

# Chapter 11

## Facilitating a Hierarchy of Engagement: Corporate Education in Virtual Worlds

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### ABSTRACT

*Virtual worlds, where many people can interact simultaneously within the same three-dimensional environment, are productive enabling environments for corporate education. In this chapter, the authors propose a hierarchy of four types of educational engagement, at successively deeper levels of interaction. The authors then show that virtual worlds can be useful platforms for distance corporate education because they can be used to promote engagement at all four levels of the proposed hierarchy. By linking their hierarchy with existing learning theories, they argue that the effectiveness of corporate education can be successfully carried out by using virtual worlds. They also provide an overview of the historical development of virtual worlds, the development of distance education, and a description of technological, institutional, and research challenges needed to be met for distance corporate education to realize its potential.*

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## INTRODUCTION

Virtual worlds open up fruitful applications in distance corporate education because they promote multifaceted forms of distance interaction between the instructor and students and among students. The rich and diverse forms of personal and group interactions supported by virtual worlds go beyond one-way and two-way communication, prevalent in instructional videos or facilitated by videoconferencing, to also promote education co-creation and community building.

In this chapter, we propose a hierarchy of engagement in education consisting of four elements, and we discuss how virtualization technologies and virtual worlds provide a space in which distance corporate education can promote education at all four levels of this hierarchy. Section 2 of this chapter provides a background on the development of virtual environments, the history of distance learning, and relevant theories of education. Section 3 develops our proposed hierarchy of engagement and describes how virtual worlds enable engagement at all levels in this hierarchy. Section 4 addresses educational topics that are pertinent to virtual worlds education, including the influence of avatar mediation on learning and communication behavior (from a student's perspective) and instructional issues arising in these worlds (from an instructor's perspective). Section 5 concludes by indicating future technological, institutional, and research issues that will need to be resolved as we continue to leverage virtualization technologies and virtual worlds for corporate education.

## BACKGROUND

We begin with a brief background about the emergence of virtual environments, the history of distance learning and corporate training, and a review of education theories related to distance learning.

**Emergence of Virtual Environments.** Virtual worlds represent a blending of two generations of gaming elements, developed over the past 35 years, with online social networking features. Understanding this progression provides perspective on virtualization functionalities that can be applied for education.

The first generation of video games dates back to the earliest coin-operated video games (e.g., *PONG* in 1972) which added real-time video interactivity to elements of earlier strategic or thematic role-playing games. Such interactivity enhanced reflexes and provided excitement. In 1986, video games were brought into the home with console system technology, such as the Nintendo Entertainment System released across the U.S. (previously released as Famicom in Japan), featuring popular characters like Mario, Donkey Kong, Zelda, and Popeye (Herman et al., 2008). Many of these games were initially for a single player, but multiplayer console system games followed, first with the *MIDI Maze* for the Atari ST in 1987. In these games, players compete or fight against each other (modern forms, such as the Nintendo Wii system, include dynamic user interfaces for various physical games and electronic sports). Similar games subsequently came to be run from LAN (Local Area Network) systems, which permitted everyone's characters on the system to interact with each other. For example, in *Maze War*, a "first-person shooter" game first developed by high school students in a program sponsored by NASA's Ames Research Center, users were represented as eyeballs hunting each other through a maze using only lines to give perspective to the 3D graphics. It was developed into a networked version (via serial cable) when one of the creators went on to college at MIT, and later was playable over the ARPAnet, the precursor to the Internet (see Jansz & Martens, 2005, for related LAN games). Subsequently, *Neverwinter Nights* and *Dungeons and Dragons* were introduced by America Online in 1991, which were early multiplayer games

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