# EQ Review

## Educational Quality in the Developing World

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## ICT and Education in International Development

In any field, international development included, success typically follows a series of shortcomings from which lessons learned and best practices are drawn. There is no key to unlocking the potential of a country and a people; instead there are methodologies and models that are slowly uncovered and make progress toward a long-term goal. This is true of the use of Information Communication Technologies (ICT) in education, as well. As programs integrate ICT into their education projects, we are learning lessons and accumulating best practices that will aid us in future interventions. This exercise is particularly important because in many cases tools such as mobile phones, personal data assistants (PDAs) and even many computers were not originally designed for education purposes. The use of ICT has exciting implications for education in developing countries. However, we must be careful not to see ICT as a panacea and abandon all that we have learned over the past fifty years about the process involved in accomplishing meaningful change.

The deployment of ICT to support teaching and learning has been happening for decades. Much of the rationale supporting investments in new tools for education follows on the coattails of the private sector's evolution and growth. However, while private sector investment and use has been driven as much from the ground up as the top down and in resource rich environments, the integration of ICT in schools and education systems has largely been top-down, scattered, and deployed based on generally scarce and highly prioritized resources.

Universal challenges and processes for deploying ICT in schools have been well documented[1] and yet many countries and multilateral donors adopt the perspective that simply updating infrastructure with technology will result in changes in teaching practice and improve learning outcomes. These studies point to a vital need for responsible deployment and careful planning and attention to a broad spectrum of issues including, but not limited to: sustainability and maintenance plans for costly equipment; power sources in locations with little or no consistent electricity; community support and access; and training of users, facilitators and administrators.

Another often overlooked consideration is measuring the return on investment. The return can be measured in terms of improved learning or any other desired outcome, and the investment would include the cost to implement the technology. This could then be compared to the return of other potential investments in education, including buying new books or other learning materials, introducing food or meal programs in schools, or even focusing resources simply on upgrading school facilities or teacher practices in the classroom.

That being said, when the ICT use is linked to pedagogy and when there are clear goals for the use of ICT in education, and its integration is well-planned and thought out, the results can have positive effects such as increased student and teacher motivation and attendance, increased learner autonomy, and student achievement when appropriate ICT models have been used.

Technology changes quickly, and as practitioners, it is important for us to adapt quickly as well. The emergence of mobile phones as a primary means of telephonic communication in developing countries has had implications in areas from agriculture, allowing farmers to check market prices, to disaster preparedness, by using text messages to get early warning messages to residents living in at-risk areas. People are more connected than ever, but the question is: how do we harness the connectedness to enhance education delivery to some of the poorest nations in the world?

This issue of EQ Review highlights a project in Macedonia that uses Student Support Technician Clubs, an IT/business curriculum development project in Jordan, a project in Zambia that is using MP3 players to support professional development, and a project in Mali that aims to provide teacher training through radio instruction.

For more information, please contact Roy Zimmermann, Deputy Director of Global Initiatives, American Institutes for Research, at rzimmermann@air.org.

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[1] See the infoDev/World Bank Survey of ICT and Education in Africa (Volume 2) at http://www.infodev.org/en/Publication.354.html and the ICT in-Education Toolkit at http://www.ictinedtoolkit.org/usere/login.php.

# Student Support Technician Clubs, Macedonia

USAID Macedonia's Primary Education Project (PEP) is bringing ICT to the schools of this small mountainous country in Southeast Europe. Since September, 2006, PEP has focused on preparing teachers to integrate the use of ICT into every curriculum subject. However, because of a large government procurement of additional computers for schools, the need for more technical support at the school level became evident. To help meet this need, PEP is working within schools to establish Student Support Technician Clubs (SSTC).

The SSTCs are groups of students from 7th and 8th grades (the top two grades of primary schools) that show interest in computer studies and are managed by two teachers from each school. One is a specialist IT teacher who has a technical function and the other teacher provides organizational support.

The main purpose of the clubs is to provide technical support at a school level by:
- ▪ Maintaining the school network
- ▪ Supervising the IT lab outside of regular classes
- ▪ Providing regular computer support to ensure functionality

Sustained operation of the SSTCs will be ensured through the following measures:
- ▪ After the first year, the 8th grade students will mentor the 7th grade students
- ▪ At the end of the school year, the SSTC students and their teachers will select a number of students to replace the 8th graders.

