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TEACHER TRAINING WITH TECHNOLOGY: NOTES FROM THE FIELD

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This chapter[1] summarizes computer-mediated professional development activities in five countries. These activities illustrate the kinds of applications of information and communication technologies (ICTs) that can enhance pre- and inservice teacher training and provide valuable and ongoing professional development opportunities for educators.

GUATEMALA

Home to 22 indigenous Mayan cultures, Guatemala is multiethnic, multicultural, and multilingual, with nearly 40% of children starting school without a productive knowledge of Spanish. Yet, only 12% of schools are bilingual. This linguistic and cultural mismatch is particularly pronounced in certain provinces, or "departments," as they are known in Guatemala, like Quiché, where 95% of the population is Mayan.

Typically, teachers working in areas with large indigenous populations possess limited local language skills—many speak the language but can neither read nor write it—and are essentially ill-prepared to teach Mayan children in their own tongue. Opportunities for training are also inadequate, particularly in bilingual education and intercultural understanding.

To help bridge the gap between home and school, Guatemala's teacher training institutions need to strengthen instruction in Mayan language literacy and cultural concepts, first and second language learning and bilingual pedagogy, multigrade teaching methods, and cultural sensitivity. Focusing on the Department of Quiché, an area severely affected by decades of armed conflict, an innovative teacher training program was designed to meet these needs. The program includes the following components:

- Culturally appropriate Mayan language instructional support materials. Drawing on local wisdom and community groups, program staff have developed and digitized a set of K'iche' and Ixil Mayan language materials for teacher training and student learning. The result is culturally appropriate and linguistically relevant teacher guides, instructional units, workbooks, and manuals for classroom use. An illustrated bilingual audio dictionary on CD-ROM, produced by teachers and students, enables both to expand vocabulary and cultural concepts. Visual images—art, really—resonate with rich local tradition, and an audio track ensures proper pronunciation.
- Teachers' professional skills and proficiency in oral and written Mayan languages. The program has purchased equipment and installed multimedia computer labs in four teacher training schools *(escuelas normales)* in the region. In the labs, training materials for bilingual teacher preparation are produced, including an interactive, multimedia CD-ROM to train teachers in oral and written K'iche' and Ixil.
- Early childhood activities to enhance learning. After researching and collecting K'iche' and Ixil language materials, the program is producing radio programs that will be aired on local stations to provide preschool children with early learning opportunities.
- Institutional capacity in computer applications for teacher training institutes. The program is training trainers to use the computer labs, and is training Departmental Directorate of Education staff to increase their effectiveness in using software, e-mail, and the Internet.
- Community outreach and capacity building. Program plans include opening the computer labs to indigenous communities, thereby helping to develop a more aware and educated rural society.

Beyond teacher training, the program in Guatemala also is using ICTs to help preserve Mayan culture while linking indigenous schools and communities with the outside world.

MOROCCO

With the Ministry of National Education, the Computer-Assisted Teacher Training (CATT) project trains student teachers—and their professors—in using ICTs for education. Seven *Centres de Formation des Instituteurs* (CFIs) (teacher training institutes) throughout the country—in Sidi Kacem, Ouarzazate, Errachidia, Al-Hoceima, Tiznit, Tardudant, and Essaouira—now have multimedia laboratories and offer a specially designed Arabic-language training program for future primary teachers. Through the program, participants learn at an individualized pace and in stages, moving from basic computer training to skill development in communication and networking to research and instructional design. Each step is geared to particular tasks that student teachers will have to perform in their classrooms—Excel spreadsheets are used to record student grades, for example—thereby rendering the training immediately relevant.

The overall purpose of the program is to:

- improve educational quality by incorporating technology into teacher training;
- promote ICT use in education more broadly for distance learning and networking purposes;

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- develop communications networks to facilitate the work of the teacher trainees, teacher trainers, and inspectors, as well as collaboration and information sharing among peers across provinces;
- build local education technology capacity by training "Master Information Teachers" who will sustain local development of learning technologies; and
- contribute to national policy discussions on the use of learning technologies in education.

As student teachers and professors become proficient, they are applying their new skills on the spot. Professors are transferring their handwritten notes to the word processor—in one case, perhaps the most detailed analysis of the geology of southeast Morocco ever prepared—and preparing to launch a Website. They also are open to sharing the wealth with their neighbors. Labor unions, local government officials, inservice teachers, and members of surrounding communities want access, and several CFIs are considering ways to open their doors to the public in the evening and on weekends. Said, a student teacher, took so naturally to the technology that he devoted months of his free time to cataloging via computer every book in the college library. ("We have 6,000 books," the Director said. "We never knew that before.") And Latifa, a 20-year-old student teacher in Ouarzazate, spends evenings and weekends sharing what she has learned about Word, Excel, and PowerPoint with her professors, an age and gender reversal uncommon in small towns in Morocco.

Leveraging the potential of available, low-cost electronic networking technologies, the CATT project hopes to create dynamic learning environments that will enable—and encourage—Ministry teachers, trainers, and staff to engage in substantive collaboration that will result in better teaching and learning in Moroccan primary schools. The CATT project also supports the Ministry's initiative to introduce the use of computers throughout the education system by 2008. By using technology in their own training, it is expected that teachers will be better able to prepare their students to use computers in the classroom.

Since October 1999, when the CATT project began, 50 trainers, 500 student teachers, and 70 CFI professors have completed the entire training program, and 1,500 instructors and student teachers have participated in a portion of it. Recently, the Ministry of National Education approved the curriculum produced for the project for training in all institutions of learning nationwide.

