

Information and Communication Technologies in Teachers Continuing Education: Experiences in Andalusia.

L. Marín Trechera^{*}, A. Gámez Mellado, R. Rodríguez Huertas, y S. Fandiño Patino

Dpto. de Estadística e Investigación Operativa, Escuela Superior de Ingeniería, Universidad de Cádiz.
c/ Chile 1, 11002 Cádiz, España

In this paper, we present our experiences in e-learning and b-learning environments through our collaboration with different education societies and authorities. At first time, we collaborated with Thales Society in its e-learning project, which explores how Information and Communication Technologies can enhance the learning environment in mathematical education. We participated in this project like teachers, coordinators and tutors for more than twenty e-learning courses during last eight years. At second time, we collaborated with provincial education authority joining to the continuous formation team of the CEP (Centro de Profesores of the "Delegación Provincial de Cádiz de la Consejería de Educación" of the Andalusian autonomous Government). CEP organizes a lot of face-to-face courses oriented to the actualization of primary and secondary teachers, but we organized the first b-learning course of this institution.

Keywords Teachers Continuing Education; E-learning; B-learning; pedagogical collectives.

En este trabajo se presentan las experiencias de los autores en entornos de e-learning y b-learning a través de la colaboración con diferentes sociedades educativas e instituciones. En primer lugar se detalla la colaboración con la Sociedad Thales en su proyecto de educación a distancia, que explora cómo las Nuevas Tecnologías pueden mejorar los entornos de aprendizaje en educación matemática. Hemos participado en este proyecto como profesores, coordinadores y tutores de más de 20 cursos durante los últimos ocho años. En segundo lugar se detalla la colaboración con el Centro de Profesores de Cádiz en la organización del primer curso semipresencial impartido por esta institución.

Palabras clave Formación Continua; E-learning; B-learning; Formación en Administraciones Públicas; Colectivos de Renovación Pedagógica. Enseñanza Virtual.

1. Introduction

Since 1999, we are collaborating with the THALES-CICA-WEB project, which explores how Information and Communication Technologies can enhance the learning environment in mathematical education. This project is led by Thales, Andalusian Society for Mathematical Education [1]. Founded in 1981, this Society has organized, through the Centro Informático Científico de Andalucía of the Consejería de Educación of the Andalusian autonomous Government, different activities oriented to the diffusion of educational innovations. . One of these activities is the THALES-CICA-WEB project, which explores how Information and Communication Technologies can enhance the learning environment in mathematical education.

In these activities, our participation involves different aspects: content design, teaching, tutoring, administration, and so on. Along these years, the number of participants has been increasing yearly, raising the total number of 6000 teachers. The courses offer a broad selection of subjects, covering many differ-

^{*} Autor de contacto: e-mail: luis.marin@uca.es Teléfono: +34 956015312

ent areas within mathematical specialization, computer and information science. The duration of the courses has varied along the years, from 20 hours to 80 hours. The work of the participants was evaluated by teachers and we edited a CD-ROM with all the works.

We must emphasize the high level of both participant and institution's satisfaction. Actually this project is the reference followed by others teacher's societies, not only from Andalusia, but also from Spain and South America.

We also collaborated with provincial education authority joining to the continuous formation team of the CEP, organizing the first b-learning activity of this institution oriented to teachers continuing education.

2. Thales Project

In 1999, a group of teachers started the THALES-CICA-WEB project. In this first edition, we offered five courses for educators, using Internet as an alternative to face-to-face education. This first model was very similar to older models of distance education, but we utilized email instead of regular mail to send written material. Although the aim of the project was promote the use of new technologies in education, the poor level of penetration of Internet and the very low availability of broadband in these years limited seriously the project.

An initial session in person was necessary to explain the system's characteristics, distribute the access keys, and the programs used during the next months. Other practise information was detailed, the instructor's contact information, a bibliography of required readings, and most importantly, the course calendar with topics, required readings, and due dates clearly specified.

A final session was used to give a CD-ROM with the works of all participants. The evaluation was based on these works which can be done in groups or individually. Every educator must do an electronic resource witch could be used with their pupils. One of the project's objectives was to build a collection of educational resources an offer these resources to students, teachers and the general public through the Thales Website.

In next years, the availability of Internet and broadband was growing in Spain, especially in the educational community, so the use of other internet facilities was increasing in next editions (2000-2003):

- We installed FTP to transfer data reliably and efficiently. Once connected, the client can do a number of file manipulation operations such as uploading files to the server, download files from the server, rename or delete files on the server and so on.
- We developed a web news system, similar to usenet newsgroup. It allowed users to submit doubts and get answers. The news system was divided in rooms. In each room, there were groups of people having discussions. Each discussion had a thread to the conversation with everyone replying to each other about the topic. The system allowed subscriptions. When a user subscribed to a forum, all new posts were automatically sent to the email address stored in his user profile. The use of a keyword was required to access to the system.
- We developed, using JavaScript and Dynamic HTML, our own Web Environment for Learning. This environment is shown in fig. 1. The course material was written in HTML or PDF format, with the aim of be able to be adapted to different platforms. Reusability, a concept very well understood in software development, is also essential in the area of education. However, reusability assumes that one has already developed a tool or concept and would like to make further use of it, in identical or modified form. The adaptation of course material to this platform was very easy, and it would be so easy the adaptation to future environments. In fact, all resources were used in different context [2].

