

**ICT at CICIMAR-IPN - NEW MODEL FOR EDUCATION:
A CASE STUDY OF THE CLAROLINE SYSTEM**

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Abstract: This paper addresses information and communication technology (ICT) and its application in education from the standpoint of librarians and systems specialists. It demonstrates how this new model for education has directed and contributed to the teaching-learning process at the Centro Interdisciplinario de Ciencias Marinas del Instituto Politécnico Nacional (IPN). The institution adopted the Open Source “Claroline” platform, a system designed for online education. This paper includes a description of the platform and the reasons why it was selected, as well as how teaching staff, students, systems specialists and librarians used Claroline to develop a growing number of courses and teaching resources.

Keywords: ICT, open source, Claroline, education, Mexico, course management systems.

Introduction

The current conditions of both the higher education system and educational institutions in general can hardly meet the challenges presented by new forms of organization and work, and by scientific, technological and social changes (ANUIES 2000). For this reason, the National Polytechnic Institute (IPN) decided institute a new educational model, the main objective of which is to create Academic Units transformed into lifelong learning communities where students expand their ability to learn to learn, to do, to interact, and take over their lives. Teachers need to be facilitators of learning, and a virtual campus enables the intensive use of information technologies and communications and the generation of new learning environments to transfer knowledge to the Polytechnic community. It is now commonplace to communicate via email, forums and chats. Even cell phones receive e-mail messages, and manual equipment such as iPods and Palms store information and provide access to the Internet, among other advantages. Thus the entire teaching-learning process must to adapt to new technological tools that impact everyday life and transform people's lives.

CICIMAR is a Research and Graduate Center of the IPN, and was eager to achieve the above objectives. We decided to investigate the e-learning technology platforms available and choose the most suitable.

Antecedents

There was need for a technological tool to facilitate the storing and distribution of electronic files between teachers and students, without hindering the flow of mail. There were serious difficulties because of the low-capacity bandwidth and connectivity within the IPN (128 Kbist), and this was the main reason that we investigated an e-learning technology platform that would meet the infrastructure and information needs of the academic community (teachers and students) of CICIMAR.

E-learning technology platforms are defined as distance education systems that integrate the use of information technologies (Internet, Intranet, CD-ROM, multimedia productions such as texts, images, audio, video, etc.) and other teaching materials for education, training and education of users or students online. Also, e-learning systems are a tool for instructors who teach in person and use it as support meaningful learning of their students.

Within e-learning platforms, some are free or open source and some are commercial, as shown in Table 1.

OPEN SOURCE	COMERCIAL
Moodle	Ozono Media Solutions E-learning
Sakai Proyect	Arriba Learning Portal
Claroline	e-oceo
Docebo	eCollege
Dokeos	Desire2Learn
ILIAS	Blackboard
LRN,	Skillfactory
ATutor	SITEA Sistema de Teleformación avanzado
LON-CAPA	Delfos LMS
JClie	Prometeo
	Composica
	AVA - C14 Studio
	WebCT

	EKP
	we-Learning
	e-educativa, FormacionOnline
	Computer Aided Elearning, EducaciOnline
	Distance Educational network
	Virtual Training
	Training Coordinator
	E-LeVA
	Gec Virtagora

Table 1. E-learning platforms.

For use at CICIMAR, three open source e-learning platforms were studied: ATutor, Claroline and Moodle, and we decided to implement the platform Claroline. This tool facilitates learning through electronic means because in addition to integrating the use of Internet, Intranet and multimedia productions, no additional software is required by the user, who can use it with only a web browser.

Thus the objective of this paper is to explain the experience and the paths that were taken to move forward and implement new trends in virtual education, considering the policies of the National Polytechnic Institute to introduce the new educational model in the Schools, Centers and constituent units.

Materials and Methods

According to Monfasani and Curzel (2008), when implementing new information and communication technologies in educational institutions, we must ask how much we know about them, whether they meet institutional policies, if we have the proper infrastructure, if the people involved in the project are trained, and what level of application we need. Finding the answers to these questions allowed us to first define the research platforms ATutor, Claroline and Moodle, and choose the "Huascaran Program" (Velazquez Huerta and Manrique Zorrilla 2008) to incorporate ICT for CICIMAR.

