Development of a Virtual Campus Based on Bimodal Education

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Summary

A bimodal education model is a flexible model which harmoniously combines the possibilities for teaching offered by Information Society Technologies (IST), such as interactive classrooms, videoconference, and the virtual campus, with traditional educational activities such as lectures and certain types of practical training.

The main goal was to provide university students and teachers in formal and continuing education with telematic tools based on new information technologies within the framework of a bimodal educational system. Other objectives were to evaluate the possibility of shortening and improving the learning cycles and overcoming the physical barriers that make it difficult for students to contact their tutor.

This paper describes the development of a virtual campus based on a bimodal model of university education, in which the educational possibilities of IST were combined with the traditional training activities.

Five virtual education sections were designed: Formal Education courses, Global Campus, Masters and Postgraduate courses, Specialised Education courses, and the Thematic Portal. Each section is defined by a series of functions that combine aspects related to information, communication, and the educational proposals.

Introduction

This project is the outcome of three years of experiments, results analyses, and the presentation of new proposals. The main goal was to provide university students and teachers in formal and continuing education with telematic tools based on the new information technologies within the framework of a bimodal educational system. Other objectives were to evaluate the possibilities of shortening and improving the learning cycles and overcoming the physical barriers that make it difficult for students to

contact their tutor.

During this process we defined five educational virtual sections used to meet the needs of a range of educational contexts. Each of the sections has its own computing configuration, since the needs they are intended to cover are different.

We start from a bimodal model of university education. A bimodal education model is a flexible model which harmoniously combines the possibilities for teaching offered by Information Society Technologies (IST) such asinteractive classrooms, videoconference, and the virtual campus, with traditional educational activities such as lectures and certain types of practical training. It is a model that allows the attendance/non−attendance pairing to be adapted to specific educational needs. It thus overcomes certain limitations, such as the space−time co−ordinates through the implementation of IST. The bimodal model also promotes high quality teaching. It permits the selection of any area inside the classic schemes of space (attendance and distance learning) and time (synchronous and asynchronous) in which attendance/ interactive classroom, teletraining and the virtual campus are combined.
 The virtual education sections are: Formal Education courses, Global Campus, Masters and Postgraduate courses, Specialised Education courses and the Thematic Portal. Each of the sections is described in detail below, along with a summary of the results of their application. https://ticeu.uab.es

Virtual education sections

Formal Education

This section corresponds to the teaching of the official subjects in the curriculum in the different specialities. To prepare this section a Virtual Campus (VC) was designed, with an access profile for the teacher and another for the students in which a group of functions interacts for each of the subjects introduced. These functions are grouped under:

1. Information: agenda, news, bibliography, interesting links and documents.
2. Communication: via e−mail by means of web and forum.
3. Proposed educational materials: the teacher introduces the course programme, the material for the subject, the activities, questionnaires and exercises.
4. Educational tools: self−evaluation tools, frequently asked questions and answers (FAQ), and student and subject mail management.

The access profiles make most functions available to the students for consultation, and also allow teachers to introduce changes.

Global Campus

This section focuses on official curriculum subjects taught at several universities. This module offers all the possibilities available in the Formal Education module, but also integrates other technological tools applied to education, such as videoconferencing.

Masters and Postgraduate courses

This section comprises continuing education and consists of a specific number of credits, between 30 and 50.

This section is a predefined structure that responds to the educational needs of a specific masters or postgraduate course. To this end, a flexible structure was created which satisfies the needs of education,

communication, and evaluation on the basis of the experience gained on the first masters courses held. The following outline shows the whole structure, and depicts the two open and closed intranet sections reserved to the students and the teachers.

Specialised Education

This section focuses on the most specialised and time−limited continued education. Its structure is also predefined and responds to the specific needs of the course. What distinguishes it from the other modules is the availability of an e−mail system internal to the course, with no external outlet, allowing teacher−student and student−student communication.

Educational section: Thematic Portal

This section responds to the need to maintain contact inside the setting of continuing education. This need may arise in a group that has undergone joint training and which must keep in contact either to share the results of research projects and to conduct research projects with companies, or to constantly update their knowledge.

Results

The development of these virtual education sections led the vice−chancellor's team to create an organisational structure known as the *Autònoma* Office for Interactive Teaching (OAID) in order to meet new challenges in the field as they emerge.

The results obtained by each of the sections are outlined below.