Support for establishing the SSTCs was provided by the local Microsoft branch. PEP developed technical manuals, provided materials for the students and trained the teachers in how to organize the clubs. So far, 164 schools have established SSTCs and they have proved popular with schools and local businesses. By giving students practical experience and training through the SSTCs, more young people will develop the skills needed in the IT industry.

For more information on PEP go to www.pep.org.mk or contact Lela Jakovlevska, PEP's CTO, at ljakovlevska@usaid.gov.

# IT Curriculum Development in Jordan

The Education Reform for the Knowledge Economy (ERfKE) initiative is a five-year comprehensive education reform effort by the Government of Jordan that began in July 2003. One of the main goals of the initiative is the creation of a new business/IT curriculum that provides students with technology and business skills necessary for entering either the employment market or higher education.

USAID has supported the Ministry's development of the Management Information Stream (MIS), a secondary business/IT curriculum for students in Grades 11 and 12. The MIS curriculum consists of six subjects: basics of management, management information systems, computerized accounting, business statistics, computer programming and e-commerce. As part of support for the curriculum, the ERfKE Support Project (ESP) has worked with the Ministry to develop a project-based and blended design, entitled MIS-Online. MIS-Online was created through transdisciplinary integration of the six subjects into semester-long projects that are organized according to the business life-cycle. First semester students create business ideas and plans, and second semester students learn to run their businesses using performance management tools and information systems. Among the computer applications they use are accounting software called ITAC, and an online e-commerce application entitled Dokkaneh, which was developed internally at ESP. By the end of the first year, MIS students learn how to manage their businesses and how to evaluate their performance based on system-generated information and key performance indicators. To develop critical self-assessment skills, students develop the performance indicators themselves based on their strategic and operational planning.

MIS is an innovative technology-intensive curriculum, and it has become more intensive with the introduction of e-commerce applications and online/blended coursework. The program has been very positively received by all participants of the MIS-Online pilot in 15 schools. The majority of those interviewed during the formal evaluation have reported that MIS-Online is a substantial improvement over learning business/IT through the textbook. Teachers have reported satisfaction in working in learning teams in order to co-plan the project-based instruction. And students have overwhelmingly voiced that they are in fact learning business/IT better through "learning by doing."

ESP will evaluate the pilot program in terms of student achievement vis-à-vis national learning outcomes. The project has captured the attention of the Ministry and local communities as a potential model for constructivist, learner-centered curriculum integration that provides both teachers and students with greater opportunities for practicing business and IT. Should Dokkaneh prove useful to the Ministry in immersing students in global markets and business organizations, MIS-Online will take another major step forward in contextualizing business education through technology, and in preparing Jordanian students for the global knowledge economy.

For more information, please contact the Jordan ESP CTO, Maha Al-Shaer at mal-shaer@usaid.gov.

# Teachers are Using MP3 Players in Zambia



*Community school teachers in the central province of Zambia learn how to use an iPod to broadcast IRI programs in their classrooms.*

In rural areas of Zambia, beyond the reach of radio waves and the power grid, community school teachers are benefiting from collaborative, engaged professional development in their own schools using MP3 players, thanks to a USAID support for an initiative called QUESTT (Quality Education Services Through Technology) implemented by EDC. These video-capable MP3 players provide Interactive Radio Instruction (IRI) lessons. They also deliver locally produced teaching resources to primary school teachers.

An initial pilot in 2007 targeted untrained volunteers teaching Grade 6, where content levels in the areas of Mathematics, Science and English posed a challenge. Over 140 resources linked with specific IRI lessons were created to assist teachers in understanding and delivering the lessons. These resources, ranging from 1 to 5 minutes in length, are in text, audio-text and video formats. They are designed for teachers to preview, along with the next day's IRI lesson, as a means to helping to improve the quality of teaching and learning in the difficult rural Zambian context.

In response to national achievement testing which revealed the poor performance in literacy skills at elementary levels, the current expansion of the MP3 pilot widened the focus to target Grades 1 - 3 teachers. Original videos of community school teachers using literacy strategies to engage learners in reading and writing are being uploaded on to the MP3 players to provide a demonstration and motivation for others.

Each 80-gb MP3 player is being shared among teachers in one school. The electronic resource library provides a focal point for promoting collaboration among teachers in the exploration, production and debriefing of the materials. Each resource is presented in an interactive manner and invites the teachers to reflect on its incorporation into their teaching repertoires. The theme of reflective practice is an important part of the training that these teachers have undergone.

For more information, please contact USAID CTO, Beatrice Mweene at bmweene@usaid.gov.

