

Chapter 15

An Innovative Educational Project at the University of Granada: A New Teaching–Learning Model for Adapting the Organization of Curricula to Interactive Learning

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ABSTRACT

The European Space of Higher Education (ESHE) is a new conceptual formulation of the organization of teaching at the university, largely involving the development of new training models based on the individual student's work. In this context, the University of Granada has approved two plans of Educational Excellence to promote a culture of quality and stimulate excellence in teaching. The Area of Environmental Technology in the Department of Civil Engineering has developed an innovative project entitled Application of new Information and Communication Technologies (ICT) to the Area of Environmental Technology teaching to create a new communication channel consisting of a Web site that benefits teacher and student ("Environmental Studies Centre": <http://cem.ugr.es>). Through this interactive page, teachers can conduct supervised teaching, and students will have the tools necessary for guiding their learning process, according to their capacities and possibilities. However, the material is designed to serve as a complement to the traditional method of attended teaching.

1. INTRODUCTION

In recent years the working world demands greater abilities and practical skills, so in addition to theoretical knowledge, universities should develop in their students skills such as leadership, decision making or the ability to work in a multidisciplinary team. To achieve these extra goals, universities should include teaching-learning models that encourage the student body to analyze, discriminate, classify and synthesize the information they receive (King, 2005). In order to promote teaching-learning models that give students a more active role, developing abilities as decision making and analysis, the European Union (EU) has defined the new framework of the European Space of Higher Education (ESHE), based on the establishment of the European Credit Transfer and Accumulation System (ECTS) and defined as a student-centred system with the required student workload geared toward achieving the objectives of a programme specified in terms of learning outcomes and competences to be acquired. The concept of credit should take into account the total workload that a student must carry out to overcome individual subjects and attain the knowledge and skills set out therein, including both the hours of attendance and the effort that the student must devote to studying and preparing for examinations: for example, tutorials, seminars, practical work and non-attendance learning (Arias, 2003; Font, 2003). The adoption of ECTS demands a new approach to teaching methods, and therefore a revision of curricula and subjects. Since the Spanish Royal Decree 1125/2003 (Generalitat de Catalunya, 2003a) establishes the European credit system and the system of qualifications in university degrees, the Spanish University System is immersed in the process of reforming the curricula of higher education for adaptation to the new educational models.

Using new Information and Communication Technologies (ICT) in teaching models lends enormous potential to the support of an advanced

teaching-learning process and to the student's experience -both theoretical and practical- assuming the responsibility of his/her learning (Aragones et al., 2006; Löfström & Nevgi, 2008). Websites or Web portals help knowledge organisation by improving collaborative activities and facilitating knowledge acquisition, the sharing of ideas, and collaborative work (Jones et al., 2006). The Bologna Declaration, signed in 1999, marks a turning point in the development of European higher education; but it does not mention the importance of the virtual dimension (Moon et al., 2007). Later on the European Commission became aware of the important current social and educational role of new technologies, adopting the first multi-annual programme (2004 to 2006) for the effective integration of information and communication technologies (ICT) in education and training systems in Europe (eLearning Programme) through Decision No 2318/2003/EC of the European Parliament and the Council (Gavari, 2006). The overall objective of the programme is to support and further develop the effective use of ICT in European education and training systems, as a contribution to quality education and as an essential element of their adaptation to the needs of the knowledge society in a lifelong learning context (European Parliament, 2003). Many educational institutions have adopted e-learning systems to complement traditional teaching in various disciplines in recent years (Jarvela & Hakkinen, 2002; Shin et al., 2002; Lau & Mak, 2005). In comparison to the traditional methods of teaching that emphasize using the classroom, e-learning can provide an environment that lifts the restrictions of time and space in knowledge delivery and capture. With the advance of computer infrastructures and the Internet, the use of Information Technology (IT) for teaching and learning has vastly increased the flexibility and effectiveness of knowledge delivery. In a typical e-learning system, IT components include computer graphics, animation, multimedia effects, and databases. In addition, Internet applications such

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