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## Learning in a different life:

### *Pre-service education students using an online virtual world*

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## Abstract

*Second Life is an online virtual world that is three-dimensional and uses rich graphics that allow the user to be engaged in this environment. There has been a significant increase in people using this virtual world and those conducting research in it in the recent past. This research study analyses a project where pre-service education students accessed Second Life as part of a 4th year elective course. The students had not used this virtual world prior to being introduced to it in class. They completed a problem-based learning experience in Second Life that allowed the students to explore the virtual world, as well as develop an activity that could be taught to a high school class. This study used case study methodology within a qualitative research framework. Although it was only a small pilot study, results suggest that the students learned how to navigate around Second Life and were open to this new technology. Half of the students reported that they would use this technology or similar technologies in the future.*

**Keywords:** Second Life; pre-service teacher education; problem based learning; virtual words.

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**Learning in a different life:**  
***Pre-service education students using an online virtual world***

By Chris Campbell, La Trobe University/University of Notre Dame, Australia

**Background to the study**

*I learnt so much about Second Life as I had never heard of it before. It brings up some great points of interest.*

*I knew nothing about Second Life, so this gave me an opportunity to understand the new technology that is out there.*

*If this is where the future of education lies, I feel informed and confident about my ability to use it.*

*It showed me that this technology has potential in the classroom as a teaching tool.*

These comments were made by students about the effects of the introduction of a program using Second Life as part of a pre-service education course and are indicative of the comments made by the group. This research paper goes on to analyze how Second Life, a virtual world, was used by these pre-service education students in a final year educational technology course. The students used Second Life to engage in and experience new technology. Second Life is an online world in three dimensions where each user has an avatar that represents his or herself. Using this avatar, users can travel around in the Second Life environment and are able to adapt and change their avatar, as well as transform their environment. Because their avatar is an animation, they can give themselves a new age, gender, or even alter if they are human to create a completely original persona and organism. Second Life can offer the user new ways to communicate, collaborate, and cooperate, thus making it an exciting new tool for use in educational settings. Research in this field has been conducted over the past few years, with some studies now becoming available. Anderson, Hristov, and Karimi (2008) conducted a small investigation as part of a thesis and concluded that Second Life can be used as a pedagogical tool in higher education institutions. However, they also suggested that due to slow graphics and the high demands of computer hardware, Second Life should be used as a learning tool to complement rather than as a substitute for other teaching methods.

The increased reporting on virtual worlds is due to the huge interest across the world, with people from many countries accessing Second Life. In May 2007, there were 6,888,765 residents of Second Life, of whom almost two million had logged in during the past sixty days, showing that Second Life has many active users internationally (Diehl, 2007). More recently, there were 499,986 residents logged in during a seven day period in September, 2008, with a total of over fifteen million residents in Second Life (Linden Research, 2008). It has been suggested that by the end of 2011, approximately 80 percent of internet users will have a virtual self, although perhaps not in Second Life, but in other virtual worlds (Gartner Group, 2007).

A substantial body of research has been undertaken on the sociology of both virtual communities and virtual worlds. One group of researchers report that Second Life is an educational game and that it should be both informative and engaging (Slator, et al., 2005). They conducted research on virtual world games, in particular Dollar Bay, which is intended to teach retailing principles and practices to students playing the game, it is meant to assist them in acquiring both real life skills and concepts. The rationale then, is that this learning is subsequently transferred to real life situations (Slator, et al., 2005). One study investigated whether learning can be improved through interaction with a virtual environment. Although the results were inconclusive in this complex issue, they suggest more investigation might be beneficial in increasing the body of research knowledge (Roussou, Oliver, & Slater, 2006). Another group of researchers also suggest that “there are limitless possibilities for educational research and evaluation within the Second Life environment” (Sherman & Tillies, 2007, p. 7367). Another type of virtual world is SimCity which Devich (2008) suggests is an example of a strategy game. This means that a player needs to win and to do so, must acquire a level of skill. In Second Life, one of the aims of the virtual world is to socialize, making this quite unusual in gaming strategies.

More specifically, Second Life is a multi-user virtual environment or a virtual world with a rich social network. It has evolved from the context of computer based games and is part of the current explosion in the use of Web 2.0 technologies. It is a commercial enterprise created by Linden Labs in 2003 selling and renting virtual land, as well as managing a virtual economy and providing a level of administration, policing and censorship (Linden Research, 2007). A portal is also provided for educators to exchange ideas and for researchers to network. This virtual world is free to use, although many users pay money (called Lindens in the virtual world) to purchase items virtually. Linden Labs also provides a secure environment for under age users called Teen Second Life. There are a number of comparable virtual worlds on the market, such as The Sims Online and the Active World environments.

