ICT Training of Maestros of Primary Schools Located in Barrios Carenciados in Argentina. A Twofold Challenge: How They Can Master New ICT Technologies and Transform the Way They Teach

C. Osvaldo Rodriguez

INIFTA, Universidad Nacional de La Plata, Diagonal 113 y 64,
La Plata 1900, Argentina
cor_ar@yahoo.com

Abstract. Internet access is becoming available in many schools of Argentina´s educational infrastructure. This represents a challenge for the primary school teachers. They have to teach children digitally motivated, visually stimulated and socially connected yet most teachers have been exposed very little to ICT technologies.

An important task is how to train these teachers that not only need to master the new ICT tools in very short time but also transform the way they teach, guide their students and interact with their communities.

Schools in poor neighborhoods (barrios carenciados) unfortunately do not receive the full capacity that today´s technology can provide, nor in resources or support. This makes the challenge particularly difficult and their training should prepare them for this situation.

In this paper we describe the work of two years in Escuela 502, where we have implemented state of the art multimedia laboratory in order to research possible alternative training methodologies. We describe results from the innovative experiences obtained and point that online learning technologies can serve as a powerful and cost effective tool to carry out teachers training.

Keywords: ICT4D, FOSS, Online training, Teachers training.

1   Introduction

Today's educational systems worldwide are being strongly influenced by new technologies. In this context the so called ICTs (Information and Communication Technologies) occupy a prime place mainly due to the fast advance of wireless technologies, Internet omni presence and the increase of knowledge as an intangible asset.

This creates a challenge to the teachers. In Argentina many schools are starting to receive computers and to have broadband Internet connectivity. But most of the teachers have very little or no exposure to the new technologies. There are then two challenges: they need to master these technologies in very short time and also modify the way they teach. Although some efforts have been made to bring teachers to qualified training centers, their exposure to the new technologies is brief. In most cases

what was learned is partially forgotten as they return. It is also very expensive since these centers are usually far from their homes.

In poor neighborhoods the schools infrastructure could be so basic that a third obstacle is in place: how to prepare teachers to work with very little support and resources.

In what follows we describe our work: the setup of a multimedia laboratory in Escuela 502, research effective ways to the training of teachers via alternative methodologies and finally discuss how online can serve as a powerful and cost effective tool for massive training.

2   Background and Context of Project in Escuela 502

The University of La Plata through the Facultad de Informática and the Instituto de Investigación en Informática LIDI (III LIDI) has for sometime been involved in projects related to the link between technology, schools and community.

Within this frame and together with researchers belonging to the group ICTDAR (ICT for Development Argentina) the present project was planned based on the setup of a multimedia laboratory in Escuela 502.

The research project is a continuation of a previous one carried out by ICTDAR in collaboration with the NGO Barrios del Plata (a chapter of Muhammad Yunus´s Grameen Bank). In their study [1], they monitored the changes in families' life (in particularly children's education and parents opportunities related to obtaining work) after deploying a large number of nodes with computers at each family's house all linked via Wireless Mesh Networking (WMN). The school, Escuela 502, originally a node of the WMN, has now become a "Laboratory for the use of innovative methodologies in ICT training of primary school teachers". The original project was financed through an award given in a public competition by Microsoft research.

3   Teachers ICT Training in Escuela 502

A very poor neighborhood in Argentina that has many features of lower middle class is called "barrio carenciado". Many heads of the families are unemployed and although children have access to schools it is common that they do not finish their basic instruction. The Escuela 502 is located in barrio carenciado El Carmen, in the outskirts of La Plata [2]. It is classified as a *special* school since it caters for children with learning disabilities. Thus their teachers must have special pedagogical skills. The school aims to prepare these handicapped children with working skills so they can obtain a job further on in life. Before the start of the project the students had no previous contact to digital technologies.

The project has three pillars: teachers training, transfer to the classroom and links to the community.

3.1   Intra School Training

In the search of these objectives one of the first actions taken was to establish the laboratory for the experimentation of new technologies for the training of teachers[3].

The laboratory was setup with full multimedia infrastructure and an excellent internet connection. It can host 15 teachers at one time. It can also be used as a projection room with children under supervision. Via web conferencing other universities and schools can participate remotely of the activities.

The first task was clear. Teachers and personnel in the school should become knowledgeable in digital technologies. Teachers were priority and a survey was made so as to establish their background in ICT. This survey allowed us to:

- Understand the degree of interest of each teacher to the project.
- Identify their profile in ICT.
- Find how much they would like to be involved in community linked activities.
- Establish what attitude they would take towards the project: be opposed, neutral, in favor and if they could act as future tutors.