Formal Education

A virtual campus structured according to its corresponding functions of information, communication, courses offered and educational tools is currently in operation. The campus is fully connected to the university databases, which allows real−time updating of any change in the registrations and subjects listed on the campus.

Teacher participation in the campus subjects is totally voluntary. As soon as a teacher applies to participate, a section is created for the subject offered, providing it with all necessary functions. These functions are activated at the discretion of the teacher. This module is considered to be complementary to the compulsory *in situ* training, since it promotes access to information with connections to specialised webs, communication by e−mail and forums, and access to materials via the *courses offered* function or via other functions.

Already at the beginning of the 2000/2001 academic year more than 400 teachers are participating in the virtual campus, which involves teaching in 350 subjects and more than 15,000 students. Teachers are involved at different levels, depending on their degree of participation and the use of the functions available.

At the start of the experimental stage of the project, all the students were given an e−mail address. At first the e−mail tools in the browsers available at the time were used, but this system caused difficulties since most students connect onto the virtual campus from the university computer rooms. We therefore changed to Webmail, a web−based e−mail. With the help of the Computer Service, the Universitat Autònoma de Barcelona (UAB), has been able to offer all its students a free e−mail address since October 1998 thanks to a financial contribution for the acquisition of computer material. In the 97/98 course this free e−mail address was limited to the participants in the experiment. Since October 1999 onwards participants have

also had free access from home, which has clearly favoured the implementation of this section.

Evaluations of the early experiences in this section highlighted the following points:

- At the end of the first academic year the teachers were asked to assess their experience with the Virtual Campus (VC) as regards time invested, its utility, and student response. On the whole, the opinion of 18 teachers at the 12 different centres was positive. They proposed the addition of new functions, made it plain that the students preferred personal, face–to–face communication with their teachers and that teachers needed more training in use of the computer tool.
- At the beginning of the following year the five teachers who had proposed changes in the form and content of the communication and information structures were interviewed. It was concluded that the teachers used the VC to introduce basic or complementary material to their classes. Given the substantial amount of work involved in the implementation of the bimodal educational system, the teachers recommended designing a marketing campaign among students and providing some kind of incentive for the teachers. With relation to the format they again stressed the presence of distracting elements on the screen as well as the lack of clear differentiation between drawings and icons. They stressed the following general points: the need to make the use of the VC compatible with other databases, at least for the teachers; the excessive number of passwords required to access their subject; the desirability of material editing tools for each teacher; and the insufficient instructions for the use of the VC.
- During the last month of the 1998–1999 academic year, evaluation from both teachers and students was received. In general, the students showed a certain ignorance of the use and the functioning of the VC, for the following reasons: not all had use of a computer at home, the supply of computers available in the computer rooms was insufficient and finally they did not regard the use of the VC as necessary, since they were content just to follow the classes. Whenever they used the VC, they were impressed by the easy availability of the material reviewing classwork and of new material. Teachers teaching several courses proposed the introduction of only one in the VC due to the time and work that the use of the VC involves. They used it to introduce material (exam models, problems to solve, practical exercises particularly in the case of the sciences, and complementary reading in the case of the humanities), do their tutoring and finally posting the FAQS, but stressed the limited technical functioning of the forums. In general, they welcomed the technical support received for the development of the materials.
  For the students, the VC is a rapid way to obtain information deliberately prepared for them, assuming that they have appropriate soft/hardware. On the other hand, it does not seem to be used as a means of communication between professors and students, since the latter prefer personal interviews and teachers find it hard to discuss papers made individually or in groups.
- Finally, the following issues were stressed: the lack of a telematic 'culture', or experience in the management of knowledge; the particular teacher's need for training; the need for computer resources to respond to the changes taking place in the access to and the construction of knowledge; and, in general. the interest and positive response to the *Autònoma Interactiva* VC project.

Global Campus

This section includes projects run in conjunction with other universities:

- Shared course projects, via videoconference and Virtual Campus; organised by the UAB and the UPM (the Polytechnical University of Madrid).

Year 1997/98 2nd semester	2 subjects
Year 1998/99	2 subjects
Year2000/01	4 subjects taught by videoconference and 4 by distance

The OAID (the *Autònoma* Office for Interactive Teaching) in conjunction with the Office for Distance Education Applications (GATE) at the UPM conducted a study of these experiments.