One of the most recent educational studies using Teen Second Life is the Schome pilot project report from the Open University in the United Kingdom. This project in Teen Second Life investigated the level of engagement of 149 high school students (The Schome Community, 2007). The results of this study are positive and suggest that the teenagers who participated developed a wide range of skills needed in Second Life, such as walking, building, scripting, and other skills. Although these are Second Life related skills, these manipulation and problem solving skills are transferable to other activities. Other results from this study include enhanced knowledge and skills including communication, teamwork, creativity, and leadership skills. Importantly, this research suggests that Second Life can offer some learning opportunities that other media can lack, thus providing flexibility in curriculum. Although the Schome report was from an initial study, it was the first of its kind to use Teen Second Life and as such, informed our current study by suggesting that there are positive outcomes for those using Teen Second Life and by suggesting it is an avenue that could be further investigated.

Researchers report on the limitations of using virtual worlds, particularly technical limitations, including latency. Brainbridge (2007) suggests that, in general, the deficiencies of the internet are highlighted when using Second Life. This is, in part, because of bandwidth problems causing latency or lag in downloading times. This is particularly noticeable in countries

such as Australia that have slower internet speeds than other developed countries. A recent paper by Fetscherin and Latteman (2008) found that even with improving technology available there are still technical challenges for users of Second Life. Despite the problems in using Second Life that have been reported, many feel that these problems can be overcome and the benefits make it well worth the effort. One of the positives of Second Life is that it allows the instructor or teacher to create educational simulations and games (Livingstone & Kemp, 2008). Moreover, one advantage that Second Life has over other virtual worlds is that all users can create content, as it is not limited to the teacher.

### **Educational Context**

Second Life is increasingly used in educational contexts. While educators have to deal with limitations in Second Life, it is a quickly evolving technology and remains the most accessible of these newer virtual worlds. According to the recently appointed Chief Executive Officer of Second Life Mark Kingdon, one goal is to continue with innovation as more competition increases from new virtual worlds (Prokofy, 2008).

Some early research suggests that virtual worlds, and in particular Second Life, may provide pedagogical advantages for specific learning styles and learner groups and for particular subject areas (Bradshaw, 2006; Roussou, et al., 2006; Slator, et al., 2005; The Schome Community, 2007). Rather than segregate specific learner groups, this study embraces a whole class context and gives attention to the whole school community. This applied research study aimed to build on previous knowledge gained by investigating emerging teachers' pedagogical approaches to using Second Life for specific cohorts and curriculums. As many students in this study are considered to be digital natives, this study hoped to examine the digital convergence of their learning. The research methodology has reflected this and as such, includes a preliminary questionnaire in order to examine the specific technology background of the pre-service education students. The students who participated in this study will benefit in several ways. It was hoped they would learn a new set of skills that may help them in their teaching in the future. These skills included being able to learn to coordinate a new set of prompts in the virtual world and being able to integrate a completely new range of in-world cues. It was also hoped that the students could adapt these skills in various ways once they are teaching.

There are a number of universities using Second Life both to teach curriculum and as an extra curricular tool. Often it is used to represent a real life environment; for example, at Harvard Law School they have created Harvard Extension School's moot court, where students learn about court proceedings in the Second Life environment (Nolan, 2006). Another example of this is the Theatron 3 Project building of replicas of historical European theatres (The Higher Education Academy English Subject Centre, 2006). Others, such as the Open University-based Schome community, have focused on specific learner groups and on allowing students a high degree of creative freedom. Universities are also beginning to use virtual worlds to support research. In Australia, Swinburne University's Centre for Advanced Internet Architectures is using Quake 3 to model statistics and monitor their computer network as part of the L3DGEWorld project (Turner, 2008). Stanford University is teaching virtual world creation in their computer science programs as well as using them in research (Timmer, 2007). Brainbridge

(2007) contends that the evolution of online virtual environments is enabling new types of social science research and can be viewed as virtual laboratories.

