Chapter V
Integrating New Technologies into Blended Learning Environments

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ABSTRACT

This chapter describes two European projects that respond to blended learning by integrating innovative technologies into blended learning environments. The first sections describes Portuguese research into the use of podcasts, delivered through the learning management system, Blackboard through which the teacher provided education students with instruction about online discussions and feedback on their online postings and presentations. The students preferred the teacher's voice in the podcasts to written text and this section provides strategies for teachers to effectively integrate podcasts into their blended learning practice. The chapter then describes research from the Czech Republic on electronic labs (E-Labs) through a project that enables the handling of real objects in science experiments by students at remote locations. This section provides an example of how blended learning can involve a blend of real and virtual objects.

INTRODUCTION

Blended learning has been defined in complex ways but generally assumes a combination of real time and online interaction, often through the medium of integrated learning management systems. In investigating blended learning, Macdonald (2006) surveyed practitioners internationally and found that most blended the use of face-to-face interaction with the use of a learning management system though she did find some teachers were beginning to experiment with the possibilities that broadband Internet access made possible and using audio and video with such systems. Such use of innovative blending of audio and visual resources can help to motivate learners and improve their learning possibilities and the following chapter provides European research that investigates and explains how such innovations can be integrated into the blended learning process.

This chapter first discusses research into the pedagogical implications of podcasts integrated into university courses in Portugal and provides detailed research results identifying the importance and potential of podcasts blended within the use of learning management systems. A project using an innovative blending of scientific experimentation through real observations and presentations with virtual/electronic laboratories (e-labs) in the Czech Republic is then described and the implications of these types of media in blended learning is then discussed.

PEDAGOGICAL IMPLICATIONS OF PODCASTS IN BLENDED LEARNING

In higher education a blended learning mode is more and more often used, combining online with face-to-face sessions. More studies are devoted to interaction in classes and in online learning, proving the importance of this mode as a way of engaging students and involving them

in knowledge building. This part of the chapter describes a study about the use of podcasts in blended learning courses which were used for different purposes.

Students' reactions to the acceptance, type and length of podcasts were researched and analysed The concept of blended learning and studies about the use of podcasts in learning are reviewed, followed by a description of the study conducted in two courses, one with undergraduate students (n=14) and another one with graduate students (n=25). The students' acceptance of podcasts led to further research to study the impact of the teacher's voice effect in motivating and guiding students during their learning online instead of through use of a written text as well as the relation between podcasts' type, length and students' engagement in learning.

BACKGROUND

Blended Learning

The concept of blended learning is defined in a variety of ways with different dimensions of the blend identified by Singh and Reed (2001), Driscoll (2002), Osguthorpe and Graham (2003), and Oliver and Trigwell (2005), among others. Singh and Reed (2001) recognized that a blended learning program may combine one or more of six dimensions: offline and online learning; self-paced, live and collaborative learning; structured and unstructured learning; custom content with off-the-shelf content; work and learning; and ingredients of the blend: synchronous physical formats, synchronous online formats, and self-paced, asynchronous formats. Driscoll (2002) pointed out four different ways in which blended learning can occur: a combination or mix of modes of web-based technology to accomplish an educational goal, a mix of various pedagogical approaches (e.g., constructivism, behaviourism, cognitivism) to produce an optimal learning out-

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