Chapter 5
Games and Simulations in Distance Learning: The AIDLET Model

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ABSTRACT

This chapter discusses the selection and potential use of electronic games and simulations in distance learning supported by an operational model called AIDLET. After analyzing the different approaches to the use of games and simulations in education, and discussing their benefits and shortcomings, a framework was developed to facilitate the selection, repurposing, design and implementation of games and simulations, with focus on the practical aspects of the processes used in Open and Distance Learning (ODL). Whereas traditional learning is based on knowledge memorization and the completion of carefully graded assignments, today, games, simulations and virtual environments turn out to be safe platforms for trial and error experimentation, i.e. learning by doing/playing. New instructional models may require that rich interactive processes of communication are supported, that assignments are structured as game-like projects, and that a culture of interaction, collaboration, and enablement drives learning and personal development. In this context, the AIDLET model was set out and verified against a taxonomy representing the main categories and genres of games to meet the requirements of distance education teachers, instructional designers and decision-makers.

INTRODUCTION

The current model of pedagogy in conventional schools and universities is essentially teacher focused and one-way communication. It is set against evidence that shows how students learn more by collaborating with their teacher and with each other in the context of educational narratives (Pachler & Daly, 2009). Furthermore, evidence indicates that a new model of education is emerging, one that is student-centered, networked, customized and col-

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laborative, leading to the creation of mechanisms through which infusion experiences and other rich learning contexts may support activity in novel situations (Shaffer, 2004). In addition, it is now recognized that student emotional expressions are a part of the learning process and also an essential component of basic education, a fact that continues to be a minor concern in schools and higher education. There is a growing body of evidence from the neurosciences and the cognitive sciences that recognizes the importance of emotions in cognitive processes and memory operations. The Portuguese born neuroscientist António Damásio developed a theory of emotion that has evolved from his first book, *Descartes' Error: Emotion, Reason and the Human Brain* (1994), which explains how feelings are entangled in the cogitations of the brain and the circumstances of the body. In his second book, *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (1999), Damásio further explores the role of emotion. He attempts to connect the neurology of emotion to the neurology of consciousness and extends this to the existence of a sense of self. Essentially, Damásio states that mind and body are inseparable and integrated via mutually interactive biochemical and neural components, such as the endocrine, immune, and autonomic neural constituents, which produce chemical and electrical transmitters.

As a rule, freedom of choice, challenge, participation, transparency, integrity, collaboration, fun, speed, and innovation must be a part of students' learning experiences. Playing games may be an important part of learning as this generation's game-playing experiences are more widespread than the game-playing experiences of previous generations. No doubt technology is transforming the ways we learn today but the most widely accepted theories and models behind learning are still valid. For instance, the pedagogical framework for implementing new software tools, games and simulations in the context of Open and Distance Learning (ODL) can be developed by drawing on concepts from: constructivism (Bruner, 1966; Piaget, 1973), social constructivism (Vygotsky, 1978), situated cognition (Brown, Collins, & Duguid, 1989; Barab & Kirschner, 2001), and communities of practice (Wenger et al., 2002). Social constructivism in the Vygostkyan way provides a series of principles that may be accomplished during the development of educational activities. The Piagetan notion of constructivism is at the core and it basically means that students modify their current knowledge schemes to integrate new information and acquire new knowledge when in contact with teachers, peers and the surrounding environment. In addition, learning activities must be situated in authentic settings and in a context that is meaningful to each individual student, and may increase in effectiveness when students are part of community that shares values and contributes to a common objective. Constructivism, situated learning, and the establishment of communities of practice constitute a robust theoretical framework for knowledge acquisition based on the notion that learning occurs in the context of activities that typically involve a problem or task, other persons, and an environment or shared culture.

A recent Educause Center for Applied Research (ECAR) survey of undergraduate technology used in the United States reports that 82.2% of undergraduates own a computer, with 80.5% owning a laptop. Web-enabled or smart phones are owned by 66.1% of undergraduate students, though not all use the features due to cost. Over 85% of students surveyed report using network resources for activities such as accessing social networking sites, playing online multiuser computer games, or accessing virtual worlds (Salaway & Caruso, 2008). Video game use has become a more diverse and popular form of entertainment than it was a decade ago. Games are not just for children, as nearly half (49%) of players are between the ages of 18 and 49. The gender divide in gamers has also greatly narrowed, with males making up 57% of online game players, and women at 43% (ESA, 2008). With the emergence of greater variety in