Teacher and Computer Self Efficacy in Brazilian Community Schools

Abstract: This paper aims at presenting an ongoing project on the use of ICT in the in-service training of primary school teachers, working in community schools in the area of Salvador Bahia (State of Bahia, Brazil), called BET K-12. The project is managed by the NewMinE Lab and CEAP, and is funded by the Swiss National Science Foundation and the Swiss Agency for Development and Cooperation. The first section is devoted to briefly outline the role that ICT can play in improving teacher training experiences in developing countries. The second section presents the BET-K12 project approach in detail, in its operational and research parts. The last and third section focuses on the impact issues, outlining the concept of teacher and computer self-efficacy and providing the results of the first questionnaire filled in by CEAP teachers in March 2007.

Introduction

This paper presents a project to introduce ICT in the training of teachers working in disadvantaged community developed by the Centro de Estudos e Assessoria Pedagógica (CEAP, Salvador, Brazil) and the The New Media in Education Lab (NewMinE Lab) of the University of Lugano (Switzerland).
CEAP is an institution dealing with teacher training matters in the context of Salvador de Bahia since 1993. Its main target are teachers working in community schools and coming from disadvantaged areas. In the last years CEAP focused on preparing teachers for the "vestibular" exam – the entry test to universities – and on supporting teachers coming from poor areas who were able to enter university but do not have the same knowledge as their university colleagues.
The NewMinE Lab is a laboratory of the University of Lugano born in 2002 dealing with researches and projects in the eLearning field in partnership with private companies and public institutions
In 2004 the collaboration between CEAP and the NewMinE Lab began; the NewMinE Lab has been charged with the exploration of how eLearning could be integrated into the CEAP curricula, especially to support teachers enrolled in universities. CEAP and NewMinE Lab teams decided to introduce into the CEAP curriculum three blended learning courses: a course of computer literacy, a course on the use of Information and Communication Technologies (ICT) in educational contexts, and a course on Communication Theories. Within the CEAP curriculum a course per year is delivered to two classes of 30 teachers, the large majority of whom (59 out of 60) are women.
This paper, after providing an overview on the issue of teacher training in Brazil and a description of the main research areas of BET K12 – Brazilian eLearning Teacher training in K12 – project, focuses on the issues of teacher self-efficacy and computer self-efficacy, outlining the methodology used to investigate this matter and describing the results obtained by the first questionnaire submitted to CEAP teachers.

Teacher Training in Brazil

The Context

In 1996 the Brazilian government decided that teachers at all levels had to obtain an academic degree within 2007, in order to continue practicing. Due to the government decision, the demand for in-service teacher training dramatically increased.
In Brazil almost 80% of primary school teachers working from grade 1 to grade 4 do not have a higher education degree and this figure increases to 95% when considering teachers working in rural areas. The situation is different when it comes to teachers working from grade 5 to grade 8: almost 24% do not have a higher education degree and this figure increases to 55% when considering teachers working in rural areas
In this context, the crucial role ICT could play in fulfilling this urgent need of teacher training lead to the creation of many programs involving, at different levels of integration, eLearning activities. However, researches and evaluation studies do not always keep the pace as program implementation.
Moreover, Brazil has a consistent number of teachers working in the so-called "community schools", i.e. schools promoted and sustained by disadvantaged communities. Often teachers working in this kind of schools do not have access to good quality education during their own school period and lack knowledge and training. eLearning is an option to reduce the gap between the level of education of teachers in community schools and in public school,

giving to the first ones the possibility of attending more frequently training courses, without moving from their neighborhood to the training center for each training session (teachers often face trip of more than two hours by bus to reach training centers).

The Issue of Community School

The phenomenon of the so called "community schools" arose at the beginning of 80' in Central and South America to tackle the lack of primary public schools in disadvantaged areas in different states of the continent. Community Schools are usually placed in sub-urban areas of big cities, and are hosted in shaky buildings with small and not aerated classrooms. These areas face all social problems caused by poorness: high rate of unemployment, domestic and social violence, lack of infrastructures and of basic social services as schools, hospitals and means of transport, and so on.

Community Schools are funded by community associations usually formed by young people, mothers and religious institutions with the aim of giving to children living in areas where public schools are insufficient or totally absent a chance of education. The school is totally financed and managed by the community association and teachers are chosen by the community and often do not have enough preparation to offer to children a quality education comparable to other kinds of schools, e.g. public or private schools.

