

Chapter 45

Faculty Adoption of 3D Avatar-Based Virtual World Learning Environments: An Exploratory Case Study

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ABSTRACT

An exploratory, mixed methods case study was conducted within a design-based research approach to explore nursing faculty (n = 8) consideration of adopting virtual worlds as a learning environment before and after a three session Professional Development Intervention (PDI). Surveys, interviews, and session transcripts revealed the PDI did improve faculty consideration of virtual worlds but only three participants would likely pursue virtual worlds as a learning environment. Multiple adoption model constructs such as perceived ease of use were explored but no one construct was found to be an indicator of adoption intentions. However, personal innovativeness was considered a demographic likely to influence adoption. Additionally, those participants that self-identified concrete, perceivably doable learning activities for a virtual world that offered a relative advantage over current practice may be key to discerning those who may adopt a virtual world.

INTRODUCTION

A virtual world is a persistent, online 3D environment where individuals, represented by avatars, are immersed in a massively, multi-user environment whether synchronously or asynchronously (EDUCAUSE, 2006; Smart, Cascio, & Paffendorf, 2007). The user has control and has a sense of immediacy with others (de Freitas, 2008). It differs from 3D online games in that virtual worlds do not have pre-defined goals or value systems (Atkinson, 2009). It is a social environment where there is a sense of community,

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presence, togetherness, and awareness of others (Clark, 2008; De Lucia, Francese, Passero, & Tortora, 2009; Robbins & Butler, 2009).

All ages are using virtual worlds, from pre-school to adults (KZero Worldwide, 2014). Second Life, a widely known 3D virtual world, averaged about 10,000 concurrent users each month in 2006 and has since leveled to about 48,000 concurrent users (Tateru Nino & Feldspar Epstein, 2012). Furthermore, millions of five to ten year olds have registered virtual world accounts with popular sites such as Club Penguin (225 million accounts) and Neopets (75 million accounts) (KZero Worldwide, 2014). More recently, the virtual world Minecraft, comprised entirely of blocks and intended for children and adolescents, is perceived to inspire the next generation of computer scientists and humanists (Henseler, 2014). Over 16 million have purchased the PC or Apple version of Minecraft (Minecraft, 2014).

Virtual worlds were expected to be the next generation learning environment. Online, publicly accessible virtual worlds have been around as early as 1995 but it wasn't until the release of the popular social site Second Life in 2003, did virtual worlds excel (Active Worlds, 2012, 1998; Second Life, 2012; There, 2012). By 2007, virtual worlds were recognized as an upcoming technology to watch over the next two to three years for widespread adoption (New Media Consortium and EDUCAUSE Learning Initiative, 2007). Additionally, in 2007, Gartner's Hype Cycle for emerging technologies placed virtual worlds at the 'peak of inflated expectations' with 5 to 10 years to mainstream adoption. Furthermore, Gartner, Inc. (2007) predicted that 80 percent of all active Internet users would have an avatar by 2011. But that did not happen.

Several reasons might be attributed to this lack of continued adoption. Google (2008a, 2008b) launched an experimental 3D world but within six months, it was considered a risk and was shut down. Then in 2010, Linden Lab made three decisions unsettling to current educational users (Au, 2013): (1) they no longer supported the enterprise version of Second Life; (2) they shut down Teen Grid much to the dismay of many teachers (Pramas, 2010); and (3) they discontinued subsidies to educational and non-profit users albeit this decision was reversed three years later (Nelson Linden, 2010; Second Life, 2013). Educators began to look at open source alternatives (Korolov, 2012). Additionally, implementation problems persisted such as technology support, available time, and organizational support continued to be problematic (see Dalgarno, Gregory, Carlson, Lee, & Tynan, 2013). By 2010, virtual worlds had slid to the bottom of the 'trough of disillusionment' where it has remained (Gartner, 2010, 2011, 2014). But this was to be expected since it is recognized that swells of negative hype common to the trough must be overcome before a technology is fully realized (Fenn, 2008). Furthermore, newer innovations may be helping virtual worlds climb out of this trough.

Virtual worlds may be rekindling with the advent of head-mounted devices (HMDs) for a more immersive experience (Gartner, 2014); whereby you are within the virtual world and not just viewing from a 2D screen (KZero Worldwide, 2014). Given Facebook's US\$2B purchase of Oculus Rift in 2014 with a planned commercial release in 2016, this notion may have merit (Meadows, 2015). Additionally, other large companies such as Samsung, Sony, and Microsoft, have either developed or are developing HMDs (Kzero Worldwide, 2015). Furthermore, movie production companies are also investing in movies for these devices (Schwartzel, 2015). So while virtual world experiences are proliferating in the entertainment arena, others have noted that adoption in the educational arena has been limited (Dawley & Dede, 2013).

In an international survey study ($n = 223$), faculty respondents indicated that lack of institutional support, via funding, technical, or teaching support, is the biggest barrier to continued adoption (Gregory, Scutter, Jacka, McDonald, Farley, & Newman, 2015). However, in that same study, of those that were

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