This study used Second Life as a tool to equip final year education students with the skills to critically and purposefully engage with emerging technologies to enhance their teaching practice. At the time of the study there were no other courses at the university that either taught Second Life or teach using Second Life as the medium. A community of practice at the university is slowly developing, and a number of faculties and centers have expressed interest in using Second Life for teaching curriculum and to support research and networking activities.

This study was inspired by the researcher's experience of conducting a single seminar on Second Life that was conducted with 4th year primary pre-service education students during the second semester of 2007. The high level of engagement by this group of tertiary students with Second Life impressed the researcher. It was observed that the students appeared to be very comfortable exploring Second Life and at assessing its potential value and its limitations for users and for themselves as educators. This group readily identified the potential to incorporate Second Life into their technological knowledge and teaching practice and how to relate it to the curriculum. This suggested that Second life has potential to support deep learning in secondary and higher education. Thus, with the next cohort of students, Second Life was embedded into the course.

### **Research Design**

This study aimed to investigate the emerging teachers' initial responses to and potential use of Second Life as an example of a virtual world and a new technological teaching tool. This research investigated education students' responses to and perceived usability of virtual worlds. Thus, a case study method was used for this study as this is one discrete cohort (Yin, 2003).

From the review of literature, research questions were devised within the context of the overall aim. The research questions were:

- How do emerging teachers respond to using Second Life as a potential teaching tool in their future classroom?
- What are some of the potential uses of Second Life within a secondary school classroom context?
- What specific learning activities can utilize Second Life?

This project focused on 4th year pre-service education students who were enrolled in an elective course called Interactive Technologies in the summer semester of 2008. The course is an intermediate educational technology course where students create websites, gain experience using interactive whiteboards, and learn about emerging technologies. The course was taught in block mode over one month and included several assessment tasks, of which only one pertained to Second Life. By incorporating this project into the course it was hoped the students would undertake an enriched course using a new and emerging technology as well as have the opportunity to reflect on the unique characteristics of virtual worlds and what relevance these may have to contemporary teaching practice. Several important goals were thus set, which

included students being able to identify new learning demands on their students once they are teachers. Another goal was for the introduction of the project to support the current learning goals of the course as well as the acquisition of student skills. These skills included the generic skills universities teach students, such as team work skills, improved problem solving ability, as well as having curriculum experiences.

Data collected included student questionnaires, focus group interviews, as well as an online journal. This online journal was worth 10 percent of the total assessment for the course. Other data included lesson plans from each group and audio recordings of class presentations that utilized Second Life. The type of data that was collected is shown more fully below in Table 1. Due to the number of students who were enrolled in this class the group was broken into two separate cohorts and they were taught a week apart for the entire course. This meant that one class completed all tasks a week later than the other class. As the course was taught in block mode, the entire class went for five weeks, with students participating on several full days.

**Table 1. Data Collected and Number of Responses.**

<b>Data Type</b>	<b>Number of Responses</b>
Pre questionnaire	36
Post questionnaire	25
Online journal	36
Learning activity report	10
Focus group interview transcripts	4 groups of 6 students
Audio recording of presentations	4 group presentations

Thirty-six students participated in this study, which were all the students from the two classes involved in the study. However, not all students participated in the final questionnaire or the focus group interviews. Twenty-five students completed the final questionnaire and there were two focus groups from each of the two classes. One of the limitations of this study is the small sample size, but as this is a small pilot study it could perhaps be repeated at a later time, strengthening this study.

Participants completed an online pre-questionnaire at the beginning of the course and another online questionnaire at the end of the course. The questionnaire was conducted using the online website called Survey Monkey, where a variety of questions were developed by the researcher and then hosted in a secure online space. The questionnaire contained a mixture of open ended and closed questions, including matrix style questions that focused on students Information and Communication Technology (ICT) use, including general use of technology both at home and at work, including mobile phone usage, emailing and social networking website use, as well as any preconceptions of Second Life prior to being introduced to it. The

students were also asked if they had used Second Life previously and how they think they may be able to use Second Life for educational purposes. The students were also asked about other virtual environments and if they have used them before. The final questionnaire asked students about their use of Second Life during the course, as well as how they anticipate they will use Second Life for educational purposes in their future teaching. Questions included asking the students how many hours during the course they used Second Life, as well as how they used Second Life for educational purposes. They were also asked if they might use Second Life in the future, when that might be, and how they might use it.

