, ICTs are being used to help meet education objectives. Interestingly, ICTs are mentioned explicitly (if obliquely) in the official government requests to participate in the FTI. That said, most such initiatives are small pilot projects, loosely (if at all) coordinated with other education initiatives (and the Ministry of Education), and often in partnership with outside NGOs and donor agencies.

- **Less is known about ICT use in education other developing countries**

No comprehensive mapping exists of ICT in education initiatives throughout Latin America (although initiatives in some individual countries are quite well documented), the Caribbean or Eastern Europe/Central Asia.

- **It is very difficult to identify ICT components in donor-supported education projects**

It is extremely difficult to identify where donor-supported education initiatives, including those funded by the World Bank, utilize ICT components and, where such components are identifiable, it is quite difficult to identify the size of such investments, for a variety of reasons.

- **Donor education experts often have little knowledge of ICT use in education issues**

Many task managers working on education projects in donor agencies have incomplete knowledge of uses of ICTs for education in their countries. It is surmised that this relates to the fact that most ICT interventions in the education sector in many developing countries – especially the poorest, and especially in Africa – have been through small, uncoordinated pilot projects. In addition, there is a tension in many donor organizations between those who feel that the use of ICTs in education is an unaffordable luxury for countries struggling to meet Education For All (EFA) targets, and those who feel that, given the pressing and often seemingly intractable challenges faced by these countries, it is hard to see how some targets can be reached without considering the use of ICTs.

Typical uses for ICTs in education in donor-supported projects

- **ICT components in donor-supported education projects can be divided into five categories**

Where large scale donor-supported education projects exist that utilize ICTs in the target countries to

benefit education, ICT components typically help in (a) supplying computers and connectivity and building school computer labs; (b) enabling instruction in computer programming and computer literacy; (c) (to a lesser extent) developing and disseminating new curricula in electronic format; (d) distance learning (especially as it relates to teacher professional development); and (e) enabling better administration in the education sector (particularly through the development of education management information systems, or EMIS).

■ **Where ICTs are used for learning, they are chiefly used to present and disseminate information**

Where ICTs are used in donor-supported projects at a large scale in teaching, to support subjects other than computer programming and computer literacy in the target countries, they are typically used as tools for presentation. The justification for and rhetoric surrounding such implementations often cite the potential role of ICTs to promote and develop a set of “twenty-first century skills” related to critical thinking, information evaluation and reasoning, collaboration, and international awareness. However, in most cases ICTs are largely used in schools to teach ICT skills.

Issues in identifying ICT components in World Bank (and other donor-supported) education projects

■ **No common vocabulary for ICT use in education projects**

There is a lack of consensus about definitions of ICTs as used in education. Perhaps for this reason, no comprehensive mandated standards exist with which ICT components in education projects can be coded.

■ **Existing data is dicey**

Existing World Bank studies and figures related to the ICT components in World Bank education projects are problematic. The methodologies used in the studies are either highly questionable and/or very difficult to reproduce, and never explicit. Internal World Bank data is incomplete and/or confusing relating to the uses of ICTs in World Bank education projects.

■ **No standard coding at the World Bank**

There is no standard coding for ICT components in World Bank, or other donor-supported, projects. Where codes have been developed, they typically focus more on the presence of easily identifiable, physical information infrastructure components (computers, routers, televisions, software purchases) than on other ‘softer’ components, especially those related to services (training, curriculum development, systems integration, custom software development, on-going maintenance). In addition, procurement guidelines and thresholds often obfuscate the presence of ICT components, which are often believed to be purchased piecemeal and/or combined with other goods or services. This is true for the World Bank as for other donors (including the Asian Development Bank and the European Commission/Union).

■ **EMIS implementations are widely used and easy to find**

Documentation relating to the use of EMIS, explicitly mentioned in official EFA documents as important ICT tools to use related to EFA goals, is easy to find. Based on feedback from World Bank education task managers and other ICT in education practitioners, such components of education projects are mostly of less interest than the uses of ICTs as teaching and learning tools.

