Costa Rica:
Teacher Training for Education Technology

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Costa Rica is a best practice example of both computer introduction to schools and technology use in teacher training and teacher support. Technology can serve as a tool to change traditional notions of teacher training, for instance, by allowing teachers to perform training on their own and under their own schedules and receive pedagogical support and networking as well. The program has provided for the massive integration of computers in primary schools in rural areas and in low-income centers in urban districts, benefiting over half of all pre-primary and primary students over twelve years of implementation.

Introduction

Good practices around the world suggest a cautious approach to the introduction of computers in the school. Pilot and small scale programs allow a particular country's education authorities to accumulate experience in an area universally recognized as highly demanding in technical, managerial and human resources without the massive expenses of large programs and the risks of a premature commitment to technologies that are changing very fast and sometimes in ways that are difficult to predict.

The Costa Rican experience could be considered in contrast to such a cautious approach. Initiated in 1988 by the Omar Dengo Foundation and the Ministry of Education and continuing through the present, the Program has provided for the massive integration of computers in primary schools in rural areas and low-income centers in urban districts. Throughout its more than 12 years of implementation, over half of all students at the pre-primary and primary levels, the majority of whom reside in marginal urban or rural areas, have benefited from the Program. It recently has been expanded to include the secondary level. The Program emerged out of an early, relatively radical, policy decision to integrate technology in the schools. Clearly, for a developing country, it was no doubt bold and risky, yet according to many observers, it has served the country well by playing a part in recent successes in attracting investment by multinational information technology firms.

In what follows, we briefly describe the program and then focus on teacher training, which has been a key component of it.

The Program

Schools wishing to participate in the Program must meet certain criteria. For one, they must have a minimum of 250 students. For another, there must be community participation and buy-in. Prior to the installation of any equipment, the community must demonstrate its commitment to the Program by preparing the physical space required and making any necessary upgrades in infrastructure (e.g., electrical connections, air conditioning). Thirdly, the institutional arrangements for administering the Program must be in place inside the school. Once operable, the computer labs are staffed by teacher-tutors, supported by evaluators/facilitators from the Ministry of Education. This, obviously, requires support and flexibility from school administrators. Class schedules must accommodate lab time and coordinators, all of whom are teachers, and other interested teachers must be given adequate release time to attend training sessions.

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On average, students covered by the Program spend at least 80 minutes a week on a computer. Working in teams of two, the educational activities in which they participate include computer programming and the creation and implementation of projects linked to curricula (see MEP, 2000). Regardless of the activities undertaken, time spent on the computer is used to drive subject material home, using competency-based activities to link realities in the classroom to those of everyday life. In this way, computers contextualize learning, giving students an opportunity to use real-life technology and develop skills (e.g., research and problem solving) that will serve them well in other contexts. With recent infrastructure and technological upgrades, including the incorporation of more user friendly and interactive media, students and teachers have been publishing their projects on the web. Above and beyond providing a convenient means for sharing projects between schools, the web has extended learning opportunities into cyber space—from the mere sharing of projects to online and virtual learning experiences.

Teacher training in the context of the program

Who receives training?
The Program does not intend to turn teachers into technology experts. Rather, it provides technology to help teachers teach more effectively. And, in many ways, teachers, not computers, have been at the center of the Program. Outlays for training and pedagogical support come close to those for equipment (32.37 percent vs. 36.15 percent, respectively). The Program thus not only takes training seriously, it also spreads training generously throughout school hierarchies. To date, more than 15,000 teachers and school administrators have been trained.

For those on the front lines—i.e., the teacher-coordinators who run the labs and facilitate learning activities with the students—training is mandatory and intensive. They receive 120 hours of initial training distributed over a three-week period. Additional hours are provided over the course of the school year. In 1999, for example, the 540 teacher-coordinators each received an average of 240 hours of training.

The Program relies on a strong network of advisors/facilitators. Totaling about 50, these staff also receive intensive training. In fact, the training they receive is more intense than what teachers receive (an estimated 334 hours in 1999). Here, continuous training and skills updating are the name of the game. The Program relies on these staff to control quality in individual labs and to encourage and facilitate new teaching and learning methods. In theory, these staff supervise and monitor the work of the teacher-coordinators in the labs. In practice, however, their role is more one of facilitation: informing teachers of new developments in the field and bringing new insights to bear on classroom activities, and otherwise encouraging and motivating teachers.