From the survey it was clear that two distinct groups had to be setup:

Group A (advanced): There were very few in this group. They could understand the use of an operating system, manage folders, files and would know how to browse the internet. They used ICT in their daily life. They were offered access to laboratory while at school and certain advanced courses were planned for them.

Group B (elementary): Their contact with ICT was practically null. They needed very basic training and most important confidence in its use. Since they did not have access to these technologies outside the laboratory they were invited to use it frequently while in the school. Confidence in the use was the main objective.

The basic training was combined with different strategies that they could use in class with their students.

Once this first pillar was established students were incorporated in the classes so as to exemplify the teachers on different possible methodologies they could apply using the new infrastructure in the school.

Many related activities were implemented with great success. For example, a cycle of educational videos for students and teachers was very popular, multimedia presentations of music and narrated books had a special attraction for the children.

This work still in progress brought many rewarding results.

3.2 Link to the Community

Many activities were planned so as to integrate the ICT activities in the school to help its community. Since the previous project had already been involved with the neighbors such a step was relatively simple. Parents participated in some special courses and were invited to many of the activities already detailed.

4   Online Learning: Cost Effective Teachers Training

Learning technologies have seen dramatic changes in the first decade of the 21st century. They have moved from experimental to mainstream delivery. The initial small

community of pioneers and small scale projects have now seen the sector transformed. Today e-Learning has become an institution-wide solution at the heart of organizational strategy.

The combination of online classes and software tools for handling a Virtual Learning Environment (VLE) (also known as Learning Management Environment systems) are producing a big impact in education.

The technical quality of video conferencing for online classes are improving daily (video streaming technologies and products like WEBEX or open source Dim Dim) together with the reduction of their implementation and running costs. Moodle (Modular Object-Oriented Dynamic Learning Environment) is a free and open-source e-learning software platform. It is the most popular VLE tool available with a user-base of 50 thousand registered sites with 40 million users in 4 million courses in 210 countries and available in more than 75 languages.

For developed countries this combination of online teaching and VLE has opened a new chapter in education. For developing countries it could represent a revolution.

Many projects have been setup in Argentina using different orthodox ICT teacher training implementations made through the public school system. Teachers attend training courses in specialized centers. The success is limited since the teachers have rarely been exposed to ICT technologies and because of the cost they can only attend for a few days. There can be at most 20 students for each expert trainer and there is no practically time to mature concepts which disappear nearly as fast as they return to their local environment. There are several other alternatives but distance online learning stands as the most appropriate and cost effective. The training can be done in a regular manner year round, for as long as needed, at a cost of one expert to educate unlimited attendees. Our ongoing work focuses on researching for new methodologies within this framework.

5   Conclusions and Future Work

In this paper we have presented the work realized in Escuela 502 involving its teachers, children with learning disabilities and the community. The creation of a multimedia laboratory in ICT methodologies permitted the training of their teachers: first to acquire confidence in the use of ICT tools and second in how to integrate the students with learning disabilities. Since the aim is to prepare the students so as to acquire a job many different strategies were used depending on the specialty (wood work, secretarial, cooking). All this was complemented with integration with the community (parents).

The training of teachers becomes very costly if done in an orthodox manner since many experts and trainers need regularly travel to the school or vice versa the teacher needs to travel to specialized centers.. The use of web conferencing tools and VLE can make this training be performed simultaneously in many schools if one counts with the appropriate ICT setup. An evaluation and optimization of the many possibilities at hand is the next step in our research work.

References

1. Rodriguez, C.O., Jubert, A., Godoy, C., Rodriguez, C.: Wireless Mesh Networking: Low Cost Internet Connectivity. A Test bed for Its Possible Implementation and Community Actions in a Barrio "carenciado", Argentina". In: Proceedings of the Wireless 4D Conference, Karlstad, Sweden, pp. 39–46 (2008) ISSN 1403-8099
2. Rodríguez, C.O., Sanz, C., Zangara, M.A., Jubert, A., Cupolo, G.: Inclusión de tecnología digital en regiones socialmente desfavorecidas como elemento potenciador de la calidad de enseñanza. El caso de la Escuela 502 de Buenos Aires, Argentina, Revista Tecnológica y Comunicación Educativa, Año 22-23, Nro 47-48, pp. 73–80 (2008) ISSN 0187-0785
3. Rodriguez, C.O.: Affordable Wireless Connectivity Linking Poor Latin American Communities Binding Their Schools by Sharing ICT Training for "Maestros" of Primary Schools. In: 3rd International Conference on Internationalization, Design and Global Development, in the context of HCI International 2009, Human Computer Interaction, San Diego, California, USA, March 19-24, pp. 404–412. Springer, Berlin (2009) (obtained best paper award) ISBN 978-3-642-02766-6