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
Games-Based E-Learning

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 phenom-
enon 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, assess-
ment 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 cur-
riculum 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 consist-
ing 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 compo-
nent 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 (Gunawar-
dena & 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 learn-
ing, 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 learn-
ing (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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