Teaching and Learning in Second Life: A Pilot Study

Anamika Dasgupta, York College
Teaching and Learning in Second Life: 
A Pilot Study

Anamika Dasgupta
Instructor & Reference Librarian, adasgupta@york.cuny.edu

Abstract
Second Life (SL) is a 3-D virtual online environment that was first released in 2003 by Linden Lab. Educators speculate that it has the ability to support kinesthetic and audio-visual styles. Many universities and colleges have built their teaching campuses in SL in order to experiment with teaching and learning activities in SL. In this study, data were collected from 16 students to evaluate how students respond to the various communication modes available in SL, how students perceive the manipulation of in-world movement, navigation, and action affordances in SL, and how students perceive using a virtual environment to attain learning goals. In other words, the study was designed to evaluate cognitive impression, diegesis of activities in SL, and the process of learning in SL.
**Introduction**

Second Life (SL) is a 3-D virtual online environment that was first released in 2003 by Linden Lab. Since its release universities and colleges have built their teaching campuses in SL in order to experiment with teaching and learning activities in SL. Many universities such as Harvard, Texas State, and Stanford have set up virtual campuses where instructors conduct teaching sessions and students attend classes and explore other virtual communities in SL. Second Life is quite different from other online learning platforms such as Blackboard and WebCT. Unlike Blackboard and WebCT, students and teachers have a “face-to-face” interaction via avatars that students and instructors create to represent themselves in SL. These avatars have various facial and verbal expressions, and body gestures built in for users to use while communicating with others. Avatars are human-like and can sit, walk, run, swim, and even fly anywhere in SL. Students and teachers can communicate synchronously through a microphone and/ or online chat that are similar to MSN messenger and AIM. In addition, there are numerous asynchronous communication modes such as Notecard, Slide Show Viewer, Video Viewer, and Kiosk. Because of these additional SL features, educators speculate that SL has the ability to support kinesthetic and audio visual styles. However, teaching in SL is still in its experimental stage and no specific framework has been used to evaluate SL and its integration in teaching and learning.

Studies have shown that classroom environment and educational space affect teaching and learning. Research shows that learning environment impacts human thoughts, behaviors, feelings, and behaviors (Graetz, 2006, p. 62). Weinstein reports that environmental variables including physical settings could impact learners indirectly (Weinstein, 1979). Students develop emotional connection to their physical learning environments that play a role in their learning. Likewise, as students enter virtual classrooms, they form a cognitive impression of the space and develop emotional responses and preferences (Graetz, 2006, p. 72). According to Kaplan and Kaplan (1982), preference for a specific environment depends on cognitive impressions, and there are four
cognitive determinants of environmental preference: Coherence, Complexity, Legibility, and Mystery.

This article discusses the advantages and disadvantages of using SL in teaching and learning. In this article I present a pilot study that was conducted to evaluate the use of SL in teaching an Education course called Gaming as an Interface to Learning. The aim of the study was to evaluate how students respond to the various communication modes available in SL, how students perceive the manipulation of in-world movement, navigation, and action affordances in SL, and how students perceive using a virtual environment to attain learning goals. In other words, the study was designed to evaluate cognitive impression, diegesis of activities in SL, and process of learning in SL. Data was collected from 16 students who evaluated the course through an online survey questionnaire. Students were asked to complete the questionnaire on the last day of classes. They accessed the questionnaire in SL. The results of the study are explained using Kaplan and Kaplan’s four cognitive determinants of environmental preference (Kaplan & Kaplan, 1982) and tease out the advantages and disadvantages of using SL in teaching and learning.

Description of the Course and Cinque Terre

Cinque Terre is the educational land in SL created by a professor at Long Island University. The land is specifically designed to teach a Masters level Education course, Gaming as an Interface to Learning. Cinque Terre was designed to have a classroom, a video room, a Kiosk, a Sandbox, teleporting objects, maps, and virtual audio-visual systems.

The purpose of the course, Gaming as an Interface to Learning, is to explore the educational aspects of SL, focusing on learning how educators might use SL with their students. There are five learning activities that involve students. They are lectures, videos, Kiosk, Sandbox, and field trips. Lectures are delivered through chat, PowerPoint slides, video, WWW links, and Notecard. Chat and PowerPoint slides are often used simultaneously. Notecard includes electronic cards that can be used by the students to save a complete lecture or parts of it for
future reference. Kiosk is where lectures are stored for future reference. It is also a place where the map of Cinque Terre can be viewed. Sandbox is where students can practice navigation and movement in SL. Students can also practice building models in the Sandbox. Field trips consist of explorations of terrains outside of Cinque Terre guided by the instructor to experience learning from places beyond the virtual classroom at Cinque Terre. Usually, field trips are geared toward exploring simulations that other educators have created in their educational land. Field trips are mandatory and students who cannot attend the guided tour are allowed to take trips alone.