The Bet K-12 Project: Context, Goals And Structure

Operational part: online courses developed at CEAP

In this section the above-mentioned courses are briefly described:
Computer Literacy Course Taking into consideration the lack of ICT exposure of teachers coming from disadvantaged areas, it has been decided to deliver the first course completely in presentia. The contents of the course have been designed adapting the ECDL (European Computer Driving Licence) program to the context. Course modules are presented in the table below:

Computer Literacy Course Modules
Module 1: Basic Concepts of Information Technologies
Module 2: Using the Computer and Managing Files
Module 3: Word Processing
Module 4: Spreadsheet
Module 5: Presentation
Module 6: Internet and Email
Module 7: Introduction to Moodle Platform

Table 1 Computer Literacy Course Modules

The last module, introduction to Moodle Platform, has been added because the other two courses use this Learning Management System.
The first edition of this course lasted from September 2005 to September 2006

ICT in Educational Context Course At the second year of their curriculum the course "ICT in Educational Context" is being offered to teachers. The course lasts 20 hours and is organized in three main sections: Qualitative Analysis of Websites, How to Learn Online, and How to Teach Online. This course is offered on Moodle in a blended modality. The contents have been developed by the NewMinE Lab team and have been localized by a student of the University of Lugano who did a three-months internship at CEAP.
The following schema summarizes the educational scenario:

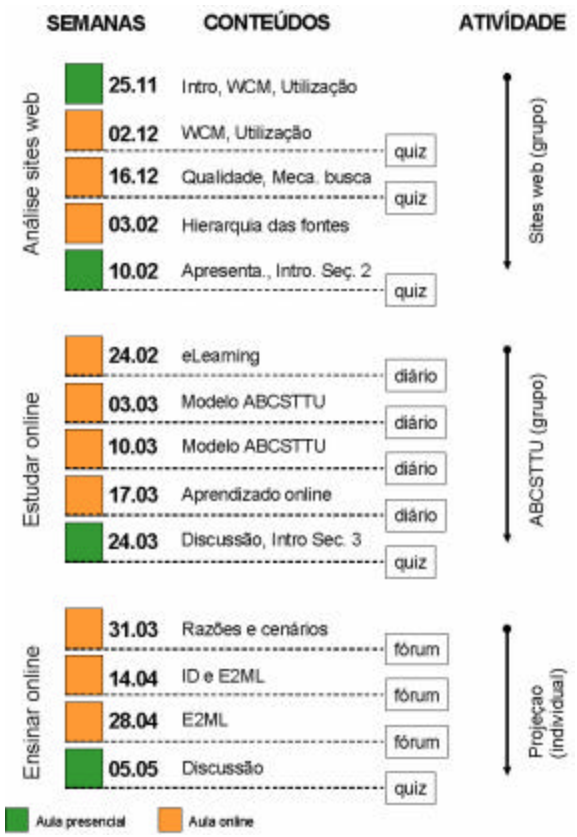

Fig 1: Educational scenario

Communication Theories Course The last course delivered through Moodle in a blended modality is integrated into the third year of CEAP curriculum. The course lasts 60 hours, and it is divided in three sections of 20 hours each: Logic and Argumentation, Language, Production of Texts. The first edition of the course will be delivered in 2007, at the moment materials are in development.

Research part: the issue of Access, Impact and Quality

The urgent need of studying the impact of eLearning in primary school teacher training in Brazil and assessing its possible applications and advantages, as well as success conditions and shortcomings arose soon after the beginning of the collaboration between CEAP and the NewMinE Lab and the idea of the BET K-12 (Brazilian eLearning Teacher training K-12) project started to be conceived.

BET K-12 aims at investigating three main issues:

- The issue of **access** to ICT: this involves technical, economic, sociological and psychological factors influencing persons' opportunities to use the technologies;
- The issue of **quality**: the conditions under which it is possible to implement an effective and efficient eLearning program for primary teachers in disadvantaged Brazilian areas;
- The issue of **impact**: the readiness of Brazilian primary teachers to use eLearning in their training, and their adoption patterns.

