Teaching Health Care in Virtual Space
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This chapter presents a definition and description of MUVEs, including a history of the evolution of MUVEs and MUVE learning.

This chapter is for you if:

1. You are not familiar with MUVEs and/or are new to MUVE teaching.

2. You have worked with MUVEs previously but are interested in learning more about the history and development of MUVEs.

What Is a Multi-user Virtual Environment?

Imagine an animated, three-dimensional world. There are cities, forests, all manner of places to visit. You visit this world using an avatar—a visual representation of yourself in the three-dimensional world. You control the movement of your avatar as it moves through the virtual world, interacting with objects and other avatars in the virtual world. An avatar is an extension of the person who controls it. Welcome to multi-user virtual environments (MUVEs), where whole worlds unfold for discovery and new experiences with new opportunities for learning.

A MUVE is defined as any computer-generated physical space that can be experienced by many people at once (Castronova 2005). MUVEs are three-dimensional worlds that provide sights (a visual interface), sounds (birds singing, crowd noises, the paging system in a hospital), and the opportunity for interactions with other users who are in the same MUVE. Multiple users in these Internet-based virtual places interact with each other and the environment in real time. The three-dimensionality and multisensory (sight, sound, movement) nature of these places offer users a sense of immersion, of really being there.

MUVEs: A Brief History

To understand MUVE learning, a brief history of its technological and social roots may be helpful. The earliest computer video games involved one person.
Improvements in gaming technology expanded gaming capability to involve multiple players. A major breakthrough came with multiplayer role-playing online games. Players competed against each other, sometimes as individuals, sometimes in teams, within a virtual environment created uniquely for the game. Massively Multiplayer Online Games (MMOGs) such as World of Warcraft became overnight successes. Players often spent many hours a day playing them. The addictive quality of online gaming became a widely discussed social issue. By 2009, an estimated 1.8 billion people worldwide were using virtual games and other virtual environments online (Digitalspace.com).

**Second Life® Is Not a Game**

Second Life®, other MUVEs, and MMOGs all involve the occupation of a shared three-dimensional virtual space by multiple users who, in their avatar forms, interact in real time. The environment offers users a powerful illusion of being present in the inworld space. What Second Life® offers that MMOGs do not offer is an open-ended system, the absence of a predetermined narrative. Second Life® is not a game driven by rules or goals. There is no winning or losing. In Second Life®, users exercise total autonomy in their selection of activities and experiences (Hunsinger and Krotski 2012). The only rules in Second Life® are those that regulate inappropriate behavior that infringes on other Second Life® residents.

It is certainly possible to play a game in a MUVE, just as you could go to a park to play a game. But in general, a Second Life® MUVE is an environment,
a sandbox, a world where many people, in their avatar form, can meet, communicate, and do things alone or together. There is no specific objective, no winning or losing, and, for general purposes, no specific agenda. One author observed that Second Life® is no more a game than a box of crayons is (Boellstorff 2008). Its purpose is fundamentally different from that of a game. In an apt analogy, Bartle said, “The Pasadena Rose Bowl is a stadium, not a game” (Bartle 2004, 475). Similarly, Second Life® simply provides an environment. Users choose what they want to do in that environment. In Second Life®, a user can meet with a professional colleague in a Paris café to discuss a work project. After that, they could go to a concert in Second Life®, go dancing at a disco, or go skydiving. They could build a house, watch a sunset, attend a lecture, or go shopping. The focus in Second Life® is creativity, communication, and discovery through freely selected activities, often with others, which are experiential, social, and collaborative.

Talking Story

I was teaching a graduate-level pathophysiology class that included a weekly Second Life® discussion group. One of my students, a hardworking nurse manager, was also a busy mom and wife. One day she wrote me an e-mail, saying, “This is how badly I need a break. After my group completed our work in Second Life® this week, I decided that before I logged off, I would go on a mini-vacation . . . to Paris! I found a Paris café region in Second Life® and then spent half an hour, strolling down the beautiful streets, exploring a museum, a beautiful chapel, and sitting in a café for a while, just watching people go by. It was really odd, but I felt like I got that mini vacation I needed.” This student had an experience fueled by her imagination, a virtual vacation that provided energy, diversion, and a much-needed mental and emotional rest.