Students were given the option to either attend online lectures or perform autonomous learning using the Kiosk. Students were allowed different ways of moving around in SL. They could walk, fly, use vehicles, teleport via landmarks, teleport via invitation, teleport via maps, and teleport via objects. Students were asked to teleport via objects whenever possible. They were given instructions to teleport via maps or landmarks when there was no teleporting object or vehicle. The instructor often sent invitations to students who could not use the object after several attempts or ended up at a wrong location while teleporting via a landmark or a map.

Results

Results from the study are grouped and explained using the four cognitive determinants of environmental preference suggested by Kaplan and Kaplan: Coherence, Complexity, Legibility, and Mystery.

Coherence

Coherence indicates ease with which a setting can be organized cognitively (Graetz, 2006, p. 72). It is an indicator of how easy it is to organize and structure an environment, in this case a virtual classroom in SL.

In order to teach in a classroom in SL, an instructor is required to design a classroom with audio-visual equipment. This requires purchasing a virtual land from Linden Lab, the creators of
SL. After purchasing the virtual land, the instructor is required to use a scripting language, specific to designing materials in SL. Although it is easier to learn this particular scripting language with prior knowledge of other scripting languages such as JavaScript, there are books available for instructors who have no experience in programming. There is definitely a higher learning curve in designing a classroom in SL.

SL offers a variety of communication modes for teaching purposes. These are Instant Messaging (IM), Voice Chat, Gestures, Animation, and Movement. In this study, lectures were delivered by the instructor using IM. IM is similar to MSN messenger, Yahoo messenger, and AIM where people communicate through sending text messages and reading messages when received from the sender. Data indicate that IM was the most often used, least challenging, and least enjoyable communication activity. Data also indicate that few students have difficulty following the instructor on IM because it was fast paced. This suggests that learning is affected by an instructor's teaching style and the pace at which a student reads and comprehends messages. Even though Voice Chat was reported as the most challenging mode of communication, students expressed their preference of having lectures on Voice Chat. It is possible that slower Internet connectivity and speed of personal computers affected the delivery of sound over Voice Chat.

Complexity
Complexity is the perceived capacity of the setting to occupy interest and stimulate activity (Graetz, 2006, p. 72). It is an indicator of different kinds of materials, in this case virtual materials available in the virtual classroom that facilitate teaching and learning.

SL offers both synchronous and asynchronous modes of communication. These communication modes can be used for teaching purposes as well. For instance, instructors can allow students to view PowerPoint slides or videos and at the same time explain the contents on slides or video using IM or Voice Chat. Students can discuss the contents displayed on the slide or video.
screen with their instructors or fellow students. Students with difficulty following the lecture can go to the Kiosk to access Power Point slides and videos from the lecture with no change in the content of information. Kiosk is an SL feature that allows instructors to save lecture notes, articles for reading, and the syllabus for students to view at any time. This feature is similar to course folders in Blackboard and WebCT where instructors save required reading, lectures, and assignments for students. Students can also take notes during the lecture and save them in their Notecard for future reference. Notecard is similar to a personal physical notebook that is used by students to take notes and save them for future reference. Thus, SL increases the level of interactivity and reduces transactional distance, supporting students’ high as well as low cognitive abilities. It offers students the opportunity for a self-paced learning environment. Students reported that Kiosk was very helpful for reviewing lecture notes that they missed, especially in lectures that were fast-paced and difficult to follow. At the same time, students rated Lectures as the second most essential activity in terms of achieving learning goals.

Field trips were rated as the most essential learning activity. Field trips gave students an opportunity to explore landmarks created by other organizations, individuals, and corporations such as NASA and Coca Cola Company. To incorporate field trips in a regular face-to-face, online, or hybrid course, instructors do not need to purchase a land in SL and design a classroom. Instructors can simply create a list of relevant and interesting landmarks in SL, and ask students to explore the landmarks. Students can be given an assignment pertaining to their experience and what they have learned from the field trip.

Students were intrigued and stimulated by field trips because they allowed experiential and exploratory learning. Field trips to Sistine Chapel, Van Gogh’s Starry Night, and the Language Lab stimulated students’ creativity and helped them put the use of SL into perspective. Field trips helped them achieve learning objectives. Students talked about exposure to people/avatars from so many places and how the concept of identity tourism and being able to develop awareness of this new
dimensionality motivated them to learn something new. Students mentioned that field trips helped them put in-class learning into practice. They preferred hands-on experiences. They liked learning by doing things rather than listening to lectures and videos. For instance, one of the students mentioned, “The opportunity to recreate other worlds and historical events is extremely interesting to me. I would like to be able to use SL in Social Studies and English instruction.” A student mentioned that her favorite field trip was to the Moon and Space Shuttle and that this would be very useful for students in her science class.