■ **The PAD is the best source of information at the World Bank**

The best source of information about the existence of ICT components in World Bank education projects is the “project appraisal document” (PAD). However, anecdotal evidence suggests that ICT components in such projects, even when they are identifiable, are often not implemented as outlined in the PAD, and it is difficult to determine where such changes have occurred, given current reporting guidelines and practices.

■ **ICT investments are often multi-sectoral**

By their very nature, investments in ICTs are often multi-sectoral, and thus uses of ICTs to benefit education can be found in projects mapped to other sectors (considered to be ‘outside’ the education sector). This is an artificial / bureaucratic distinction that may well result in a systematic underestimation of the impact of ICTs investments on education in donor-financed projects.

COMMENTS

General comments

- Locating and identifying the uses of ICTs to benefit education in developing countries is a tedious, difficult, time-consuming and ad hoc task.
- No standard reference or methodology exists for identifying such investments.
- Observations and conclusions on how ICTs are actually used in schools are drawn almost exclusively from OECD experience. Little such data exists for LDCs, and essentially none for countries most at risk of meeting education-related MDGs.

Applicability to LDC/EFA context

- If ICTs are to be useful in helping to meet education-related MDGs, it will be necessary to identify where such investments have been made, and their magnitude, so that comparative and cost/benefit analyses can be conducted. At present, this is not an easy task.
- Emerging evidence from OECD countries suggests that even massive investments in ICTs in schools may not bring about the desired changes in teaching and learning processes unless such investments are supported by similar initiatives to improve access to ICTs outside of the school environment. This may be especially important for uses of ICTs to support EFA goals, as effective use in school may require high levels of access outside school if gains in such investments are to be maximized, especially where ICTs are to be used for communication purposes.

Some areas for further investigation and research

- How should ICT components in education projects supported by donors be identified and quantified?
- How does access to and use of ICTs outside school impact the use and impact of ICT use in school?

Some Recommended Resources

to learn more

- *Best Practices for Technology Utilization in High Schools: A Delphi Research Report* [Clark 2003]
- *COL Experiences in ICT for School Education* [Menon 2003]
- *Distance Education and Technology in Sub-Saharan Africa* [Saint 2000]
- *Experts' Meeting for Documenting Experiences in the Use of ICT in Education and SchoolNet Operations* [UNESCO 2003]
- *ICTs in African Schools Workshop: Workshop Report* [SchoolNet Africa 2003]
- *Information and Communication Technologies @ the World Bank: Overview of Roles of Central Units* [World Bank 2004]
- *IICTs and MDGs: A World Bank Perspective* [World Bank Group, 2003]
- *Information Infrastructure: The World Bank Group's Experience* [Barbu 2001]
- *Imfundo KnowledgeBank* [imfundo 2004]
- *Integrating ICTs into Education: Lessons Learned* [UNESCO-Bangkok 2004]
- *Metasurvey on the use of Technologies in Education in Asia and the Pacific (2003-2004)* [Glen Farrell 2003]
- *New Perspectives for Learning: Insights from European Union funded Research on Education and Training* [European Commission DG for Research 2003]
- *Task Managers' ICT Toolkit: A Route Map for ICT Components In World Bank Projects* [World Bank 2004]
- *Task Managers' ICT Toolkit: Good Practice for Planning, Delivering, and Sustaining ICT Product* [World Bank 2004]
- *Ten Lessons for ICT and Education in the Developing World* [Hawkins 2000]

- *Technology in World Bank Education Projects: An Operational Review – Fiscal Years 1997 to 2000*
[Georgiades, unpublished]
- *World Bank Projects Database* [World Bank 2004]

About these Briefing Sheets:

infoDev's Knowledge Maps on ICTs in education are intended to serve as quick snapshots of what the research literature reveals in a number of key areas. They are not meant to be an exhaustive catalog of everything that is known (or has been debated) about the use of ICTs in education in a particular topic; rather, taken together they are an attempt to summarize and give shape to a very large body of knowledge and to highlight certain issues in a format quickly accessible to busy policymakers. The *infoDev* knowledge mapping exercise is meant to identify key general assertions and gaps in the knowledge base of what is known about the use of ICTs in education, especially as such knowledge may relate to the education-related Millennium Development Goals (MDGs).