

Chapter 19

Digital Games: Changing Education, One Raid at a Time.

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ABSTRACT

Digital Games are becoming a new form of interactive content and game playing provides an interactive and collaborative platform for learning purposes. Collaborative learning allows participants to produce new ideas as well as to exchange information, simplify problems, and resolve the tasks. Context based collaborative learning method is based on constructivist learning theory and guides the design of the effective learning environments. The constructivist design required for successful Game-Based Learning is discussed in this chapter and the model of recursive learning is discussed suggesting how Game-Based Learning (GBL) and how to maximize its affect. This chapter defines “Gameplay” and tables the perceptions of both players and teachers in the area of abilities learnt from playing digital games. Resources for implementing GBL are highlighted and the need for these is discussed. We conclude this chapter with design guidelines that will ensure effective learning outcomes are attained and suggest why these steps are necessary.

INTRODUCTION

In parallel to the phenomenal rise of the digital game development industry through time, the acceptance of games in other sectors was also changing. Availability of the first games, e.g., Tennis for

Two in 1959, and Spacewar in 1962, was limited through having access to a computer and generally to the technical staff of Universities. With the appearance of the home computer (Commodore, ATARI) and the introduction of Basic programming language that allowed people to write their

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own programs, computers and digital games were primarily the domain of geeks, boys and the male population. Besides producing games for the PC in late 1980's, the gaming industry turned its focus to the development of new gaming hardware such as consoles and handheld devices (Game Boy, Playstation, Sega, etc., and their clones and later developments). With the traditional male sector of the market becoming saturated, the game industry started to focus on alternative player demographics. In 2005, Nintendo achieved unpredictable commercial success with *Nintendogs*, targeting girl players who subsequently accounted for over 40% of sales of the gaming device. In the years following, Nintendo marketed a variety of drill and practice games under the disguise of cognitive brain training to the elder population, and with other developers following their lead, digital games were now targeting all segments of the population.

Starting from isolated applications, throughout game arcades, PCs, and consoles, digital games found their way to become a mass media, and became part of the media culture (Cassell & Jenkins, 1998; Jenkins, 2006), influencing our interactions and expectations from digital applications, digital art as well as our ways of communication (Kent, 2001; Lischka, 2002) and finally, the way we learn.

OPENING THE DOORS

Digital games have now been embraced by the academic research community (DiGRA, 2010) as a research topic, as well as discovered by the education sector as a highly interactive media that can support and foster learning, as opposed to being only for recreation or simply a waste of time—as playing games is still today often labeled (ENGAGE, 2010; ECGBL, 2010). However, many research publications focus on the negative effects of recreational video games (Gibbs & Roche, 1999; Anderson & Dill, 2000; Rollings & Morris, 2000),

while others are found to suggest the positive side in the learning effects provided by Game-Based Learning. Druckman (1995) suggests that the learning effects from digital games are purely as a result of the effective motivation created by playing recreational games, and supports Malone's (1981) theory; that the intrinsic motivation and the challenge created by video games is what improves the uptake of knowledge. Other researchers state that the drill and practice opportunity provided by video games improves learning (Wartella, 2002; Clark, 2004), yet some debate that there is no substantial proof that players learn from such games (Subrahmanyam et al., 2000), or that skills learnt from video games are transferred outside of this domain (Egenfeldt-Nielsen, 2005). Some publications also suggest that the research methodologies employed in many of the above studies are flawed (Egenfeldt-Nielsen, 2007; Pivec, 2009), adding weight to those who advocate that Game-Based Learning does not work and that games have no place in the field of education.

The European Parliament session document (2009) on the protection of consumers, in particular minors, in respect of the use of games, completely supports the use of digital games in education. It states that they embrace “the view that video games can stimulate learning of facts and skills such as strategic thinking, creativity, cooperation and innovative thinking, which are important skills in the information society”, (p.4). Further to this, they “acknowledge the educational value of video games”, even though many of the studies to ascertain which skills are learnt from playing games, and to quantify the educational value from digital games, are vague in their research methodology and are often viewed as insubstantial.

The European Parliament report also acknowledged that digital games are increasingly popular among different age groups with an estimated total revenues in the video game industry exceeding €7.3 billion in 2008. Furthermore, the Committee on Culture and Education emphasized, “video

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