EDUCATIONAL TECHNOLOGY, E-LEARNING AND KNOWLEDGE MANAGEMENT: An evolving initiative for an evolving world

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1. EXECUTIVE SUMMARY

This paper presents a post graduate academic program in educational technology developed at the university Rovira i Virgili (Tarragona, Spain) since 1995 - Masters in Educational Technology: E-LEARNING and Knowledge Management (http://late-dpedago.urv.cat/mte/). This initiative evolved from using initially an in classroom traditional format, to combining in classroom setting and distance learning and finally to offering the full distance learning two year long format currently available. The changes made in the program have aimed at, on the one hand, adapting it to a continuously changing environment, both educationally and technologically, and, on the other hand, covering international training demand, especially from South America.

1.1. The program description

The academic program covers the design and development of educational materials as well as the necessary strategies for searching, evaluating and managing of such materials. The subjects now encompass the basic elements and tools used for development, design and management of cooperative technological multimedia environments. The program assigns an online tutor to each student from the very beginning of the course. Students have the option of choosing a range of signatures which either focus on a professional profile or on a researcher profile. The later has fed the research group which supports the academic program, the Laboratory of Telematic Applications for Education, with research projects and around ten PHD thesis.

1.2. Challenges for the future

Among the main difficulties faced by the program organizers, professors and students, we would highlight the creation of a really interactive and engaging online environment. Future improvements in the program, on their way right now, aim at overcoming the traditional online materials barrier. We have succeeded in creating a distance learning environment. Now we should incorporate on a systematic basis more interactive and cooperative multimedia resources, revise and improve professor-student and student-student tutoring, give full use to visual and sound modes, apart from adapting to web 2.0 tools and technologies.

1.3. Conclusion

We hope our experience can help post graduate educational managers to take steps toward modernization informed about some of the difficulties they may face.

2. Introduction

This paper presents a post graduate academic program in educational technology developed at the University Rovira i Virgili (Tarragona, Spain) since 1995 - Masters in Educational Technology: E-LEARNING and Knowledge Management (http://late-dpedago.urv.cat/mte/). This initiative evolved from initially using an in classroom traditional setting format, to combining in classroom setting and distance learning and finally to offering the full distance learning two year long format currently available. The changes made in the program have aimed at, on the one hand, adapting it to a continuously changing environment, both educationally and technologically, and, on the other hand, covering international training demand, especially from South America.

The academic program covers the design and development of educational materials as well as the necessary strategies for searching, evaluating and managing of such materials. The subjects now encompass the basic elements and tools used for development, design and management of cooperative technological multimedia environments. This paper outlines the main characteristics of this post graduate program, examines the changes which have been made to reach the structure currently offered and discusses some of the program's strong and weak points. We hope our experience can help post graduate educational managers to take steps toward modernization informed about some of the difficulties they may face.

3. Theoretical background

Back in 1998, the UNESCO World Educational Report pointed out: "New possibilities are emerging which already show a powerful impact on meeting basic learning needs, and it is clear that the educational potential of these new possibilities has barely been tapped" (1998 UNESCO World Education Report, p. 19). It is now clear advances in information and communication technologies have reshaped social life in many ways and that they also have the potential to transform the nature of education - where and how learning takes place and the roles of students and teachers in the learning process (2002 UNESCO Information and communication technologies in teacher education: a planning guide).

Patel and Patel (2006) take online education as a radical innovation, following Colarelli, (1998), who defines it as innovations that embody a new technology that results in a new market infrastructure. It is then reasonable to expect radical innovations foster the emergence of new firms and new customers. The radical innovation view of online education points out the existence of a new market of online education with new customers.

It is important to highlight, however, these new costumers have new demands on the educational products. It is not about doing the same things as always, but now on the Web. Technology communications now allow the use of computer conferencing for submission of homework; discussion of issues and providing help; online materials that include syllabus, assignments, reading, problems and interactive learning modules; course management via homework submission, instant grading, and roll-ups of student progress; interaction with students through e-mails; audio clips of lectures via real-time audio and downloadable audio; and video clips of lectures via real-time video and downloadable video. According to Patel and Patel (2006), however, review of most courses currently on the Web reveal that few offer most of these features. The authors point out that many courses online consist of little more than a syllabus and a list of assignments.

Gooding (2008) argues that, formerly, as amazing as the Web was, it was mostly a static entity on which programmers posted information in a specific format which others could simply view. Then, education professionals and students were astonished because the information we needed was at the reach of our fingerprints. Things have changed a lot since then and, though it generally takes a long time for educational institutions to get close to being up to date with social changes, many have already discovered the potential of the user friendly tools of Web 2.0, which allow the construction of environments more centered on the user, dynamic elaboration of content, and the possibility of higher and more meaningful levels of engagement, participation and collaboration.

As communication technologies develop and allow people to participate more actively in virtual environments, those students who take distance learning courses develop new expectations. Identifying and fulfilling these expectations is a challenge for educational professionals and institutions. Shin and Chan (2004) have found distance students who have a stronger sense of availability of, and connectedness with, educational program providers are likely to be more positive about learning outcomes, more satisfied with their learning experiences and more willing to continue being involved in distance learning than are students with a weaker sense of institutional presence. Availability and connectivity become then central to establishing a strong sense of engagement in online learning environments. As Zhang et al (2005) point out, understanding student expectations is perhaps the first step to integrating online learning in distance education and establishing a model that will nurture a powerful learning environment for all.