Regular classroom teachers (i.e., those not coordinating the labs) also can opt to receive training. The Program invites, indeed encourages, the participation of regular classroom teachers in lab exercises. These teachers accompany their students to the labs and, in collaboration with the lab coordinator, design activities relevant to and appropriate for their classes. These teachers receive an average of 16-42 hours of training per academic year. Except in one-teacher schools, this training is voluntary. Yet interest and participation seem to be growing. Recent trends suggest that an increasing number of regular classroom teachers have or are receiving training. Training is also provided, on a voluntary basis, to school administrators and maintenance staff.

How is training delivered?
Training follows a "practice what you preach" approach. Teachers are trained through the same methods they are expected to apply in the classroom. Conceived within a constructivist framework, computers are used as tools "with which to think" and with which to structure and link intellectual tasks, technical competencies and pedagogical skills. Training is provided through modules ("Unidades de Capacitación"), each of which is accredited by the Civil Service and adapted to the needs and abilities of the given target group. Difficulty and the intensity of technology increase progressively. Each training module integrates a

variety of platforms and media (e.g., Microworlds, HTML, LOGO writer 2.01, Microsoft Office, the worldwide web, email, printed materials, videos, CD-ROMs) and derives content from the realities teachers bring from their classrooms. Best as well as worst practices are presented, as are problematic cases intended to spur discussion and debate.

Face-to-face and virtual delivery modes coexist; often, both are used for the same group and training activity. For example, whereas the initial training often is done face-to-face, the in-service training and follow-up are done virtually. Regardless of modality, program administrators claim that the lines of communication between teachers and facilitators remain open. Indeed, with the expansion of the Program and its migration towards the secondary level, these modalities are becoming the preferred delivery mechanisms.

It is in this regard that the quality of support materials assumes considerable importance. They have to be structured enough to guide teachers through a series of activities but loose enough to allow teachers to make their own judgements, interpret findings, and otherwise reflect on how the lessons learned can be incorporated into the realities of their own classrooms. Indeed, according to Program administrators in the Omar Dengo Foundation, considerable time and money are consumed in developing and producing training materials, processes currently supported with a newly created center for tele-training and virtual production, known as Project Nexos. This center functions as a clearinghouse, transmitting documents and other complementary resources to teachers over the Internet. It is expected to have the capacity for teleconferences in the near future.

Other offshoots of the Program include efforts to more systematically promote teacher training and education technology. For example, the Omar Dengo Foundation, in collaboration with the University of Hartford (Connecticut), recently created a masters program in education with an emphasis in education technology. To date, a total of 20 staff from the Ministry of Education and the Omar Dengo Foundation have taken part. Plans also are in progress to create certificate and degree programs in education technology at the Universidad Estatal a Distancia de Costa Rica, the nation's Open University. The Alliance Program, created by the Omar Dengo Foundation and the nation's public universities last year, operates on many of the same principles. Alliance supplies a computer lab and uses it to train university professors in the schools/faculties of education. These professionals, in turn, complement their own training by engaging in research on topics related to teacher training and the use of technology.

Implications beyond the classroom

The Costa Rican experience regarding the introduction of computers in schools constitutes both a case about training teachers to use technology and using technology to train—and provide support to—teachers involved in a technology program. It suggests that the infusion of technology into the teaching-learning process seems to have the potential to change traditional notions of teacher training. Teacher training becomes a permanent and planned process with goals and objectives extended into the medium and long term. Technology extends training beyond the classroom and immediate teaching practices. Training is no longer bound to fixed schedules or physical spaces of instruction. Rather, teachers are free to enter into training on their own and at their convenience. They can receive training as often as they log on to their computers. Follow up, continuous pedagogical support and networking, generally believed to be key components of effective in service training, are facilitated through the use of information technology.

There are also implications for the management of training. It is the individual teacher, as opposed to the school or its administrators, who plays the primary role in deciding when many training activities will occur. Training, thus understood, becomes to a large extent an issue of time management for teachers and, insofar becomes less of an issue of staff management for schools, thus facilitating implementation.

Useful Links

Education Technology Program. Summary in PREAL's Best Practice Database: http://www.preal.cl/innovaciones/costa.htm

Omar Dengo Foundation: http://www.fod.ac.cr/

Universidad Estatal a Distancia, the Open University of Costa Rica: http://www.uned.ac.cr

Ministry of Education (MEP): http://www.mep.go.cr