BET-K12 started in October 2005 and lasts 36 months; during the project the 6 persons composing the Swiss and the Brazilian teams meet regularly online and onsite (online on a monthly base and onsite on a quarterly base) to accomplish project activities and to stay tuned on the research development.
The project is divided into two main phases: phase A aims at understanding the quality of eLearning environment and models in teacher training in Brazil, while phase B aims at studying the access and the impact issues in a specific case study: CEAP courses.
In the following paragraphs each phase will be connected with its research field.

The issue of Quality The first objective of BET K-12 is to map different models of teacher training programs involving ICT in Brazil and at understanding the quality of these programs; this is done in order to seek and suggest innovative eLearning models, which can allow effective and efficient learning practice.
In order to accomplish this objective the Swiss-Brazilian team has compiled a list with all the initiatives of pre-service and in-service teacher training using ICT currently in place in Brazil. The second step consists in drawing, starting from previous researches and adapting existing models (Phipps & Merisotis 1999; Cantoni, Lepori & Succi 2003; Eppler & Mickeler 2003; Massy 2002; Reeves 1999) specific quality criteria for the given field; while the third step is the conceiving of a questionnaire to submit, via telephone and email, to the identified sample. BET-K12 team will then analyze it and will plan a more in depth interview session with key respondents of the sample.
A more specific study will be carried on for the Bahia State, where not only teacher training institutions using ICT will be mapped, but all the initiatives of teacher training across the State. The institutions doing teacher training but not using ICT will be asked why they chose not to use ICT and if they intend to use eLearning in the future. In this way the team will be able also to map the entire teacher training world of the Bahia State and its attitude toward technologies.

The issues of Access and Impact The second objective of BET-K12 is to understand how primary school teachers, in a disadvantaged Brazilian area, react to their first eLearning experience, along three different dimensions:

- The impact on how they teach and learn;
- The impact on other fields of their life (snowball effect);
- The impact on the transmission of ICT potentialities to their community.

In order to accomplish this phase, the research focuses on the case of the above-mentioned CEAP in-service curriculum.
The already existing collaboration between the involved institutions allows carrying on a longitudinal study. A questionnaire has been designed by the project team in order to test the group on the following matters:

- its use and exposure to ICT,
- its perception of the computer and the internet
- its perception of eLearning
- its learning behaviors, its teaching behaviors, and their role as change agents (Rogers 1995) (not including the first turn of questionnaire submission).

In this phase teachers enrolled in the CEAP curriculum will be asked to answer the questionnaire four times: first, at the beginning of their learning experience with ICT during the "Computer Literacy" course; then, during the "ICT in Educational Contexts" course; third, during the "Theory of Communication" course; finally, six months after the completion of the curriculum.
The following paragraph shows the main results of the first questionnaire delivered in June 2006.

Teacher and Computer Self-Efficacy: First Perceptions of CEAP Teachers

To investigate the impact issue the BET K12 team decided to adopt the concept of self efficacy by Albert Bandura. Self efficacy can be defined as an impression that one is capable of performing in a certain manner or attaining certain goals (Ormrod 2006). The concept of self efficacy has been declined for the purpose of our study in teacher and computer self efficacy. The first one is related to the impression that one is capable of performing the teacher profession and the second the impression that one is capable of using specific ICT tools.

The aim of the research is to understand if computer and teacher self efficacy are correlated, that is to understand if CEAP online courses help community schools teachers not only to gain self-esteem, as proven by a focus group organized in July 2006, but affect also their teaching attitude.

To accomplish this aim BET K12 team decided to deliver a questionnaire to teachers in three moments:

- March 2007: at the beginning of the course ICT in Educational Context
- September 2007: during the first part of the course Communication Theories
- February 2008. at the end of the course Communication Theories
- September 2008: few months after the end of the CEAP online courses curriculum

This section presents the descriptive statistical results of the questionnaire delivered at the beginning of March 2007, filled in by 31 participants to the CEAP online courses. In following publications changes in computer and teacher self-efficacy will be monitored.

General information about the use of ICT

The following graphs describe general use patterns of ICT, in terms of time and places of access to computers and internet. Figure 2 shows that all teachers access computers and internet at least once per week, while Figure 3 shows that CEAP is still the place from where most of the teachers are able to use computers and internet. However, 33% of teachers own a computer and 33% of them uses the so called LAN house (the Brazilian label to name cybercafés) to access the internet.

