Chapter 13
Co–creation and Collaboration in a Virtual World:
A 3D Visualization Design Project in Second Life

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ABSTRACT

One of the most successful and useful implementations of 3D virtual worlds is in the area of education and training. This paper discusses the use of virtual worlds in education and describes an innovative 3D visualization design project using one of the most popular virtual worlds, Second Life. This ongoing project is a partnership between IBM and three universities in the United States: the University of Nebraska-Lincoln, Iowa State University, and Wright State University. More than 400 MBA students have participated in this project by completing a creative design project that involves co-creation and collaboration in Second Life. The MBA students from the three universities worked in pairs to create designs to represent concepts related to IBM Power Systems, a family of IBM servers. The paper discusses observations and reflections on the 3D visualization design project. The paper concludes with a discussion of future research directions in applying virtual worlds in education.

1. INTRODUCTION

With the advent of low cost networks, high speed computing infrastructures, and easy to use social media platforms, a growing number of educators and scholars have begun to attend to the opportunities presented by new media platforms for delivering high quality learning experiences (Erickson & Siau, 2003). 3D virtual world environments, which support a higher level of interactivity and richness for collaboration and communication than traditional media, have the potential to create engaging and meaningful experiences for learners (Eschenbrenner et al., 2008). Guru and Siau (2008) note that the possibilities surrounding these platforms are endless as the technology continues to advance and evolve. Similarly, Zhao et al. (2010) observe that the various types of virtual world platforms are now having major influences on businesses, communities, and society at large.

Most 3D virtual world environments offer various affordances for learning and education that make them attractive as platforms for supporting educational experiences (Dickey, 2005a; Park et al., 2008). These unique affordances enable pedagogical activities related to co-creation and collaboration that often extend well beyond those available to collaborators working with traditional technologies and media. In virtual worlds, users interact and form relationships with one another through their virtual representations called avatars. This embodied representation enables richer forms of interaction compared to traditional media such as chat rooms or web conferencing (Mennecke et al., forthcoming). Interactivity is a critical component of teaching and learning because enhanced interaction can increase the effectiveness of learning (Siau et al., 2006). Unfortunately, the lack of interactivity has been identified as one of the major issues facing many educational pedagogies and techniques (Siau et al., 2006). In this light, Dickey (2005a) points out that creating interactive learning environments is one of the prominent trends in the development of effective pedagogies. Furthermore, at a theoretical level, the focus on interactive learning is supported by an increasing paradigm shift towards constructivism in education, which emphasizes approaches such as learner-centered teaching (Schiller, 2009). This paradigm is premised on the notion that knowledge is constructed by learners and learners need to take an active role in the learning process in order to develop a rich understanding of the concepts and skills associated with their learning experience.

One of the unique features of many virtual worlds is the object affordance (Dickey, 2005a; Dickey, 2005b; Park et al., 2008; Chen et al., 2010). Objects can be created, manipulated, and positioned by users, thereby enabling the users to engage in truly creative endeavors (Osborne & Schiller, 2010). Such freedom in creation supports active learning because it allows users to learn not by simply 'watching', but by 'doing' and creating ideas and concepts in the virtual worlds that may closely resemble their real world counterparts. Additionally, users are able to collaboratively design and co-create objects in the 3D virtual world environment in ways that may not be feasible in the real world. This capability for collaboration is important because it fits with the requirements associated with constructivist learning that is increasingly emphasized in pedagogy (Barab et al., 2000). While it is not appropriate for all learning tasks, collaborative learning is increasing in importance because of its demonstrable effectiveness (Gokhale, 1995; Slavin, 1980, 1983; Unalan, 2008). Further, Nah et al. (2010) demonstrate that with the right balance of skills and challenges in a 3D virtual world, a user's flow experience or engagement increases. As one's flow experience increases, engagement in learning and outcomes of learning also increase (Shin, 2006; Skadberg & Kimmel, 2004).

In this paper, we focus on co-creation and collaboration in virtual worlds' learning activities designed to achieve educational objectives. The paper aims to provide actionable suggestions and findings that academics, instructors, and educa-

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