

## Chapter 99

# Faculty Perception of Virtual 3-D Learning Environment to Assess Student Learning

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### **ABSTRACT**

*This chapter presents some of the methods and approaches that are used in the assessment of student outcomes in 3-D virtual learning environments. Distance learning or eLearning that includes the 3-D virtual learning environments have been increasing dramatically because of the rise in demand by students. Because of this advent in eLearning, assessment of the outcomes is crucial when measuring student learning. In addition to the measurement of student learning, the instructional designers will need assessment of student learning as a means to upgrade the 3-D virtual learning environments and maintain the relevancy of the content for students. Much of the research on measurement of outcomes is based on anecdotal evidence provided by students. A comprehensive examination of assessment of the 3-D virtual learning environment becomes paramount, so educators will have a better idea how to carefully assess outcomes of student learning.*

### **INTRODUCTION**

As Internet usage soared exponentially since the 1990s, the use of eLearning paralleled this rise as well, which has also revolutionized the delivery of education (Janicki & Steinberg, 2003; Rungtusanatham, Ellram, & Siferd, 2004). Many universities are using the increased availability of online learning tools or electronic learning (eLearning) in both online and traditional classrooms. To provide these online learning tools, many higher education publishing companies are actively integrating Internet technolo-

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gies into students' course materials. There is a greater level of interest in the impacts of the new tools on the learning outcomes of students in the contemporary classroom. As part of this enhanced learning, virtual worlds or virtual three-dimensional (3-D) environments are available for learning (Kelton, 2008). The delivery of e-learning encompasses multiple schools of thought on learning that include behaviorism, cognitive psychology, and constructivism. Each of these schools of thought can be used with each other in order to develop a productive learning environment and measure positive outcomes for student learning (Salomon & Perkins, 1998).

The use of virtual 3-D environments or virtual worlds provides a robust learning environment for complex text, graphical, and voice-based social interactions and experiences; yet, despite its valuable contributions to student learning, virtual worlds does not have much research (Braman, Jinman, & Trajkovski, 2007). A virtual world is a computer-simulated environment that provides a 3-D graphical representation of a physical environment in which students can interact with each other and manipulate the learning environment to master learning (Dickey, 2005; Minocha & Roberts, 2008). A variety of virtual worlds have been developed in recent years, and the most prevalent platforms that have been created for student learning include Second Life, OpenSim, Active Worlds, and Twinity; Second Life is the most popular platform. (Vickerstaff, 2015). Virtual worlds offer opportunities for more engaging learning experiences and interactions that cannot be easily experienced or replicated through standard eLearning platforms.

Rock and Schwartz (2006) imply that some of the largest leaps in science have emerged from the integration of separate fields. They also suggested that it is imperative to teach people how to learn. Given the demand of talent in education that is not only proficient in academic qualities but also in business life applications, a possible solution is to focus on a person-centered approach. Undeniably, there has been an increase in the demand for eLearning in recent years. With the advent of electronic books, simulations, text messaging, podcasts, wikis, and blogs, the introduction of these new electronic tools have formed a link of pedagogy and technology to meet the needs of students in the two-dimensional (2-D) framework (Rudestam & Schoenholtz-Read, 2010). As understanding increases, regarding how the brain learns, the question arises if neuroscience is an area to be researched and applied in the development of the virtual 3-D environments. The strength of neural connections plays a role in learning and so does the quantity of connections. As more connections are formed, the more effective the learning process becomes (lumosity.com). Do the virtual 3-D environments or virtual worlds better lend themselves to the learning process than traditional education venues or the 2-D learning environments?

There is a concern among educators that the development of 3-D virtual learning platforms is taking precedence in learning, and there is not carefully crafted measurement of outcomes from this learning. There is also little scholarly research that assesses the outcomes of 3-D virtual learning environments. In the sparse literature that does exist, there are some initial reports that the outcomes from these 3-D virtual learning outcomes are positive, and the ease of this technology into various courses has been successful. However, the latter is often based on anecdotal evidence or merely based on reactions (Sletten 2014). A comprehensive examination of assessment of the 3-D virtual learning environment becomes paramount, so educators will have a better idea how to carefully assess outcomes of student learning. This chapter presents some of the methods and approaches that are used in the assessment of student outcomes in 3-D virtual learning environments.

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