To add to the depth of the data, collected focus group interviews were conducted at the end of the course. Questions asked at this time involved asking about their experiences using Second Life both prior to undertaking the class as well as during the class. They were asked about the learning activities they created in class and if they thought they would use Second Life in the future, as well as if they feel they might use Teen Second Life after they are qualified teachers. The focus group interviews were conducted to add depth to the questionnaire data and to gain further answers from the students regarding their use of this technology. There were two groups who participated in the focus group interviews from each of the separate cohorts, which meant a total of twenty-four students participated in these interviews. Students were asked to volunteer for the interviews during their final class of the course, with the interviews being conducted by a research assistant in a room adjacent to the class.

Students had access to their own online journal in WebCT 6, which is part of the university's Learning Management System. This journal allowed students to reflect on their virtual world experiences and was kept private between the course instructors and the individual. The journal was worth 10 percent of the total assessment for the course. The students were able to reflect on their experiences such as working as a group, moving around their avatar in Second Life, and the advantages and uses they think they will have when they are classroom teachers. They were able to reflect on class discussions about the learning styles teaching with Second Life might be useful for and how it may fit in with the curriculum taught in schools in the Australian state of Victoria or extracurricular activities. The students were also given two or three academic readings on Second Life, as well as a report on the Shome pilot study. The journal was designed to be open ended so that students could record any of their thoughts and not just comment on the areas suggested. Class discussions also revolved around these readings. The journal was not meant to be an arduous task for the students, and it was expected they would complete approximately five entries in the journal, although some students completed more than this.

Students were given a choice of either obtaining their own avatar (which requires signing up) or using a generic avatar while undertaking the course. By allowing the students a choice in the avatar they used, it allowed time for the students to decide if they really wanted to create their own. It also meant that class time did not have to be allocated for signing up and choosing an avatar name. Initially all students used the created avatars, although during the second and third Second Life sessions, several groups of students created their own avatars either just prior to the commencement of the class or at home. No records were kept on the number of students who created their own avatar, but from observation it is thought that at least 30 percent of the students created one. The lessons were all conducted in a computer laboratory, in a face to face

teaching situation. The students had wide access to these labs, not just during their class time, so they were able to access Second Life on campus other than just in class. They also had access to other online tools such as email and discussion groups. In class the main focus was on the students completing a group learning activity. This is described in-depth later in the paper.

Data analysis was completed in the following ways with the data being collected and then synthesized from the participant questionnaires, focus group interviews, and other data collected. The emerging themes were then categorized and explored. Once the categories were assigned, the analysis relied heavily on description rather than inference. The data was coded through the qualitative analysis software called NVivo. In this software program there was a coding of how the students used Second Life as well as their opinions on others using Second Life and how it might be used in educational ways in the future. This allowed for analysis by the researchers. This is a pilot study and thus, unexpected themes were expected to emerge at this time.

## **Results**

The first section of the results reveals the students' previous experience in technology. They all had some background in using technology, whether it was mobile phones or accessing social networking sites. The students were asked this information in order to ascertain the amount of technology they use in their daily lives. The next section reports on the actual activity the students completed, as well as their responses to the activity and their expectations of using Second Life with their future students in a classroom.

### ***Background in using technology***

Students used a variety of technology in their everyday lives; however, these technologies were not generally used in their work environments. Only six (16.7 percent), out of the thirty-six participants had heard about Second Life prior to undertaking the unit. Five of these participants commented on what they knew about it, with all thirty-six participants either saying or inferring it is a virtual world.

From this group of participants, none had ever used Second Life before. The participants were asked what they thought Second Life might be about. From a total of thirty-three responses, half the participants (N = 16) had no idea what Second Life was, while eight participants thought it is a virtual world. Four participants thought it is a computer program or online game, while two assumed it is similar to the Sims game. Two comments were regarding it being a tool for learning with one participant stating "I guess I think it's probably an application that can be used as a tool for teachers and students: a learning tool?!" One comment could not be categorized.

Students used technology at home and at work in several interesting ways. Email was used extensively at home with 58 percent (N = 21) of students using it either daily or several times a day. Students were more likely to use Facebook, than My Space, with 60 percent (N = 21) using Facebook once a week or more and 23 percent (N = 8) using My Space. Generally, students mostly did not use email, mobile phones, text messaging, or social networking sites while at work.



