Chapter 7
Evaluating the Impact of a Virtual Emergency Room Simulation for Learning

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ABSTRACT
This study explored the value of Second Life as a clinical simulation platform for healthcare students. Participants were exposed to the Critical Life simulation and worked in teams within the simulation. Pre- and post-surveys and interviews were used to gauge responses to participation, level of use of online tools and gaming, and input about the experience of using the simulation. The main findings from the study were that participants had positive and realistic experiences using Critical Life as a collaborative learning tool; participants agreed that Critical Life would assist them in developing technical and non-technical skills; participants were not deterred by the technology and perceived they would use it in their own time; and participants agreed that the simulation was able to incorporate effective learning strategies that may improve clinical judgment. Interviews revealed that the participants enjoyed working in virtual teams suggesting that in healthcare education, virtual simulations have potential for use across multiple campuses and universities.

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INTRODUCTION

Three-dimensional Multi-User Virtual Environment (MUVE) simulations in tertiary-level healthcare education are used for a variety of teaching and learning purposes, including teaching of facts, principles, and concepts; assessing students’ development of certain skills or competencies; integrating the use of technology in the learning experience; and developing problem solving and diagnostic reasoning skills in a safe, non-threatening environment (Boulos, Hetherington, & Wheeler, 2007; Jeffries, 2006). Simulation is particularly suited to team training, giving participants the opportunity to interact, play different roles, and practice team-based activities in real time (Fanning & Gaba, 2008).

Prior research indicates that simulations can lead to increased self-confidence, improved clinical judgment (Thiele, Holloway, Murphy, Pardavis, & Stuckey, 1991), and enhanced problem-solving abilities (Johnson, Zerwic, & Theis, 1999). If clinical simulations are viewed as events made to resemble clinical practice as closely as possible (Seropian, Brown, Gavilanes, & Driggers, 2004), and take into account that research has shown learning obtained from clinical simulations is very similar to the learning gained from traditional classrooms (Bruce, Bridges, & Holcomb, 2003; Engum, Jeffries & Fisher, 2003; Jeffries, 2006), it can be seen how a simulation with a constructive and collaborative environment can provide an effective means by which educational training and collaborative team-building exercises can be conducted. At the authors’ institution, Second Life is being used as a platform for an emergency room simulation to train pre-service nurses (Rogers, 2008).

This chapter focuses on research conducted in 2009 on this e-simulation that included both quantitative and qualitative data collection to investigate the learning habits and perceptions of healthcare students with regard to simulation, computer games, online learning and virtual worlds. This information is used to provide a descriptive profile of the sample and to determine the complexity level of the simulation for the students. In addition, the participants reported on which experiences they perceived could assist them develop as a healthcare professional. The research further focuses on what technical and nontechnical skills can be developed in a virtual simulation and how the participants perceived they could transfer these skills into the real world.

In the past, research into the value of a simulation has primarily been interested in quantifying its performance in terms of retention, student motivation, and engagement. Although these aspects are important, and are touched on in this study, with the introduction of virtual world technologies a new phenomenon is emerging where students can participate together in a computer-based simulation and experience problem-based learning in a team environment. The evaluation of the advantages of simulations as clinical teaching and learning platforms was an important aspect of this research. In addition, the investigation included exploration of healthcare students’ perceptions of usability of the e-simulation platform and perceived value of future use of such simulations to assist them in learning practical components of their course.

The chapter begins with a systematic review of the literature including a critical exploration of the rationale/motivation for using simulations in healthcare education and the need for evaluation of these simulations. Following is the research study that underpins this chapter, concluding with practical suggestions and discussion of the implications of the research for educators, as well as outlining recommendations for future research and development. It is intended that this chapter will provide guidance and information to those considering the development and evaluation of virtual simulations for learning.