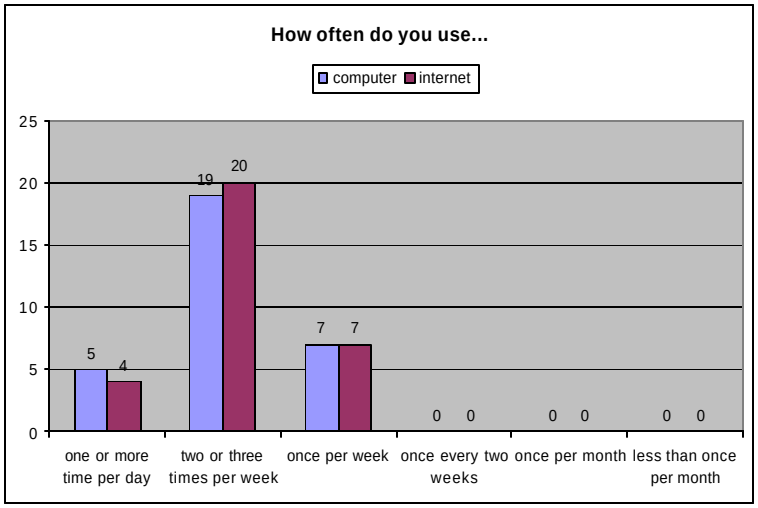

Fig 2: Access pattern in term of frequency

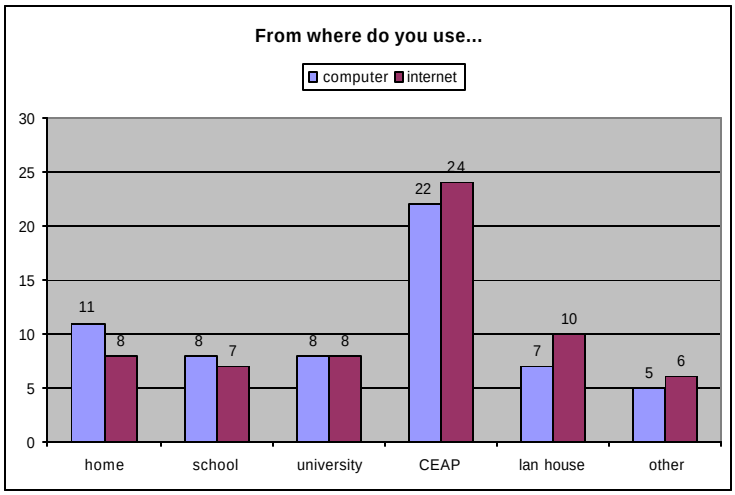

Fig 3: Access pattern in term of places

Results on teacher self efficacy

The following figure shows how teachers perceive their efficacy as teachers. It can be noticed that among the 16 questions the ones in which they showed to feel more uncertain or not at ease are the last four, regarding the use of technologies. In particular the last four questions concern:

- If teachers are able to find resources on the internet to prepare their lessons
- If they are able to prepare didactical materials using ICT

- If they feel comfortable in using ICT during their classes
- If they are able to introduce their students to the information society