Second Life®

Some MUVEs, such as Second Life®, are free of charge and available for use by anyone with a computer and an Internet connection. Other MUVEs are private and with restricted access. Still other MUVEs are commercial and may be accessed for a fee. Second Life® was the first widely used, public, open-access, free MUVE. As of 2016, it continues to be one of the largest public MUVE platforms in existence. Second Life® was founded by Philip Rosedale in 1999 and launched for public use in 2003 by his San Francisco company, Linden Labs. Rosedale’s vision was to create a virtual world in which people could immerse themselves. This was a departure from virtual worlds inhabited by online games.
Early MUVEs were created to be places where participants, in their avatar form, could engage in a wide range of creative activities and experiences. Second Life®, for example, was conceived as a place where people could focus on creative endeavors. After its launch in 2003, it became an immediate success. By 2014, Second Life® had 38 million registered accounts, approximately a million regular users worldwide, and an average of 38,000 to 62,000 users logged in at any given time. In January 2008 alone, it was estimated that users spent over twenty-eight million hours in Second Life® (Wikipedia 2014). At that time, other public MUVEs such as OpenSim had grown rapidly as well.

MUVE Regions: The Landmass of Second Life®

It is the creative role of users that sets Second Life® apart, even among other MUVEs. The Second Life® designers created only a basic landmass in Second Life® along with tools for building on the land. Second Life® residents took these tools and got creative. The original Second Life® world consisted of a large blue sea, a sky overhead, and many islands off a mainland landmass. On these landmasses, Second Life® users created specific regions suited to their design preferences and purposes. Most of the islands and landmasses were (and continue to be) open to the public. Of the over 77,000 distinct regions in Second Life®, approximately 18,000 had limited access as of 2014. Second Life® residents move from one region to another by walking, running, dancing, flying, or, for transportation across long distances, teleporting. It is also possible for Second Life® residents to ride trains, cars, horses, boats, or airplanes (Wikipedia 2014).

Through the creative efforts of many, there are regions that look like First Life locations, e.g., Harvard University’s Second Life® Campus, or Second Life®’s Cologne Cathedral. Other regions look like First Life locations in some respects (houses, rivers, trees) but are fictional, created by the imagination of the builder. Still other regions are fantastical places that bear little or no resemblance to real locations. Would you enjoy a zero-gravity experience on Mars? Second Life® residents are free to explore and engage in many different ways the regions they visit.

Communication in Second Life®: Interactions with People and Things

Residents can interact with each other, using a chat box or instant message function within the Second Life® viewer. The chat box is visualized in the Second Life® viewer and can be seen by anyone within thirty inworld feet of those participating in the dialogue. Later in Second Life®'s development, talking via microphone headsets became possible. The Second Life® software includes a text translation function so people who speak different languages...
can understand each other’s chat entries. Nonverbal communication is supplied with a drop-down menu of sounds (laughing, sighing, crying) and gestures (shrugging, laughing, etc.). Users often use words in the chat box (hahahah . . .) or emoticons to enrich communication with emotional cues.

Avatars can manipulate and interact with objects within the virtual environment. They can pick up objects (a glass of wine, a coffee cup) or wear things (clothes, a pair of skis). They can cause things to move or change (open doors or call an elevator) and use objects for a variety of reasons (drive a car, skydive, or ride a boat or airplane). Participants can go shopping, attend a conference or a concert, or go dancing. By clicking on a movement activation icon, an avatar can move in preprogrammed ways. An avatar on a dance floor could select a dance to “do,” for example, tango or wild interpretive dance. In a meditation garden, one might click on a Tai Chi or Kung Fu icon to “do” martial arts. Second Life® users can modify all aspects of their avatar, not only changing gender, clothes, hair, and accessories but also taking on nonhuman or animal avatar forms. A Second Life® account also permits users to make up to five avatars for use in Second Life®. Additional avatars are added by creating additional Second Life® accounts with the same e-mail address but a different avatar name. It is also possible for one user to manage several avatars inworld simultaneously.