NAMIBIA

Since its independence in 1990, Namibia has expressed a commitment to removing the last vestiges of apartheid's social and economic policies. However, high student failure rates, unemployment, population growth rates, and the menacing incidence of HIV/AIDS remain major development challenges.

Namibia's Ministry of Basic Education and Culture (MBEC), its National Institute for Educational Development (NIED), and donors are working to improve the education sector overall. Within this arena, teacher training ranks high on the list. Currently, teacher education and qualifications are uneven across regions, and existing teacher training methods are inadequate for dealing with these disparities. The great distances between schools, training centers, and colleges of education add to the difficulties teachers face in gaining any training, inadequate though it may be.

The CATT project, part of a greater plan to improve teacher training nationwide, includes the following components:

- developing computer-assisted training courses for teachers and other educators;
- constructing a communications network linking educators to NIED through the Internet and other technologies;
- designing prototype curriculum-based training materials for primary school students;
- training and helping to integrate "Master Information Teachers" into the administrative structure of the MBEC and NIED as champions of teaching/learning technologies; and
- introducing teaching/learning technology concepts into the national policy dialogue.

In addition, the project is helping NIED to create a Website that facilitates communication, research, and training among officials, teachers, principals, inspectors, and researchers—a virtual community of educators. Now available at *http://www.edsnet.na*, the Educational Development & Support Network enables educators throughout Namibia to join forces for their own professional development and the improvement of education nationwide.

UGANDA

Uganda is emerging as a leader in African education reform. One of the country's most progressive moves is its adoption and application of ICTs for national development, with its growing computer capability harnessed to serve education. Through the CONNECT-ED (Connectivity for Educator Development) project, for example, Uganda is integrating ICTs into professional development programs for primary school teachers, with a focus on computer-assisted teacher-training.

Through newly created multimedia teacher training laboratories in eight Primary Teacher Training Colleges (PTCs), located in both rural and urban areas, teachers will have access to the training curriculum through computer-mediated learning environments and digital library resources. The program also is working with Ugandan governmental agencies and the Institute of Education Kyambogo (ITEK) to set up multimedia training laboratories at its facility in Kampala. The program is enhancing the curriculum with ICTs by developing, testing, and distributing online multimedia training modules for teachers and tutors. These teachers, in turn, will train current and future teachers at the participating PTCs.

Through March 2003, PTCs in Shimoni, Gulu, Bushenyi, Mukujju, Ndegeya, and Kibuli, plus two more rural communities will start to benefit from access to the multimedia laboratories, interactive instruction, and digital library. With new Internet service providers (ISPs) and Internet points of presence moving into these areas, ITEK and the PTCs will all go online. Then the new material will be accessible from ITEK's Website at *http://www.itek.ac.ug*. To ensure effective use, a new feature of the program is the Professional Development Training Course for computer literacy, which will enable user groups of PTC administrators, tutors, pre- and inservice teachers, and school staff and students to learn basic computer applications, multimedia production methods, and Internet skills. Even PTC principals have expressed interest in receiving training.

In building the network, teachers at PTCs also will learn how to construct their own Websites. Later, interactive media such as discussion boards can be installed for facilitating communication among educators.

The computer laboratories in this teacher training network reach most of the country, serving as access points for developing teaching curriculum electronically, teacher training, and, eventually, selected community use. By providing the equipment, training users, and facilitating production of educational products, project staff members expect teachers to find innovative ways to use ICT for teaching and learning well beyond the scope of the activity.

BRAZIL

LTNet—the U.S.-Brazil Learning Technologies Network *(http://www.LTNet.org)*—is an Internet-based learning environment and clearinghouse on the ever-expanding role of ICTs in education, as well as a means of enabling interactive collaboration among educators in the United States and Brazil. Bilingual in English and Portuguese, LTNet provides Brazilian and U.S. educators with access to information about computer-assisted learning and efforts to integrate the use of technology in teaching and learning. LTNet also presents information on Brazil's ProInfo program, a bold effort to integrate computers into schools throughout the country. The Website includes:

- A virtual library containing reviewed articles, many of which have been abstracted, as well as a means by which users can submit new articles.
- A *SchoolLinks* program that promotes professional collaborations among U.S. and Brazilian educators.
- Announcements about events, developments, and news of interest to those involved in educational technology.
- A place for users to post information about their own projects, events, activities, and experiences, and an online discussion forum and listserv.
- A Help Desk that responds within 24 hours to questions about information and resources related to learning technologies.
- Free subscriptions for Brazilian schools to an online course in English-language instruction, launched in collaboration with GlobalEnglish.com, a U.S. Internet company that offers free online English-language instruction for Brazilians.

In addition to the Website, LTNet facilitates a variety of activities to support learning and professional networking among teachers. For example, in partnership with ProInfo in Brazil, LTNet's SchoolLinks program is enabling educators across Brazil to meet and work together. Through LTNet's Virtual Exchange Environment (VEE), a group of Fulbright English-language teachers from the United States and Brazil are able to communicate with each other by e-mail, threaded discussions, and live chat sessions to plan activities, share documents, collaborate on projects, and develop individual and group Web pages. Two other VEEs are enabling groups of educators and students in Rio de Janeiro and Manaus in Brazil to develop collaborative programs with counterparts in Oakton, Virginia, and Oxon Hill, Maryland, in the United States.

ENDNOTE

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