- 'Metacampus Project'. Distance teaching of 4 free−choice subjects between the UAB and the Universitat Oberta de Catalunya (the Open University of Catalonia, UOC) by means of their virtual campuses during the 1999/2000 and 2000/2001 courses.
  https://ticeu.uab.es/blues/videoconferencies/videoconferencia.htm
- Intercampus. A pilot scheme involving free−choice subject exchange through the Internet, run for the second consecutive year by a group of Catalan universities; the project provides students at a university participating in Intercampus with access to the virtual subjects of any of the other universities.
  http://www.catcampus.org

Masters and Postgraduate Courses

In the 1998/99 academic year, using the educational section created by the research project now transferred to the OAID, two masters were created in agreement with the Spanish University of Communication (UNIAC) and a postgraduate course with the In−service Training Unit for Primary School Teachers in Chihuahua, Mexico). This year, 10 masters and postgraduate courses are being taught to students in Spain, Europe and Latin America.

Contact has been made with companies involved the area of training that may be interested in acquiring a distance learning platform of this nature.

Specialised Education

In September 1998 the Specialised Education section was tested with an office computerisation course in bimodal format, combining both attended and distance learning, for prisoners in the Women's Prison of Barcelona. The outcome of the course and the methodology used were highly satisfactory. Videoconferencing was also used as a means of student communication/ tutoring.

During the first semester of 1999 a university access preparation course and an office computerisation course were developed for prisoners over the age of 25 at Brians Prison in Catalonia. The courses were repeated in the second semester of that year. By then, the prisoners already had a web–connected Pentium 2–equipped classroom with connection to the UAB by means of RSDI through the Intranet or by means of videoconference.

One outcome of the agreement with the Spanish Directorate for Penitentiary Services and Rehabilitation , which has been in force for 2 years now, was the presentation and acceptance of a European project called EPPI – Educational Project for Penitentiary Institutions – co–ordinated by the UAB and in which institutions of Germany, England and Spain participate. In addition to the EPPI project, the UAB is also involved in the IDLEP project – Interactive Distance Learning for European Prisoners – in conjunction with institutions in England and Germany.

The overall objective of the project presented to the European Union is to promote technical training for young European prisoners via the creation of a training intranet to prepare them for reentry to the labour market. Many European prisons hold prisoners from other EU countries, and this European intranet allows the use of their own languages and cultures in their training process.

Another key objective is to allow prisoners access to information technology–based training in order to prepare them for a work environment which is becoming ever more dependent on Internet tools and functions. Another important objective is to help young European prisoners to obtain an European certificate (EDCL) that grants them professional recognition of this subject.

In order to achieve these objectives a stable team of institutions at various levels of European society such as Penitentiary Administrations, Universities, Colleges and ONGs must be set up. Participation between these levels will make possible the design of more ambitious projects with other participant countries and entities, greater prisoner involvement, and a wider range of courses and training plans.

During the 1999/2000 academic year the training area of the UAB Administration Staff will use this same section for the semi–attended training. This same section will be applied to basic office computerisation courses: Office 95/98.

https://ticeu.uab.es/blues/direccio/direccio2.htm

Thematic Portal

In this section, two experiments have been underway for some six months.
https://ticeu.uab.es/espaiste.htm

Conclusions

Taking into consideration the objectives, the results and the evaluation it can be said that:

- The bimodal model responds to the basic necessities of different situations which cannot have been met with either a totally *in situ* or a totally distance format. These needs are in a wide range of fields, both social and technical.
- Among our university students there is a serious lack of familiarity with computer science and/or the functions the Internet offers for their present and future training. This situation is rapidly changing; nonetheless, students, especially in higher years, tend to ignore the potential of these tools is required in this field.
- It is necessary to promote the flexible and easy–to–use editing tools of educational materials. Teachers must gradually become the producers of their own materials, making the most of external help at all times; this is not possible if the teachers are not offered the necessary means and basic, well–oriented training. Training plans for teachers must be designed, and self–editing functions in the web.
- It is necessary to promote the tools that make co–operative work possible. This is an area that has not been addressed in the project, but it needs a prompt answer. Along these lines, tests are being applied using tools already available in the Virtual Campus such as Altavista Forum and others such as BSCW.
- It is necessary to further contact with other universities involved in experiments of the same kind in order to work in conjunction and thus lower expenses.