

**AC 2008-2588: SECOND LIFE 3D VIRTUAL WORLD IN A FRESHMAN
INFORMATION SCIENCES AND TECHNOLOGY COURSE**

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Second Life 3D Virtual World in a Freshman Information Sciences and Technology Course

Abstract

Second Life is an on-line, 3D, virtual community which provides an environment for students to interact, communicate, explore, design, build, and collaborate in a creative fashion. During the fall of 2007, an Information Sciences and Technology (IST) course for freshman undergraduates utilized Second Life to investigate the advantages of using virtual worlds to enhance college education in a variety of disciplines. Students also explored a variety of educational sites in Second Life which included a guided tour of a computer company. 3D modeling tools and the effectiveness of virtual classroom for distance education were also explored. Lessons learned in the use of Second Life with students are presented as well as resources to guide educators in exploring Second Life to support educational goals. Second Life offers the potential to enhance the educational experience in many disciplines and provides new opportunities to collaborate.

1. Introduction

Second Life [1] is an on-line, 3D, virtual community that provides an immersive environment for students to interact, communicate, explore, design and collaborate in a creative fashion. Linden Labs release Second Life virtual community in 2003 and the environment currently attracts between 40,000 and 50,000 people on-line at any given time, with overall registered users in the millions. Second Life users are represented in the virtual world by avatars which can be customized for appearance. Through the use of avatars, people interact with other users on-line, and users may engage in such activities as walking, flying, riding in a car, skiing, swimming, scuba diving, building, and dancing. Shopping in a virtual mall, touring a museum, taking a class, joining a book club, attending a live concert or lecture, talking with friends in a virtual coffee house, and many more activities, are all supported in the virtual world. Many companies (IBM, Dell, Intel, Cisco, Sun, Apple, Toyota, and others), organizations (NASA, NOAA, and others), non-profits, and major universities have presence in Second Life and they are all exploring the benefits of virtual worlds. Due to the on-line nature of Second Life, there is also a large international community of users.

During the fall of 2007, an Information Sciences and Technology (IST) course for freshman undergraduates used Second Life to investigate the advantages of virtual worlds to enhance college education and campus life. The goals were three-fold. One goal was to expose students to virtual world technology, a second goal was to engage students to identify and evaluate specific examples of educational initiatives in Second Life, and the third goal was to evaluate the challenges of utilizing Second Life with students from an instructor's perspective.

This class of 14, first-semester, traditionally-aged students represented a variety of majors, including science, information sciences and technology (IST), engineering, computer science, business and physical therapy. None of the students had any prior experience with Second Life virtual worlds. The course, entitled “Information, People, and Technology,” explores the nature of digital technologies and their impact on society. The 15-week, project-based course comprised of 3 modules: podcasting and MP3 technology (6 weeks), Second Life Virtual Worlds (6-7 weeks), and robotics (2-3 weeks); this Second Life module will be discussed below. Practical lessons learned in the use of Second Life with students as well as resources to guide educators in exploring Second Life to support educational goals will also be presented in subsequent sections.

There are many resources and educational initiatives in Second Life which proved useful to this author in the development and preparation for this virtual world module [2]. For example, Info Island [3] and the International Society for Technology in Education ISTE [4] provide resources and guidance to educators. Two books describing Second Life were also found to be useful in the development of this Second Life module, Rymaszewski, et al [5] and v3image[6]. Linden Labs also maintains a web resources with information dedicated to educators utilizing second Life [7]

The Second Life course module began with a scavenger hunt task for the students to complete in the Second Life virtual world. This task required students to transport to a series of specific locations and sites within Second Life and answer questions or document observations through text descriptions and pictures. Sites included in the scavenger hunt included: Dell Computers (Dell City), Louvre Art Museum, Computer History Museum, Second Life Library, and others. In addition to this scavenger hunt, students explored the NASA International Space Museum site (see figure 1 below), Drexel University’s Second Life site focusing on science education and research, and others.



Figure 1: International Space Museum (ISM) in Second Life

The freshman class participated in a tour of the Sun Microsystems Second Life facility which was provided by a Sun employee. Students in the class explored Sun's Second Life facility under the guidance of the tour guide, and were able to ask questions, and interact with the facility. See figures 2 and 3 below of freshman students on guided tour at the virtual Sun Microsystems site in Second Life.



Figure 2: Second Life Tour of Sun



Figure 3: Second Life Tour with guide

In the latter stage of the course module, students formed teams to investigate and evaluate existing examples of Second Life being used as a platform to enhance a variety of educational themes. They also participated in simple building exercises using Second Life 3D modeling tools, and evaluated virtual educational classrooms and group meeting space.

