

## Chapter 3.16

# Games–Based E–Learning: Implications and Challenges for Higher Education and Training

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### **ABSTRACT**

This chapter introduces games-based e-learning as a means of providing enriching and stimulating learning experiences within higher education and training. It highlights how e-learning has evolved and the developments that have opened the way for games-based e-learning, giving examples of specific applications. The authors hope that through gaining a better understanding of the implications, challenges and barriers to games-based e-learning, educators, practitioners and developers will be able to make better use of and gain substantial benefit from these exciting learning technologies. Finally, the chapter will identify what the authors believe to be future trends in relation to e-learning and games-based e-learning.

### **INTRODUCTION**

Over the last decade, e-learning has developed to a point where it now provides a credible alternative to more traditional forms of education and training, as well as providing new opportunities to both educators and learners. In recent years a new form of learning has been developing, namely games-based e-learning, which in many ways builds on the successes of e-learning, whilst providing a more stimulating and relevant learning environment for younger people who have been brought up in an environment of powerful home computers, graphic-rich multiplayer Internet gaming and mobile phones with ever increasing functionality. This is in contrast to many of today's educators and instructors whose learning experiences were largely underpinned by the use

of more passive technologies (Prensky, 2001). This chapter explores the concepts of e-learning and games-based e-learning and examines their contribution to higher education and training. Games-based e-learning is an exciting phenomenon that draws upon many different areas that include learning theory, interactive technologies, computer-games theory and design, and specific subject matter expertise.

### BACKGROUND

The term *e-learning* has been defined as, “*the use of digital technologies and media to deliver, support and enhance teaching, learning, assessment and evaluation*” (LTSN, 2003, p. 6). In this chapter we distinguish between “online learning” and “e-learning.” We use the term *online learning* to represent any class that offers its entire curriculum via the Internet, thereby allowing learners to participate regardless of geographic location (place-independent) and theoretically 24 hours a day (time-independent). This is in contrast to the traditional classroom instruction, which is time and place bound, face-to-face (FtF), typically conducted in an educational setting and consisting primarily of a lecture/note-taking model, and *blended learning*, which is a combination of online learning and traditional classroom instruction. We use e-learning as a generic term to encompass both (fully) online learning and blended learning. The instructional media elements employed within the context of this definition of e-learning could consist of text, video, audio, graphics, animation or any combination thereof. A central component of most e-learning courses is some form of two-way interaction between learners and their instructor and between the learners themselves. Synchronous communication tools, such as real-time chat, and asynchronous tools, such as e-mail and discussion boards, are common.

Over the past decade, e-learning has evolved and developed at a rapid pace so much so that it

is a commonly accepted and increasingly popular alternative to traditional FtF education (Gunawardena & McIsaac, 2004; Connolly, MacArthur, Stansfield, & McLellan, in press). Some faculty members are strong proponents of e-learning and believe online courses can provide educational opportunities to learners who would otherwise have to do without. They also believe that the quality of these courses can be comparable to traditional place-bound courses (Dutton, Dutton, & Perry, 2002).

According to Connolly and Stansfield (2006), there have been six generations of distance learning, the last three of which represent the first three generations of e-learning. This first generation of e-learning is based on mainly passive use of the Internet (circa 1994-99), primarily consisting of conversion of course material to an online format, basic mentoring using e-mail, and low-fidelity streamed audio/video. However, the educational philosophy still belongs to the pre-Internet era. The use of more advanced technologies consisting of high-bandwidth access, rich streaming media and virtual learning environments that provide access to course material, communication facilities and student services represents the second generation of e-learning (circa 2000-03). Asynchronous communications support a constructivist form of learning and allow learners to communicate in writing. This approach encourages more reflection and disciplined and rigorous thinking, which helps learners to make connections among ideas and to construct internal, coherent knowledge structures (Garrison, 1997). The most recent developments in e-learning (since 2003) are more collaborative learning environments based much more on the constructivist epistemology, promoting reflective practice through tools like e-portfolios, blogs, wikis, using games-based e-learning and highly interactive online simulations. We are also now starting to see the development of mobile learning (m-learning) through devices like personal digital assistants (PDAs), mobile phones and smartphones. M-learning is still at an early stage,

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