The Second Life® Economy

The Second Life® economy is based on currency called Linden™ dollars. Although many items can be acquired for free, other purchasable items such as clothing, house furnishings, and land are available in Second Life® shopping
areas and can be purchased using Linden\textsuperscript{TM} dollars. Purchased items are stored in a personal inventory to be used when needed. Employment possibilities in Second Life\textregistered{} enable a resident to garner income by selling goods and services to other residents. Although a basic membership in Second Life\textregistered{} is free of charge, paid memberships come with a variety of benefits that include a home and a monthly income of Linden\textsuperscript{TM} dollars.

\section*{Popularization of Second Life\textregistered{}}

Second Life\textregistered{} became not only an overnight success but also a social phenomenon. It appeared on the cover of \textit{Time} magazine and was referenced in television shows and in popular movies, songs, videos, and literature. The uses of Second Life\textregistered{} are as diverse as Second Life\textregistered{} users. One of the early social media platforms, it was also used for a huge variety of creative ventures. Art and music are available in Second Life\textregistered{} art galleries and live music venues. Scientists use Second Life\textregistered{} regions for exhibits, education, collaboration, and visualizing research data. Examples include Genome Island, SciLands, and the American Chemical Society’s ACS Island.

There are a wide range of First Life business applications in Second Life\textregistered{}. Some of the earliest educational activities in Second Life\textregistered{} involved business administration students who created business plans for corporations they ran in Second Life\textregistered{}. For example, a business student could acquire a Second Life\textregistered{} commercial property, decorate it, fill it with priced inventory, and open it to the public. When visitors select an item they would like to purchase, they click on a “purchase” drop-down menu. Linden\textsuperscript{TM} dollars are then automatically transferred from the buyer’s bank account (opened automatically when a Second Life\textregistered{} account is opened) to that of the store owner.
First Life businesses use Second Life® for meetings, training events, and product prototyping. Religious and other interest groups meet in Second Life® in settings as diverse as an Anglican cathedral and a simulated Hajj. Humanists, atheists, and agnostics have met every Sunday since 2006 in a discussion group called SL Humanism. Over the years, embassies have been opened in Second Life®. Countries such as the Philippines, Sweden, and Colombia maintain a Second Life® presence (Wikipedia 2014).

**Education in Second Life®**

Over one hundred regions of Second Life® were created specifically for educational purposes, including First Life universities, which constructed complete Second Life® campuses. Over three hundred universities worldwide use Second Life® for teaching in some form. Over 80 percent of universities in the United Kingdom use Second Life® in some way. Several educational institutions were created to teach exclusively in Second Life®. Language education is the most common focus of Second Life® learning, but other applications range from health care to business and art education.

MUVE learning in health care has included MUVE learning for disaster response training, clinical simulations, first responder education, and mass-casualty disaster triage. The public health community has used Second Life® for community health education and for avian flu intervention training, cancer and chronic disease survivor education, and simulation of physiological processes (Anderson 2008; Stephens 2009). Chamberlain University uses MUVE training for Ebola education, for learning skills in a high-risk patient population in a safe environment.

**Benefits of MUVE Learning**

Learning in a Second Life® MUVE facilitates contextualizing learning, group learning, leadership development, precision learning and evaluation, behavior modification, and experimenting in a safe environment. The chat function provides a written transcript of Second Life® educational events (the chat dialogue is simply copied and pasted into a Word file after the event is completed). Second Life® levels the playing field between introverts and extroverts, providing the grounds for objective feedback for group activities that can address the behavior of both air hogs and students who underparticipate. Because course content can be applied in a simulated context that is appropriate for the learner (a nurse applying pathophysiology content in a virtual hospital, for example), learning activities in Second Life® can provide dense learning activities that
include application of course content but also professional role development, team function, and continuous quality assessment.

Now that MUVEs have been described and their history reviewed, Chapter 3 will describe what learning in a MUVE such as Second Life® offers both teachers and students.

CHAPTER REFERENCES