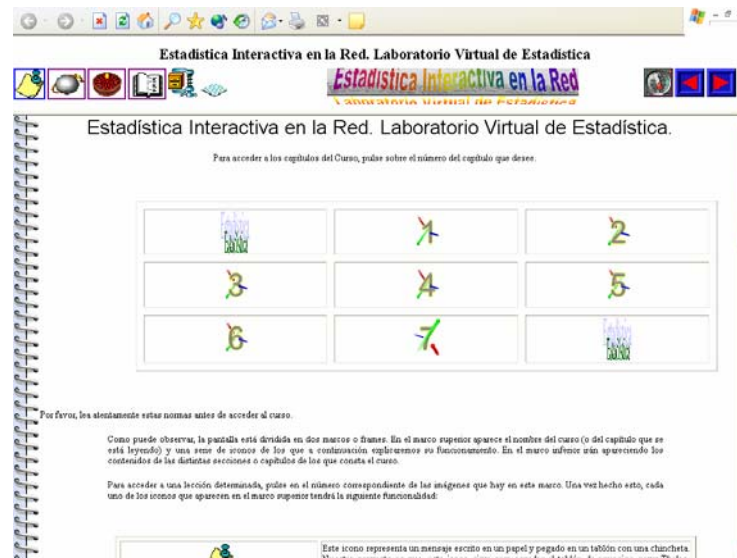


Fig. 1: Our own Web Environment for Learning, developed using JavaScript and DHTML, was used from 2000 to 2003.

In 2003, in the sixth edition of the project, we decided to transfer all our courses to an open source Learning Content Management System. We analyzed different alternatives and we decided to adopt Moodle. The access to the source code of the software was very important for us, because we needed to write new features to adapt the system to our database. The use of Moodle simplified the project administration and we were able to offer a best service. Since we adopted Moodle, the number of students grew such as the number of courses in the project. Students were very satisfied with the new interface and with the variety of online communication tools [4]. The flexibility of the Moodle environment to offer a range of both asynchronous (forum, message board, dialogues, etc.) and synchronous (chat, network meeting, video-conferencing, etc.) forms of communication is specially appreciated by our learners.

The use of a Learning Management System likes Moodle simplifies the management of learning material and offers multiple communication facilities. Pollard and Hillage provide more detailed list of activities that LMS should support [5]:

- managing courses and course registration
- managing course information, scheduling and administration
- provide access to learning
- track student registration, access and progress
- produce learning reports
- provide communication (collaboration) tools
- provide access to online help
- provide personal space for participants to store learning material.

Moodle has a very large, active community of people who are using the system and developing new features and translations. The Moodle developers and users work together to ensure quality, add new modules and features, and suggest new ideas for development. We feel we are part of this big community.

Thanks to Moodle, the project has grown from 5 courses offered to 20 courses offered and from 200 participants to more than 1000 participants. Figure 2 shows the courses offered in 2003.



Fig. 2: Thales Project using Moodle. The number of courses grew to 20.

3. Collaboration with CEP

At second time, we collaborated with provincial education authority joining to the continuous formation team of the CEP of Cádiz (Centro de Profesores of the “Delegación Provincial de Cádiz de la Consejería de Educación” of the Andalusian autonomous Government).

CEP organizes a lot of face-to-face courses oriented to the actualization of primary and secondary teachers, but they never organized a distance course. They had a little server and an old version of Moodle running on it, but they only used it to provide an electronic copy of the contents of the courses.

We organized the first b-learning course of this institution. After several face-to-face sessions, the students used the environment to access new contents. The communications tools were intensively used. Most users were satisfied or quite satisfied with the service received, at both the physical and virtual sessions. B-learning system allowed them to plan the work to be developed during free time.

After this experience, Cádiz CEP administration is planning new courses using e-learning or b-learning paradigm and other CEP are interesting in the model.

4. Content Reusability

Due to the fact that we developed all courses thinking in future environments, the adaptation of course material to Moodle was very easy. In spite of this, we are continuously changing the material, enhancing it as much as possible. Our objective is to adapt the contents to standards used for providing better interoperability between learning platforms [6]:

- We divide our contents in re-usable components of courses: Learning Objects.
- According to IEEE-LOM (IEEE Learning Object Metadata Working Group), we added metadata, descriptive information about resources for the purpose of finding managing and using them more effectively.
- We join our Learning Objects and Metadata in a package of content following the IMS Content Package Specification. We use the Reload Software for this purpose.

- Reload allows to save as SCORM (Sharable Content Object Reference Model). SCORM is a set of specifications for developing, packaging and delivering high-quality education and training materials whenever and wherever they are needed aiming to improvement of e-learning processes and provide connecting link for interoperability between existing and future learning platforms.

5. Conclusions

We have collaborated in different experiences in the use of e-learning and b-learning paradigms. After build our own environment we decided to transfer all our courses to an open source Learning Content Management System. We decided to adopt Moodle. The use of Moodle simplifies the management of learning material and offers multiple communication facilities. Most users were satisfied or quite satisfied with the service received.

Nowadays, we are adapting the contents to standards used for providing better interoperability between learning platforms.

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