### *The learning activity*

The students' learning experiences were part of a well developed and defined set of tasks that they undertook as part of the course. Working entirely in groups, the students were introduced to Second Life, and using an enquiry-based learning model, they completed a scenario which required two class sessions of about one and a half hours each. Day one consisted of the students initially exploring Second Life while also listening to a presentation, which included a history as well as practical information about Second Life. The students then logged into Second Life in groups and began exploring the aspects Second Life including navigation, flying, talking, and other in-world skills.

The pre-service students were given focus questions so that after they were able to use basic in-world navigation, they were actually investigating how high school students may use a virtual world as a learning tool and how Second Life might teach high school students in a different way than how the students are traditionally taught. This task fit in well with the overall course goals, which were to:

- Use information technology to develop flexible teaching approaches to students with diverse learning needs and abilities; and
- Use emerging technologies such as Second Life and gain experience using it as an educational tool.

These goals were in addition to the generic university goals, which were to:

- Develop skills in working as a team member;
- Improve problem solving skills;
- Gain experience in refining writing skills;
- Develop and refine planning skills.

In their second session, the students were given an enquiring and designing task to complete. This was a problem-based learning experience where the task was for the students to design a learning activity that they would like to try with a high school aged class using Second Life. The learning activity needed to support inclusive practice; that is, the practice of ensuring everyone's learning needs are included. The pre-service education students were then required to examine the scenario they were given, decide on how to approach the task and assign roles, and then locate and analyze recent Second Life research. After reflecting on the research, they were to identify their cohort, as well as relevant curriculum and their learning objectives. The students then began designing their learning activity.

The third session involved the students giving an oral presentation to the class that was five minutes in length. Each group also wrote a 500 word summary called a learning activity report. This brief summary of their learning design including a rationale and critical reflection. These presentations were audio recorded and the entire class reflected on the activities presented after each group's presentation. The class then reflected on using Second Life as an educational tool.

By the end of the sessions, the students had created a variety of activities to use with secondary students. The activities mostly used environments already available in Second Life and Teen Second Life, although one group's activity used building skills with the creation of the ideal classroom. These included different groups focusing on activities such as:

- Cyber bullying;
- Going on an excursion;
- Mapping;
- LOTE (x two groups);
- Scavenger Hunt;
- Role playing occupations;
- Communication skills;
- Children building/creating an ideal classroom; and
- Exploring water channels, ie Maths angles, depth and volume.

The students took this problem-based learning task very seriously and produced quality detailed summaries of their activity. The summaries included learning objectives for the activity, as well as evaluation and assessment sections. Through witnessing the student presentations, it was evident that the learning activities that students designed were realistic to be taught to children and resourceful in that they used readily available resources.

Students thought the activities they created during the class would work in environments such as Teen Second Life, with 87 percent of students reporting this. One student reported "students are always willing to try new things and technology is in this day an [sic] age a very popular means of doing so. Our activity- re-design and build your own classroom, i [sic] feel would be appealing to Teens in Teen SL" while another also thought that Second Life "encourages students to develop their technical skills in second life." A third student reported "students will realise that there is an educational purpose for using SL, not just socialising. If they respect that, they are likely to appreciate SL as a different type of learning tool within a unit of work."

This suggested the students thought they had developed child centered activities well. However, only six (25 percent) from a total of twenty-four responses by the students thought they would use Second Life in the future. Students reported that in the regional schools they were about to get jobs teaching in, they felt they would not have the opportunity to teach using Teen Second Life. One student recorded in the survey "I will use it to get the students to build structures in maths, e.g., creating a shopping centre or creating their dream home," while another recorded "I will encourage students to enter Teen Second Life as part of a Peer Skills training program. The emphasis will be on students interacting in a "help-seeking" scenario, that is, reflective listening." In the focus group interviews, students were asked why they might not use Second Life in the future. Responses included security being a concern by students in two of the focus groups. One student commented, "I still think even 'Teen Life' – there's too big an age gap between 12 year olds and 18 year olds. Tweleve year olds are still kids whereas 18 year olds, they're adults."

The majority of students felt that completing the activity made them more comfortable exploring new technologies. One student in the final questionnaire recorded “I may not have looked at these emerging technologies if they were not introduced into this class.” Another student recorded “practice and sharing information in the classroom (lab) is great, it's when I do the most learning!” While another student had a further perspective “having been in Second Life at the Uni, I am more willing to try it at home and also to try other new technologies.” However, one student disagreed with this as s/he “was already comfortable exploring all areas of technology.”