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**ADVANCED USES OF ICT**

**A.   Using Computers for a Comprehensive Personnel System by the Ministry of Education (Zambia)**

The USAID-funded EQUIP2/Zambia Improving Information and Strengthening Policy Implementation project has developed a complete personnel system operated by the Ministry of Education that monitors over 38,000 teachers.  The system, built around an MS SQL server database, will support protected web-access to any personnel records.
The Personnel system allows the Ministry of Education to:
- Date information about teacher allocation, staffing levels, qualifications, and recent training;
- Monitor District compliance with Government of Zambia salary schedules and requirements; and
- Provide the basis for budget recommendations during the year.

For more information contact Project CTO, Cornelius Chipoma at cchipoma@usaid.gov.

**B. Sustainable and Efficient Development of School-Based Computer Labs (Cambodia)**

The Educational Support to Children in Underserved Populations Project in Cambodia, supported by USAID/EQUIP1, will be opening the first Thin Client Computer Lab in the country in August 2008. Because Thin Clients have no moving parts and are encased in a sealed container, they are much more able to deal with the humid, insect-prone environments of the tropics. It is designed to (i) reduce set up costs; (ii) reduce energy usage; and (iii) reduce maintenance costs. Each station costs about $335 in comparison to $570 in unit costs for a traditional computer lab with CPU and monitor. In addition, energy usage for a Thin Client station is only 35 watts compared to 250 to 300 watts for a traditional computer. This translates into 90% less power usage. This low energy usage combined with significantly lower purchase costs has enabled the project to invest savings into solar energy to make labs truly sustainable with no additional project costs necessary for electricity or school generators. The ESCUP Project believes that this innovation will greatly accelerate the sustainability and longevity of computer development in Cambodia.

For more information contact ESCUP Project CTO, Sieng Heng at sheng@usaid.gov.

For more information on Thin Client please visit: http://en.wikipedia.org/wiki/Thin_client.

# Connecting Teacher Trainers to Modern Technology: USAID-sponsored Program Goes Above and Beyond

In a country like Mali, where communities are separated by large distances, ICT's have provided a cost-effective solution to increasing access to education and professional development for Mali's teachers and youth. Financed by USAID/Mali and executed by the Education Development Center, (EDC), the Teacher Training via Radio (TTvR) project works with the Malian Ministry to respond to the needs of a diverse teacher corps and strengthen the capacity of the Ministry to create quality teacher training focused on student-centered and gender-sensitive pedagogy.

The TTvR project takes advantage of radio's considerable reach throughout Mali and uses interactive radio programming to train teachers and their supervisors. A second component of the project is the establishment of four virtual teacher training centers (VTCs) within Malian teacher training institutes (IFMs) to build the capacity of professors in the use of information and communications technology for teacher training. These VTCs enable supervisors and teachers to access resources that extend their understanding of Mali's ongoing curricular reforms, support their use of student-centered learning strategies and enhance their capacity to use multi-media formats for their own professional development. Each VTC is equipped with computers, printers, scanners, a video-camera, and a television.



*Science and Math Teachers in Kayes preparing a lesson plan using information from Encarta*

Institute professors and teacher trainees use the centers to prepare lesson plans, complete homework, conduct research, and review recordings of their own classroom teaching. To establish these VTCs, TTvR staff worked "from the ground up," identifying suitable locations for the centers, overseeing the re-wiring of the buildings and the installation of the equipment, and finally offering trainings to assist institute staff and their students to use the equipment for pedagogical purposes. The results of the mid-term evaluation of the first four VTC's show that 91% of teachers in those IFMs could now use the computer (compared to 7% at baseline), and that 41% of those IFM teachers were using the internet to add to their lesson plans (compared to 0% at baseline).

The Malian Ministry has already begun expanding this initiative, using $80,000 of its own funds to support TTvR trainings to eight additional IFMs not currently receiving USAID assistance. As a result, 245 IFM teachers gathered for 14 days of instruction in the use of basic software and micro-teaching using the video camera and televisions. Ms. Sara Rasmussen-Tall, USAID/Mali's Cognizant Technical Officer (CTO) for the TTvR activity, summed up the success by saying, "This extraordinary collaboration… has enabled us to take a step towards harmonizing what teachers learn at the pre-service stage. The ripple effect of that will be that students across the country will receive better instruction from the teachers that USAID has trained in the IFMs."

For more information, please contact Ms. Sara Rasmussen-Tall, USAID/Mali's CTO for TTvR at srasmussentall@usaid.gov.