Chapter 1
Games and Simulations in Training: Factors to Consider When Designing for Adult Learners

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ABSTRACT
The purpose of this chapter is to provide a review of the research literature on the use of gaming and simulation in adult and professional education. The chapter will describe the difference between games and simulation; provide a review of the history of games in adult education; investigate important audience characteristics, including generational differences; examine how games affect motivation; and discuss the application of learning theories and instructional models to game design. The impact of games on learning, especially for those born after 1980, is profound. Games and simulations delivered using a variety of technologies may be an integral part of the educational mix offered by corporate trainers in the near future.

INTRODUCTION
The popularity of video games has led teachers and trainers to investigate the potential uses of games and simulations for continuing, adult, professional, and corporate education. Too often though, designers of adult education materials are unfamiliar with the theoretical and practical design considerations faced when creating games for adult learners. These considerations include an understanding of audience characteristics, generational differences, learning theories, learning motivation, and the use of media elements to promote learning. Games and simulations are learning tools, which have transitioned from “just for fun” entertainment to influential, immersive learning environments for
knowledge and skill development. Despite the popularity and prevalence of games, the education and corporate sectors have yet to fully realize that computer games are powerful learning devices. This chapter will address the unique design considerations instructional designers and game developers face when designing educational games for the workplace.

WHY GAMES?

Today more than ever, new entrants to the workforce are demanding the smooth, seamless integration of technology and education; the intersection where both meet can be found in interactive computer games. Why games as the new educational impetus for learning? The newest generation of workers has grown up with computer games since early childhood. Games such as *Where in the World is Carmen Sandiego?*, *Reader Rabbit*, *Math and Science Blaster*, *Super Mario Brothers*, and *Pac Man* represent a historical iconography in the lives of these new workers. Moreover, these games embody a new social phenomenon, one in which the language of behavior in the forms of goals, learning, emotion and intention is mediated by the interchange of actors, rules and resources (Klabber, 2003; Mateas, 2003). Taking control and having an effect on the outcome of the game or simulation is a critical motivational element that makes the game a powerful education medium (Bonk & Dennan, 2005).

Today’s technology literate, actively engaged students insist that education must be more than the conventional PowerPoint classroom lecture where information is poured into their heads and regurgitated onto worksheets (Oblinger, 2003). Their facility with technology and ability to multitask have led this new generation of learners – Millennials – to want to be actively engaged and in charge of their learning. Consequently, today’s students and tomorrow’s workforce expect teachers and trainers to deliver curricula in an innovative and creative way; one that will hold the attention of their technology oriented minds (Oblinger, 2003; Bonk & Dennan, 2005). Gaming and simulations provide the extra “spice” that traditional paper-based instructional materials lack. As a generation raised with computers and technology, Millennials expect their training to contain this convergence of technology and curriculum. Gaming and simulation provide these learners with the motivation to “remediate skills and knowledge” (Ricci, Salas, & Bowers, 1996) for generations to come.

As Baby Boomers (those born between 1946 and 1964) retire, the workforce will be replaced with Millennials and subsequent generations raised with games and technology. The early immersion of these individuals in technology rich environments is changing the way they think and learn. Paper-based training in the 21st century is quickly becoming extinct, so why not embrace the coming change? Shifting our learning paradigm from a linear instructional format to a technologically oriented, adaptable instructional platform is critical for human resource development in the 21st century. Using educational games to accommodate the fluid, multitasking, learning orientation of this newest generation is the key to creating motivating continuing adult, professional, and corporate education (Gee, 2003).

GAMES, SIMULATIONS AND SERIOUS GAMES

Games and simulations are not synonymous; rather each has unique characteristics that differentiate it from the other (Prensky, 2006; 2001; Gredler, 2004; Kirkley & Kirkley, 2004; Klabber, 2003; Hogle, 1996; Ricci, Salas, & Cannon-Bowers, 1996). Games are defined by Gredler (2004) as “competitive exercises in which the objective is to win and players must apply subject matter or other relevant knowledge” (p. 571). Simulations conversely are “open-ended evolving situations
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