Students kept a private journal in WebCT 6, which was read only by the researcher. In this, they reflected on their use of Second Life and on the readings they had been given. Students posted between three and ten reflections during the course. The journals reflected the change in the student's knowledge and thinking. For example, one student commented in her first posting “I thought initially it looked like the virtual world of SIMS . . . I never had this game . . . This was fairly hard to grasp . . . Social skills and role playing is not meant for the internet, nor any virtual world”..This student's second post consisted of “I was surprised, after reading a number of the readings, that Second Life could be/and was being used as an educational tool. Although I am still fairly reluctant to the idea of allowing students to explore a virtual world, I can understand that it could be beneficial.” Interestingly, this student's third post continued with her pedagogical development as she stated:

Whilst doing the SL learning activity I finally understood how Second Life could be a beneficial learning tool for teachers and students in the classroom. Our activity looked at allowing students to design their own classroom, and physically build their room whilst in the Virtual World of SL.

This student's final post included the statement “overall, after reading the article I feel that Second Life has a lot of strengths and I can see how SL is being used in classrooms.” Although just one sentence from the final post, it is representative of how this student and others changed their view of Second Life through the use of it during the course.

The online journals also show student development in being able to control the avatar and how they would use Second Life as an educational tool. One student stated “It was difficult at first to manipulate the avatar to turn and to move forward,” but then reported, “I believe with more practice that I will get better at controlling the avatar.” Other students reported similar experiences, while others commented on wanting to personalise their avatar. One student stated “I found it interesting how quickly I wanted to change the avatar's appearance.” Even with limited knowledge about Second Life, this student went on in her first journal recording to state “I do believe it's important to design your own avatar as it is a representation of yourself or how you would like to see yourself in this virtual world,” which supports research on avatar creation.

Several students reported in their journal that using Second Life assisted them in ‘thinking outside the square.’ Students also reported that they found the readings helpful and that they showed examples of how to use virtual worlds like Second Life for educational purposes.

During the class sessions there were no undue technical problems, although some students did come across some anomalies. These were reported primarily in the focus group interviews with students commenting on things such as being jostled by three men and being glued to the one spot (which this could have been due to lack of user control rather than foul play). Mostly the students reported positive experiences with others in Second Life. Overall, the students did not particularly have any negative experiences in Second Life.

Overall, students felt that completing the activity in class made them more comfortable in exploring new technologies. They commented that they normally would not be able to experience these new technologies as well on their own. They also commented on how using Second Life in class opened their minds to new experiences. One student commented about using new technologies in the future “we’ll probably jump in there because we’ll be a bit more familiar with how it works.” While another student stated “I do see it as part of the 21<sup>st</sup> century learning – that’s what it is.”

Through the completion of the task and subsequently the course, the pre-service education students achieved the overall goals of the course. Through the evidence gathered, including the focus group interviews, survey, work samples, and observation of the presentation, the conclusion can be drawn that the students achieved the goals of the course.

## Conclusion

Although Second Life is increasingly used, research in this area is relatively scarce so the research and evaluation opportunities are limitless (Sherman & Tillies, 2007). It is a new and exciting area to work in and this pilot project, although limited by the small size of the group, offers a valuable contribution to the current knowledge base. This research has some natural further directions, which include using Teen Second Life in schools with high school students. Other potential research is with pre-service education students, perhaps also with those students in high schools. This is an exciting new area that, although still being researched by many, has a lot of scope, particularly in education and with students studying teaching.

The students were all exposed to a new and innovative technology. While none of them have ever used this virtual world before, they could see the potential for its use for educational purposes, particularly with high school classes. The students used a problem-based scenario approach to investigate Second Life and determine activities they could use in a high school setting. These activities were innovative, varied, and appear to be achievable in that they can be taught to high school students, perhaps using a closed environment, such as Teen Second Life.

Before teaching this course several goals were set. The evidence presented here demonstrates that the students’ learning was enhanced through the focus of Second Life and the goals were achieved. The new skills the students learned will be transferable into their general teaching skills when they teach children. Thus, this paper demonstrates that it does add to the literature on Second Life being used in the field of education. This is particularly important because to date, there have been almost no research published in the field of pre-service

education students using Second Life, although this will change in the near future. These positive results demonstrate that it will be beneficial for more research to be conducted in this new area.

