Chapter II

Blended ICT Models for Use in Higher Education

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ABSTRACT

Information transfer is a tradition in higher education. In the information transfer model knowledge is passed from the experts (tutors) to the learners (students) by means of lectures and text books. The hope of increasing the educational impact by using impressive tools based on ICT has the serious disadvantage of increased cost. We argue that new, low-cost educational models based on constructivism can be used in parallel with traditional learning introducing a blended (or enhanced) learning approach. In such a blended environment, organizational, educational, and technological issues need to be considered as a whole. We introduce a light-weight blended educational model based on cooperation and experimentation. We describe the educational background, introduce a development framework and briefly discuss its quality aspects based on the ISO standard.
INTRODUCTION

During the past 10 years the educational community has witnessed a real revolution in the delivery of education. This revolution was mainly technological: high speed networks, powerful hardware available to simple users, multimedia-enhanced material, and free access to informal learning resources are just some of the trends introduced by the amazing advances of technology (Bates, 2000; Bonk & Graham, 2006; Pittinsky, 2002).

Despite the advances in ICT (information and communication technologies), productivity in terms of pedagogy and actual learning gains are not as significant as expected (Grocia & Miller, 2006). Current teaching and learning practices are based on the information transfer paradigm: information is passed from the teacher to the student. Although technology offers impressive possibilities for e-learning other factors, such as the underlying pedagogy, educational models, flexibility, and cost effectiveness are often overlooked. The plethora of advanced tools supporting e-learning and the difficulties in their adoption in real situations has only demonstrated that the primary need is a paradigm shift in the current, information-transfer educational model (Hiltz & Turoff, 2002; Romano et al., 2005; Xenos, Perrarkeas, & Pintelas, 2002).

Many researchers have proposed that this shift should focus on knowledge construction that will enhance, not replace, the traditional information transfer paradigm (Etheris & Tan, 2004; Rodriguez et al., 2007; Warschauer, 2003). Human peers are supported by using different kinds of collaboration technologies and especially, enhanced presence. Human learning is a social process, through sharing and executing tasks. It is a major enabler of the knowledge construction paradigm: active collaboration among learners in order for them to reach a common goal. In this context, learning is not an isolated activity (Hung & Nichani, 2001).

We consider a blended educational paradigm: traditional learning methods are supported by e-services. E-services are designed with the sole purpose of maximising the impact of traditional methods and covering their drawbacks or flaws. A major requirement is both methods should complement each other in the best possible way in administrative, educational, and technological terms. This kind of mixed learning (traditional and Web-based) is not a new concept: major investments in similar learning environments in universities and other higher education institutions across the world have been made in recent years (Bonk & Graham, 2006). Most of these efforts involve small scale, single institute adoption of web based tools which have drawn some useful conclusions (Bender, 2003; Garrison & Kanuka 2004; Haywood et al., 2000; Jefferies et al., 2004; Saunders & Klemming, 2003). Cross--institution (Van Weert & Pilot, 2003) or nation-wide (Demb et al., 2004) efforts were small in number but significant in impact.

Past examples have shown that information technology alone does not generate learning. A community informatics approach where a coordinated effort involving pedagogy and technology planning alike is needed (Jackson, 2004; Warschauer, 2003). Based on our work in Drossos et al. (2006), we theoretically analyze such a single-institute effort which strives to answer more extended questions: how e-learning can enhance the quality of the learning process for higher education students, how such a solution can be cost effective, what are the most appropriate implementation technologies, what are the appropriate pedagogical models and finally how is quality assured. The motivation stems from the vision of creating new, student-centric e-learning models that are both pedagogically and cost effective. We focus on blended experiential learning: experiential learning and cooperation and collaboration. We discuss a lightweight (in terms of costs) educational model, discuss its service functionalities and the technologies that