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Using learning methodologies and resources in the development of critical thinking competency: An exploratory study in a virtual learning environment

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ABSTRACT

This study aims to design and implement new learning methodologies and resources that seek to advance the development and assessment of one of the fundamental students' competencies from any Business Administration Degree, such as critical thinking, that is, this is an exploratory study on computing for human learning, specifically, learning of key competencies for business. We are going to use audiovisual case methodology through the use of short film clips, usually real stories, to help students understand the practical implications of theoretical concepts explained in the classroom. A theoretical model test uses data from 32 business students from the Open University of Catalonia. The first results show positive attitudes toward a new technological resource 'audio-visual cases'. They indicate that the use of this tool can improve the comprehension of a problem and its origins and, at the same time, stimulate learning. In addition, this tool helps to develop critical thinking competency. This study offers important contributions to an e-learning environment and their applicability to the workplace, since it is the first type of research about the impact of audiovisual cases in the acquisition of critical thinking competency. Furthermore, this methodology promotes collaborative learning.

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1. Introduction

Universities progressively have come to focus more on market demand (Mosey, Wright, & Clarysse, 2012; Ressler & Abratt, 2009), shifting their models of education and research to better align with business models. Moreover, emphasis on knowledge transfers across universities, and industry prompts calls for improved transfer mechanisms (Baldini, 2010).

In response, relevant research investigates business–university cooperation, transfers of knowledge, and research networks (Bak & Stair, 2011) which might include various structures, such as incubators or science parks that encourage entrepreneurial activity through the exploitation of research results and spin-offs or start-up firms. Furthermore relative to educational institutions, efforts to redesign degree programs and teaching activities tend to consider the requirements related to market demand, in order to help students acquire the skills and competencies needed to facilitate their subsequent professional activity.

Various trends advance these shifts, including the European legislative framework (EHEA¹), the innovation of new teaching methods, and the intensive use of information and communication technologies (ICT) by universities. Limited financial resources and

¹ The European Higher Education Area (EHEA) was launched along with the Bologna Process' decade anniversary, in March 2010, during the Budapest–Vienna Ministerial Conference. As the main objective of the Bologna Process since its inception in 1999, the EHEA was meant to ensure more comparable, compatible and coherent systems of higher education in Europe. The Bologna Declaration lays down the fundamental principles in order to create the European Higher Education Area, divided into four principles as follows: (a) Quality. Criteria and methodologies which are comparable among countries are established to evaluate quality in order to ensure the quality of the studies and degrees issued by the different European education institutions. Sharing criteria and methods promote mutual trust between institutions and it facilitates degree recognition. (b) Mobility. The aim is to remove barriers and make it easier for students, teachers and administration staff in European universities and higher education institutions to perform their academic and professional activity in other education institutions and in other countries. (c) Diversity. This does not involve implementing a unique, uniform and homogenous education system in the whole of Europe; it is to make the systems of the different countries transparent and comparable. (d) Competitiveness. European citizens will have to be able to receive a higher education that makes them competent in their profession while allowing them to be competitive in the labor market of a globalized world, taking into account the level currently offered by countries outside of Europe, such as the United States.

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intensive and global competition also encourage universities to better adapt their supply to market demand. Modern universities also must acknowledge the modern student profile, including digital natives who regard learning as an ongoing process (Kennedy, Judd, Churchward, & Gray, 2008). Thus, they demand theoretically based, practical training that will grant them skills immediately applicable to their jobs (Bennet, Maton, & Kervin, 2008). In turn, universities need new formulas of action, beyond just adapting to their environment, in which they seek some form of differentiation that will give them a sustainable competitive advantage (Bautista, 2006).

In this effort, some schools offer advanced ICT as a learning support tool in combination with new methods of learning to promote students' acquisition of skills and competencies. For example, the teaching innovation project at Open University of Catalonia (UOC) seeks to find ways to combine ICT with new methodologies and learning resources to enhance students' acquisition and to implement key competencies in the workplace.

On the horizon of the major changes facing education in the world, appear Competency-Based Education, enabled by ICT in the field of so-called Knowledge Society-of societies, organizations and individuals-whose activities and development (political, economic, commercial, social, cultural) are based largely on access to information and knowledge through computer systems (Climent, 2010). Technology must serve to the achievement of Knowledge Society through knowledge-based information systems, but this is not an easy and out-dated task, nevertheless critically important topics, from different multicultural and interdisciplinary perspectives, address the complex relationships among technology, knowledge and society (Lytras & Ordoñez, 2011).