Claroline Platform

The-learning and e-working Claroline platform was developed by the Université Catholique de Louvain, Belgium, and is open source (GPL). The minimum installation requirements for this platform are a Web server like Apache that has PHP 5.1.6 or higher, and MySQL 4.23 or a mail agent (optional). In the CICIMAR it was installed on a Linux server operating system.

Analyzing the installation requirements and menu features of the Claroline platform, we realized it was an intuitive and easy system that could be used by people who are familiar with the Internet. Also, financial resources were saved compared to the costs of the "Blackboard" platform used before in the IPN.

The Claroline e-learning system allows users to:

- Write a description of a course.
- Publish documents in any format (text, PDF, HTML, video ...).
- Manage public and private forums.
- Develop learning paths.
- Create student groups.
- Prepare online exercises.
- Manage an agenda with tasks and deadlines.
- Publish announcements (also by e-mail).
- Propose assignments to be handed over the network.
- View statistics of user activity.
- Use the wiki tool to write collaborative documents.

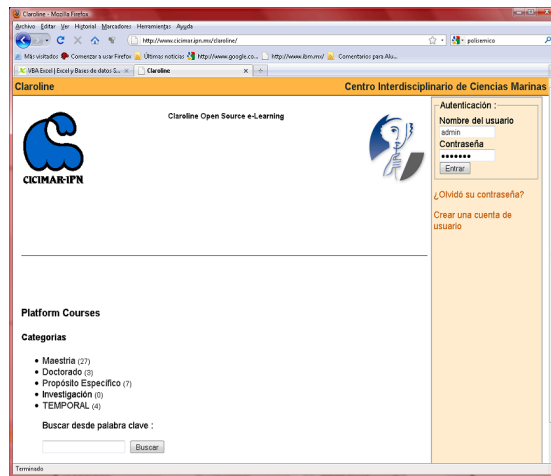
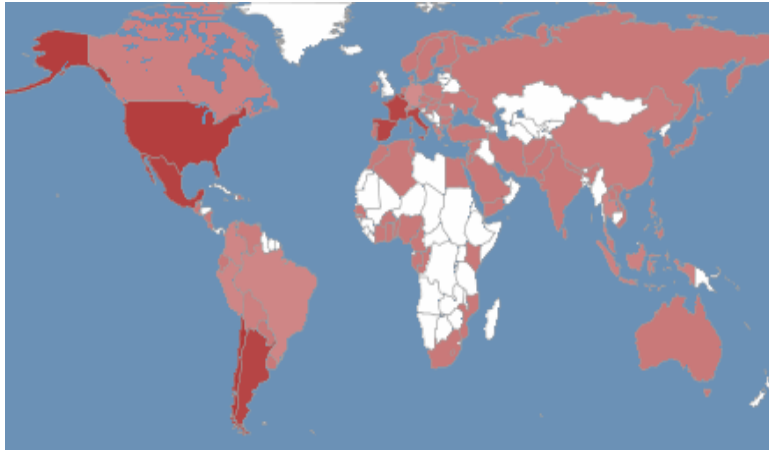


Figure 2. Claroline main screen.

This platform is implemented in 98 countries in 1564 organizations; one in Mexico is used by 133 organizations from different levels of study.



*Figure 3. Countries using Claroline.
Dark color indicates the countries with the largest number of deployments.*

Figure 3 shows that countries with the largest deployment of such platforms in America are concentrated in the U.S., Mexico, Argentina and Chile, while in Europe they are concentrated in Spain, France and Italy.

Mainstreaming ICT

The process of incorporating information and communication technologies in educational institutions is similar, but the guidelines, policies and ways of joining them are unique, because the people, infrastructure and financial resources vary at each institution. Hence, IPN CICIMAR adopted the "Huascaran Program." In general terms this program has three basic stages, on which the ICT initiative was based,

Appropriation Stage

Since all individuals involved in education at an institution need to understand and be able to manage ICT, in the case of CICIMAR-IPN the first step was made by computer engineers because of their education and job responsibility. Once they completed the installation of the Claroline platform, the next step was to train the teaching staff of the Centre in the understanding and use of the platform.