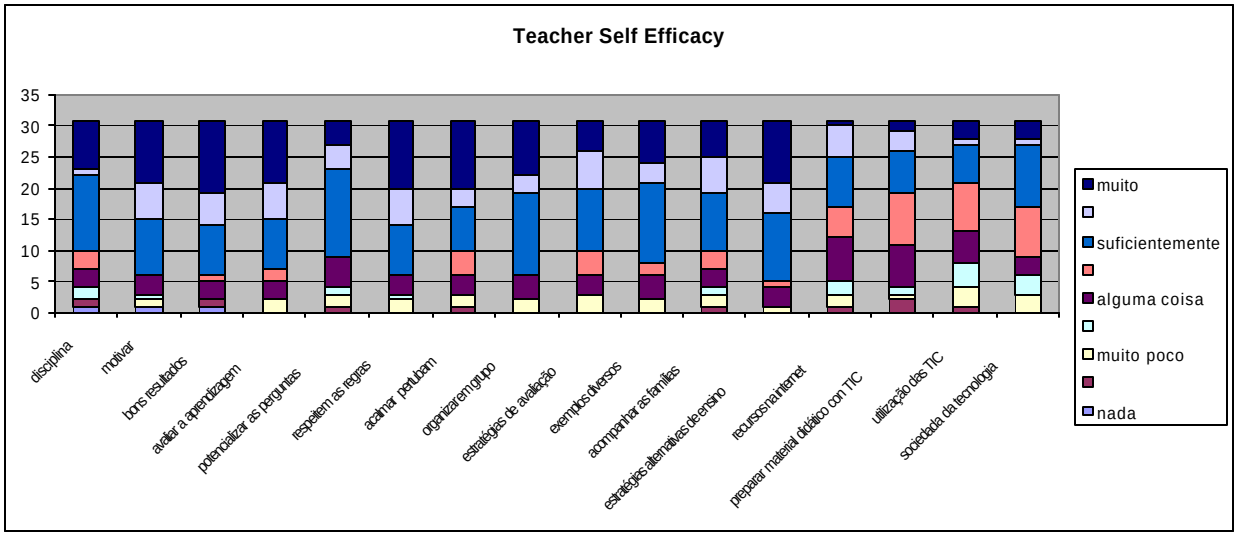

Fig 4: Teacher self efficacy

Results on computer self efficacy

The following paragraph describes how teachers perceive their computer self-efficacy, specifically regarding 7 technologies: Word, PowerPoint, Blog, Wiki, Search Engines, Email, and Chat. These are the 7 technologies on which the CEAP online courses stress the most.
The following figure shows the answers given to the 9 questions about computer self-efficacy for each of the 7 technologies in a scale from 1 (totally unsure) to 10 (totally sure).
It is interesting to notice that the blog and wiki, two tools belonging to the so called web 2.0, are the only ones detached fromthe others, with a higher perceived use uncertainty and a lower confidence.

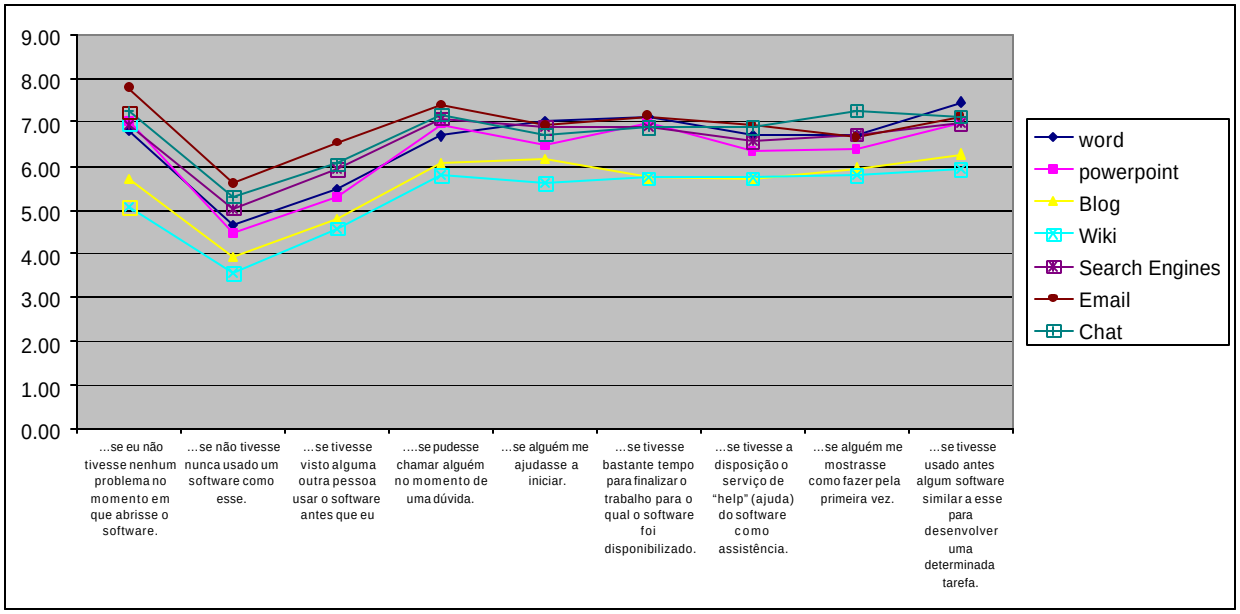

Fig 5: Computer self efficacy

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