4. An evolving program: from traditional in class format to e-learning

One of the characteristics of the Masters in Educational Technology: E-LEARNING and Knowledge Management is the fact it is designed and developed in cooperation among three public Spanish universities: Universitat Rovira i Virgili, Universidad de Lleida and Universidad de las Islas Baleares.

This factor, which could be considered one of its strong points, presented some difficulties regarding teaching activities for the course organizers when it was first launched. Such difficulties were both practical and theoretical in nature.

In its beginnings, the Masters program was designed to combine in classroom activities with distance learning, a type of blended learning which is commonly known in Spain as *semipresencial*. Theoretical content was taught in classroom. These sessions were filmed so that they could be latter distributed in digital format to students who had not had the chance to attend classes. Hands on contend was organized in workshops, in which students could develop tasks which allowed them to know different software and their application to different contexts and projects.

Professors who taught the workshops used to move among the three universities, so as to interact with students in the classrooms.

In a second phase of the program, theoretical sessions began to be taught through videoconferences. These classes were filmed and made available to students online. The experience allowed new working dynamics with the students and the incorporation of students from other geographical regions, both in the Spanish context and internationally. Students, however, still had the possibility of attending classroom in person if they wanted, going to the university from where the conference was supposed to be emitted.

During this time, different online environment were used to give access to the resources and for the development of the cooperative activities. WebCity and Edustance were environments which supported the virtual campuses of the universities engaged in the program development. Though the universities engaged in the project made remarkable efforts and investment both to develop the necessary infrastructures and to prepare teachers and students to use these technologies, the use of such online environments demanded certain knowledge, what meant additional difficulties for the Masters Program. An important part of the time which we expected to dedicate to discussion was used to learn how to participate in the educational plataforms.

Throughout all these years, the program has evolved towards a total virtualization process of its activities, towards a full e-learning program.

Nowadays, all signatures in the program are taught in the virtual environment Moodle, an open source software which is very intuitive and easy to use by teachers and students. Each signature is composed by sessions which are taught through videoconferences Adobe Connect. This system allows simultaneous computer connection of all registered students and their teacher. A direct

consequence of the use of this technology was to improve the interactive experience and to enhance student participation in the development of the different materials.

5. Evaluation of the program currently offered: strong and weak points

We consider global outcomes of the program to be very positive, though some aspects of it still can be improved.

Among the program's strong points, we would like to highlight:

-Its interdisciplinarity. The program offers signatures from educational and technological fields grouped in four modules: foundations in didactics, technology, methodology and, finally, research and practical dimensions.

- The availability of two different itineraries for students: a professional and a research focused one. Both of them let students engage in the development activities of practical applicability. In the research focused itinerary, activities are fundamentally applicable to different educational contexts and levels.

- The program is closely related to a research group. That allows students to integrate research projects since the very beginning of their learning process.

- All managing and educational activities developed in the program's frame of work is done online, through the virtual campus of the Universitat Rovira i Virgili, which uses Moodle as its environment. Moodle is an open source software characterized by its great versatility and easiness to use, which makes student's adaptation processes to the online environment a much smother one.

- Active methodologies and high level of interactivity among teachers and students. In the different signatures, teachers use PBL and Project based to develop a range of individual and group activities. The use of Adobe Connect Videoconferences has also added value to the program allowing meaningful real time interaction among teachers and students geographically disperse.

Among the program's weak points, we would point out:

- Different functional and organizational structures of the three universities responsible for the program, which has at times presented difficulties for the management of students.
- No impact in the Anglo-Saxon context.
- As an answer to student's sense of "loneness" in a program fully developed online, we are nowadays testing the so called "Tutoring action Plan". We believe tutoring, here understood and the support and guidance of students, is a clue factor in a program like the one we present here. The tutoring action plan is being undertaken through Moodle and other applicability, which will allow information integration in one system.
- Though the program is structured and developed under the principles of the European Higher Education Area, it still is necessary to improve a competence based teaching approach and to incorporate new methodologies.

6. Challenges for the future

A challenge common to all programs of the type we present here is to keep up to date with the new trends in the use of technology in education, in this ever changing society. The challenges we point out here, however, are of a more specific nature:

- The need to enhance knowledge about first year students. Most of our students do not have any face to face not mediated contact with their teachers during all the time their course lasts. That requires constant optimization of the ways teachers identify student's needs and expectations as well as the improvement of tutoring activities. One of the biggest challenges this program has to face now is to develop a methodology which makes possible to know who students are and what they

expect from us from the very beginning, and a way of integrating such information in Moodle for undertaking measures aimed at student's permanence and satisfaction.

- Increase and improve interactivity among students themselves and among students and teachers, all that through communication software (audio and video) and integrate them in the Moodle environment.

- Incorporate new work methodologies which Foster online cooperative network and benefit from the possibilities offered by different open source software.

7. Concluding remarks

The authors believe there are a few recommendations which could be useful for the organizers of programs of the type we present here:

- It is strongly advisable to structure in details all work dynamics in the different signatures and extensively inform students about them. Something which we have found of great help are the "Learning and Teaching Guides" (*Guias docentes*), which are documents prepared for each signature, aimed at describing all the cont covered, the methodologies used, the competences developed, the resources used and any other useful information regarding the signature.

- Keeping a high level of interaction and of good quality among students and teachers is of extreme importance. Maintaining continuous, fast and efficient information flows is of special importance, especially with freshmen, who need greater support to adapt to the program's work dynamics.

- It is important to identify students' needs and expectations as precisely and soon as possible. Besides, the team of teachers must be promptly informed on that.

- Finally, it is necessary to clearly state the coordination criteria with two of the key agents in any online master program: administration and organizational university staff, on the one hand, and technical and technological support staff, on the other.

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