The training was assumed by the head of the Information Technology Unit of the Center and program manager, who by experience and track record in the institution had the ability to lead the educational community in learning of Claroline. He designed a course with two main objectives: to help teachers understand what an e-learning platform is, and then to learn how to use the platform for their own online courses or materials or as a support tool in their courses.

Integration and Utilization Stage

At this stage each teacher had to define which tool was most suitable for the subjects they teach and promote, enabling them to assist the development of students' abilities. Therefore, the workshop included material support for an actual course taught on-campus. The result was very positive because there were several instances where participating teachers placed between 80% and 90% of their courses on the platform.

The system has a learning path that allows instructors to assess their students' development as well as to apply the course content, schedule activities, post notices and reminders, attach documents, and link to pages or documents on the Internet. In addition, there is an exercise section where teachers can develop tests and ask different types of questions such as multiple choice, true/false, fill in the blanks, and forums for students to discuss topics. The chat feature has the advantage that conversations can be stored within the course, and wikis can be used as a system of collaboration and publishing for the course.

Each of the tools built into Claroline motivated participants, and combined with the simplicity and intuitiveness of the system they accepted it without reservations.

Production and Innovation Stage

Production and innovation is the stage at which the subjects of education develop possible actions, including adapting and creating their own teaching materials.

Results

In the ownership stage of the Claroline platform, we conducted three workshops aimed at teachers and staff that would support teachers in the Information Technology Unit. The three workshops were attended by a total of 45 teachers.

To date, there is no study indicating the level of use of workshops given, but considering the number of courses that CICIMAR-IPN teachers have included in the platform in the two years since the program began, the results certainly seem successful. Within the platform categories we counted the following number of courses: 27 courses at the master's level, 3 at the doctoral level, 7 courses for specific purposes, and 4 temporary courses.

The training program planned a course for students, which wasn't necessary because students are a part of the population very familiar with the Internet. This was never implemented because it was clear from watching the successful response of the teachers who were considered less skilled in the managing of ICT, so the priority was to support them.

Once the courses materials were posted by teachers in Claroline, students who used it found advantages and asked other teachers to include their materials on the platform. This way, the number of teachers who wanted to take the Claroline course increased.

From the experiences gathered in the production and innovation stage, teachers agreed with their students to be available online at a specific time to chat and answer questions

about homework. However, if they got online later than the agreed time, they observed that students answered questions or problems between themselves so there was participation and feedback. This allowed teachers to review the conversations between students and identify how they learned from them.

Another interesting result was when teachers used an online survey. When reviewing the responses, teachers found some questions were more difficult for students to understand, but the tool helped them to rephrase the question and avoid confusion.

Conclusions

The implementation of the Claroline platform provided a solution to the difficulties with the bandwidth on the CICIMAR-IPN network, and the other problem that it resolved was the difficulty presented when the teacher was required to distribute information to students. Now teachers upload the files in the courses and have control of the tasks requested because the system has the ability to set a date and time of delivery. Difficulties of communication via email between teachers and students of the Center were also resolved, because Claroline provides a great number of options that allows teachers and students share documents, Internet links, comments and opinions on the scheduled dates.

Another interesting situation was observed during the study. The result of the initial training aimed at teaching was a key factor because the simplicity of the platform allowed all the participants to progress at their own pace, and their learning and skills development surpassed their own expectations. As a result, we reached the first application level projected and a little more, because users are more proactive in creating their own teaching materials in order to obtain greater benefit from the platform for themselves and their students.

Before the implementation of the Claroline Platform at CICIMAR-IPN, because the computer network was saturated with 4MB files, there was a lack of fluidity between teacher and student. Currently, since the implementation of this platform, these problems have been solved, so now we are in full compliance with the objectives set by the National Polytechnic Institute, regarding the new educational model.

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