Chapter 1.9

Games and Simulations:
A New Approach in Education?

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ABSTRACT

Computer games and simulations are considered powerful tools for learning with an untapped potential for formal educational use. However, the lack of available well-designed research studies about their integration into teaching and learning leaves unanswered questions, despite their more than 30 years of existence in the instructional design movement. Beginning with these issues, this chapter aims to shed light on the definition of games and simulations, their educational use, and some of their effects on learning. Criticisms and new trends in the field of instructional design/development in relation to educational use of games and simulations are briefly reviewed. The chapter intends to provide a brief theoretical framework and a fresh starting point for practitioners in the field who are interested in educational use of games and simulations and their integration into learning environments.

INTRODUCTION

It is unanimously acknowledged that we are living in the information age, taking part in the information society (Bates, 2000; Reigeluth, 1996). What makes these two emerging concepts possible is technology, or rather, the rate of progress that has been achieved in technology over the past 50 or so years (Molenda & Sullivan, 2003). Throughout this period, technology has been both the generator and the transmitter of information

with an increasingly faster speed and wider audience each and every day. It now dominates most facets of our lives, penetrating into the conduct of normal daily life.

The field of education is not an exception in the permeation of technology. On the contrary, education has always been considered as potentially one of the most productive breeding-grounds for technology, where it would perhaps find its finest resonances and lead to revolutionary effects. Yet, high expectations regarding the revolutionary impacts of technology on education have hardly been realized so far. More specifically, instructional technology, or the use of technology in educational environments, has not contributed significantly to the realization of these expectations (Molenda & Sullivan, 2003; Russell, 2003). It may be argued that the relative ineffectiveness of instructional technology thus far has been caused by the application of the same old methods in new educational media—"New wine was poured, but only into old bottles" (Cohen & Ball, 1990, p. 334). The inconclusiveness of the research is illustrated by the Clark and Kozma debate, started by Clark's 1983 statement that media do not influence students' learning (Clark, 1983). Kozma (1991) counter-argued that learning and media are complementary and that interrelationships of media, method, and external environment have influence on learning. Both of them rationalized their arguments by calling on Russell's (2003) study on, so called, "no-significant-difference" research. Clark (1983, 1994a, 1994b) uses this phenomenon as evidence for his argument, whereas Kozma (1994) uses this phenomenon as indicative of insufficient evidence for his debate.

Current models and methods of instructional technology are insufficient to meet the consequences of the paradigm shift from industrial age to information age (Bates, 2000; Reigeluth, 1996, 1999). Consequently, instructional designers are faced with the challenge of forcing learning situations to fit an instructional design/development model rather than selecting an appropriate model to fit the needs of varying learning situations (Gustafson & Branch, 1997).

One of the possible novelties in instructional methods is the use of games. Indeed, it may possibly be wrong to call games a novelty in education, since young children, by nature, begin to learn through games and playing from their earliest years (Rieber, 1996). However, as they grow up, their play and games are being replaced by formal education, the transition of which does not always—especially nowadays—seem to be a sharp one to the extent that games are being used also in some educational environments, yet their success is questionable or at least not rigorously established. In another sense the use of games in education is not so much a novelty, because its history may be traced back well over a thousand years (Dempsey, Lucassen, Haynes, & Casey, 1998). It is now known that even in times before history, games and dramatic performances as representations of real life were effective as teaching tools. In our modern day, with the new technological advancements, I strongly believe that traditional games have been replaced by electronic games, and, in a similar manner, dramatic representations of old have been transformed into role-playing in simulation environments. Hence, electronic games and simulations have begun to enter contemporary formal education. In addition, the "already-present" new generation of learners have grown up with ever-present games. Prensky (2001) refers to them as the digital natives of the "game generation" (p. 65). He states that this new generation is different from the "digital immigrants" (people born before games were digital and ubiquitous) resulting from their different life experiences with games as a part of the "new media socialization" (Calvert & Jordan, 2001; Prensky, 2001, p. 65). Digital natives who play a lot of games are provided with skills, such as dealing with large amounts of information quickly even at the early ages, using alternative ways to get information, and finding solutions to their own problems through new communication paths. The

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