**Legibility**

Legibility is an indicator of the perceived ease of use (Graetz, 2006, p. 73). It indicates how easy it would be to navigate, communicate in the virtual classroom, and the technical requirements that may enhance or hinder navigation and communication in the environment. SL has an extensive system requirement for it to be downloaded and used efficiently. Details on system requirements can be found on [http://secondlife.com/support/system-requirements/](http://secondlife.com/support/system-requirements/). There are specific system requirements for Windows, Mac OS X, and Linux. Minimum requirements include Cable or DSL Internet connectivity, 1 GB of memory, specific screen resolution, and a specific graphics card. In educational institutions such as York College, it is important that the IT department unblock certain ports to allow connectivity. These ports are blocked in many institutions for security purposes and as a preventative measure against virus, trojans, and worms. All students reported that they had no problem connecting to SL. Some students said that they would get disconnected if other computer applications were running or had low wireless signal. Some students had their computers crash while viewing video in SL.

There are many ways to navigate in SL. Students and instructors can have the option to walk, fly, use vehicles, teleport via landmarks, teleport via invitation, teleport via maps, and teleport via objects. Students preferred to walk to closer landmarks and fly while exploring far off landmarks. Students found flying to
be most enjoyable and walking to be the least enjoyable navigation method. Teleporting is a unique feature offered in SL, and students used it when instructed by the instructor. Teleporting via invitation was the most enjoyable method of teleporting and was reported to be not challenging at all. Overall, students who had prior experience with the virtual world or with online games found navigation in SL easy. Students with no prior experience with virtual world found navigation in SL easy with practice.

SL offers a variety of teaching modes instruments such as IM, Voice Chat, PowerPoint slides, Video, WWW links, and Notecard. Notecard is a special feature of SL that allows students to take notes as they are listening to the lecture and save them for future reference. It is similar to a physical notebook that a student uses to write notes in a classroom. Notecard was often used by students and was reported less challenging to use. Students found that PowerPoint slides were difficult to use because the visibility of slides depended on where students were sitting or standing, and the angle from which slides were viewed. Video was the most enjoyable teaching mode and Voice chat was the most challenging teaching instrument.

Mystery

Mystery is the perception that entering the setting would lead to increased learning, interaction, or interest. It indicates intellectual stimulation that the virtual environment provides and enhances creativity, deep thinking, and encourages further exploration of topics of interests.

SL as a 3-D world was very intriguing to students, even those who had prior experience with virtual worlds and computer games. SL is a virtual space that is used for education, business, recreation, creativity, as well as for playing online games. Students were intrigued by how similar SL is to the real world, and yet it allows them to experience what they would never experience in a physical classroom. As a student said, “Being able to put myself in situations [field trips] I wouldn’t be able to experience in real life was exciting and fun. These activities allowed me to practice and refine the new skills I’d learned during coursework, making me
feel more proficient using the SL environment.” When students were asked to give reasons for their favorite field trip(s), their reasons included being inspired by designs and structures that were created by other SL users, being motivated to learn to create such structures and hence to build and script, and being able to do activities such as parachuting that one would never do it in real life. A student mentioned that field trips helped him validate SL in education.

Designing avatar appearances indicate students’ affective states, as well as technical skills. Students preferred their avatars to look like their ideal selves, representative of how they see themselves to be improving. Nonetheless, they embraced the opportunity to be able to change their identity as frequently as they could. Perhaps students developed emotional connections to their avatars.

**Final Thoughts**

Despite any shortcomings, SL can be used for teaching purposes, especially as new features and lower technological demands evolve. SL is an important learning environment because it allows both synchronous and asynchronous learning. Studies have shown that online synchronous learning requires students to perform higher thinking processes of judgment and deduction and synchronous learning is more effective for students with low cognitive ability (Offir, Lev, & Bezalel, 2008).

Although navigation and communication in SL requires practice, it is highly effective in offering experiential, exploratory and immersive learning. However, not all courses can be taught in SL, such as courses that emphasize content rather than creativity and exploration. SL may not be as advantageous compared to face-to-face classes or other online methods such as WebCT and Blackboard. As SL evolves and more educators use it to teach classes, it is important to design a framework that can be used to evaluate how effective it is to teach a particular course with SL.

Feedback from students suggests that not all communication and navigation modes are suitable for all learners. Communication and teaching modes should be selected based on
the course and learning objectives, and the technical issues that might occur. This could be a potential research topic for future study. Data indicate that navigation and communication become easy with practice. However, certain modes such as www links, voice, and animation may cause some difficulty for communication due to inherent technical issues. Educators must take those issues into consideration when designing their courses.

References