2. Student Projects in Second Life

Student teams were challenged to identify an area of education in which Second Life could be used as a platform or tool to provide some type of enhancement. The task involved researching what educators were currently doing in Second Life to provide benefits to the educational process.

The areas identified by the student teams included:

- Architecture Education
- Medicine
- History
- Science and Engineering

In each case, students identified universities and colleges currently offering coursework or educational support using Second Life in the specific area and researched the effectiveness of the approach. In each application, it was generally determined that Second Life resources could supplement and enhance “real world” education, and in some cases provide tools that would not be possible in the real world. When possible, the student teams were also tasked with interviewing key educators involved in the Second Life enhancement and summarize their positions as to the worthiness of the application and to determine future directions.

In another course activity, students were challenged to use the built-in 3D construction tools to design and build a piece of office furniture. All objects in Second Life, including buildings, cars, bridges, castles, museums, classrooms, jewelry, clothes, etc. are constructed by the residents of Second Life. Figure 4 shows a display of the furniture constructed by the freshman class in Second Life. Although the 3D building tools do not provide the same features as engineering-grade design tools, the Second Life tools are relatively easy to master and provide opportunities to prototype quickly.



Figure 4: Furniture Created by Students on Display in Second Life

Lastly, students evaluated existing classroom space, lecture space and team meeting space. Due to limitations in accessing Second Life by many of the students, the class was not able to take advantage of the virtual classroom facilities available. It was evident, however, that distance education initiatives could benefit from use of virtual worlds such as Second Life. Figures 5 and 6 show a display screen and lecture area in one of the Penn State areas of Second Life.



Figure 5: Display Screen



Figure 6: Lecture Area with seating

3. Advantages and Pitfalls

Listed below is a summary of key benefits and advantages of using Second Life in an educational setting based on this author's experiences during the fall 2007 period.

- 1) Access to a great deal of existing content (museums, interactive exhibits, libraries, courses, workshops, presentations, corporate sites, classrooms etc.)
- 2) Provides an immersive 3D environment with opportunities for student and instructor collaboration
- 3) Provides support for communication (text, voice), networking, and social interactions
- 4) Supports 3D modeling, scripting (programming) and supports a physics engine (Havoc 4)
- 5) Second Life basic account is free and allows around-the-clock access to resources
- 6) Provides access to an international community
- 7) Provides basic support for distance education requirements and initiatives

Here is a list of challenges and problems potentially faced by educators using Second Life in an educational setting.

- 1) Second Life client supports a limited selection of graphics/video cards. (In this author's experience, many students in the class – approximately 50% - were unable to run Second Life successfully from home, thus limiting the time they were able to complete projects and collaborate with team members in Second Life.)
- 2) Linden Labs regularly updates the Second Life client which can make installation of client in school computer labs potentially difficult. (Some institutions run the SL client from flash drives or network drive.)
- 3) Students under 18 are not permitted to access Second Life, and will need to utilize the separate Teen Grid (for ages 13 – 17). This would most likely affect a freshman college course. It also means projects in SL cannot be easily shared with K-12.
- 4) The learning curve for Second Life is quite steep. Time is required for students to learn to master navigation, communications, camera controls, adjusting appearances, building, dealing with various media, organizing inventory of resources and objects.
- 5) Second Life suffers from periodic performance and stability problems, including lag, outages, and crashes. (This can result in frustration and limited access.)

4. Summary and Conclusions

Second Life virtual community provides many potential benefits and opportunities to educators to improve and enhance learning in many topic areas. The major results of this educational experience have included: 1) the description and outline of a project-based, 6-7 week educational module to expose students to virtual world technology, 2) a set of resources and tools to enable an educator to start the process of evaluating and utilizing Second Life as a platform to support a variety of educational goals, and 3) identification of key practical lessons learned in the implementation of Second Life in a college course setting.

Advantages of Second Life include access to a large international community, building and scripting tools, access to a physics engine for simulation, rich existing content, opportunities for collaboration and distance education, and low cost of software. Although students in general experienced some frustration with the performance issues associated with Second Life, there was

acknowledgement that there were potential advantages of Second Life to supplement and enhance the educational experience. Despite some challenges and limitations, Second Life is a potentially useful tool for the educator and provides an opportunity for educators to design new and highly effective learning environments and delivery methods. It is hoped that the experiences described in this paper, both positive and negative, will prove useful to other instructors evaluating the application of Second Life to education enhancement.

5. References

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- [7] http://www.simteach.com/wiki/index.php?title=Second_Life_Education_Wiki