This innovative project was defined as a means to help develop and assess the competencies professionals need in their day-to-day activity, such as critical thinking. Critical thinking ability is fundamental for business activities, especially decision-making and those with senior positions that have a high degree of responsibility, which can take on the survival or bankruptcy of the company. The project thus seeks to help students develop critical thinking competencies and apply them immediately to their work. It also combines multiple innovative teaching methodologies, such as learning-by-doing and case studies. Finally, it relies intensively on ICT, both as a tool-using audiovisual resource and collaborative tools 'wikis, forums, etc.', as a virtual learning environment.

Before implementing any new education model though, it is necessary to identify the factors that drive students to adopt new learning methodologies and resources, such as those based on intensive uses of ICT. Therefore, the first step for this project is an appropriate identification of factors that increase the chances of project success. Accordingly, this article analyzes the impact of new learning methodologies and resources to develop and assess students' acquisition of key competencies, as such critical thinking. It is interesting to note that the use of this methodology by audiovisual cases enhance the collaborative learning because students will carry out various tasks for the development of critical thinking competency in a group.

We start by presenting UOC's educational model and a profile of its students. In particular, UOC is a completely virtual university that uses ICT intensively. We also define critical thinking

competency and explain the reasons UOC has sought to design and implement a teaching innovation model that uses new technology resources 'audio-visual cases' to support student learning. Thus we also conduct an exploratory study to test for the applicability of our theoretical model to process acquisition and implement competencies. The results reveal that these methods improve student understanding and increase their motivation to acquire and use key competencies. Finally, we note the influences of students' age and degree level on the obtained value from this new methodology.

2. Theoretical framework

The conceptual foundation for this study relies on both the broader academic priority of methodologies to help students effectively develop necessary competencies, as well as the specific challenge of this effort for online universities, such as UOC. Especially with the UOC's educational model description and the students' characteristics, they show the high degree of adaptation to the reality at this moment. But also, the need for innovation should improve or incorporate new methods and approaches of the psychology area where the education and learning can be adapted to the requirements of students, such as their online educational needs and for their professional life.

2.1. ICT use at the University

Society and companies demand that new university graduates possess competencies related to the effective use of ICT, particularly in work settings. Professional applicants should be able to use ICT and related knowledge, as well as exhibit an understanding of how to find, process, interpret, and analyze information that is relevant for decision making. Accordingly, ICT also can create a learning environment and provide a learning support tool. When used in combination with new learning techniques, such as learning-by-doing and case studies, the outcome should be student acquisition of relevant skills and competencies. The UOC model, based on collaborative learning, thus offers an appropriate setting to analyze whether students acquire competencies such as critical thinking, through teaching using audio-visual cases (Moran & Myringer, 1999).

2.2. About the UOC: Educational model

Demand for university and post-graduate education by people between the ages of 30 and 50 years of age continue to increase, and traditional university models cannot keep pace. Many of these nontraditional students work during the day, live far from any school, and have family responsibilities. Therefore, the Government of Catalonia (Spain) created the UOC in 1995. As an institution of a digital society and with the goal of supporting lifelong learning, UOC is endowed with a flexible structure, and its educational model relies on the intensive use of ITC. On its virtual campus, students and professors interact to teach, learn, and research. Officially, the UOC has the following objectives, 'according to the mission statement':

- (1) The impulse, the improvement, and the innovation to teach and learn in life through non-present means.
- (2) The formation as well as the development of scientific research in all research areas in which the university is active, especially in the study of knowledge society.
- (3) The knowledge diffusion, the technology transfer, and the innovation in the fields of formation and culture associated with the intensive use of ICT.

¹ Moreover, the EHEA mobilizes a change in teaching methods which focus on the student's learning process and it promotes improvement in the quality and international competitiveness of higher education in Europe, so that European university degrees may increase in mobility and recognition. With a view to creating skilled and competent professionals, a programme or degree in the new EHEA framework is not only defined according to a prescriptive list of core, optional and free-elective subjects that have to be studied. Now the degree is established as an education project of the university that proposes it.

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