With improved broadband speed and access to the internet throughout the world, there has been extraordinary growth in new internet technologies. Researchers are only beginning to understand the potential of virtual worlds, as well as being able to evaluate the educational applications of many of these newer internet technologies. Second Life is one of the new technologies currently being investigated, and it is important that pre-service education students have access to these new technologies, in order to best teach their future students. This course was able to provide that, along with a new and valuable set of skills that the students have learned and will continue to use in the future.

## Bibliography

- Anderson, A., Hristov, E., & Karimi, H. (2008). *Second Life - New opportunity for higher educational institutions*. Jonkoping International Business School, Jonkoping.
- Bainbridge, W. (2007). The scientific research potential of virtual worlds. *Science*, 317(5837), 472 - 476.
- Bradshaw, D. (2006). New practices in flexible learning: Virtual worlds - real learning! Pedagogical reflections. Retrieved 17th December, 2007, from [http://virtualworlds.flexiblelearning.net.au/reports/VWRL\\_pedagog\\_reflect.pdf](http://virtualworlds.flexiblelearning.net.au/reports/VWRL_pedagog_reflect.pdf)
- Devisch, O. (2008). Should planners start playing computer games? Arguments from SimCity and Second Life. *Planning Theory & Practice*, 9(2), 209 - 226.
- Diehl, W. C. (2007). *The new social networking technologies: Educators get a Second Life*. Paper presented at the Twelfth Cambridge Conference on Open and Distance Learning, Cambridge.
- Fetscherin, M., & Lattemann, C. (2008). User acceptance of virtual worlds. *Journal of Electronic Commerce Research*, 9(3), 231 - 242.
- Gartner Group (2007, 24th April). *Gartner says 80 percent of active Internet users will have a "Second Life" in the virtual world by the end of 2011*. [Press Release] Stamford: Garner Research.
- Linden Research (2007). What is Second Life? Retrieved 19th December, 2007, from <http://secondlife.com/whatis/>
- Linden Research (2008, 18th September, 2008). What is Second Life? Economic statistics. Retrieved 21st September, 2008, from [http://secondlife.com/whatis/economy\\_stats.php](http://secondlife.com/whatis/economy_stats.php)
- Livingstone, D., & Kemp, J. (2008). Integrating web-based and 3D learning environments: Second Life meets Moodle. *Upgrade*, IX(3), 8 - 14.
- Nolan, R. B. (2006). At law school, 'Second Life', in the cards, and the course catalogue. *The Harvard Crimson: Online Edition* Retrieved 19th December, 2007, from <http://www.thecrimson.com/article.aspx?ref=514500>
- Prokofy, N. (2008). Interview: Linden Lab CEO Mark Kingdon. *Virtual Worlds News*. Retrieved 2nd May, 2008, from <http://www.virtualworldsnews.com/2008/04/interview-linde.html>
- Roussou, M., Oliver, M., & Slater, M. (2006). The virtual playground: an educational virtual reality environment for evaluating interactivity and conceptual learning. *Virtual Reality*, 10(3-4), 227.
- Sherman, G., & Tillies, R. (2007). *Educational research and evaluation data collection procedures in Second Life*. Paper presented at the World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2007, Quebec City, Canada.
- Slator, B. M., Chaput, H., Cosmano, R., Dischinger, B., Imdieke, C., & Vender, B. (2005). A multi-user desktop virtual environment for teaching shop-keeping to children. *Virtual Reality*, 9(1), 49.

- The Higher Education Academy English Subject Centre (2006, 11th December, 2007). Theatron 3 - Educational undertakings in Second Life Retrieved 17th December, 2007, from <http://www.english.heacademy.ac.uk/explore/projects/archive/technology/tech23.php>
- The Schome Community (2007). The schome-NAGTY teen second life pilot final report: A summary of key findings and lessons learnt Retrieved December 17, 2007, from <http://kn.open.ac.uk/public/getfile.cfm?documentfileid=11344>
- Timmer, J. (2007). Researchers hope to enable crowdsourcing of virtual worlds. *Ars Technica: The Art of Technology* Retrieved 30th March, 2008, from <http://arstechnica.com/news.ars/post/20071230-researchers-hope-to-enable-crowdsourcing-of-virtual-worlds.html>
- Turner, A. (2008). Quake gives 3-D control. *Tech: Case Studies and Profiles*. Retrieved 26th April, 2008, from <http://www.theage.com.au/news/biztech/quake-gives-3d-control/2008/04/21/1208742844690.html>
- Yin, R. K. (2003). *Case study research: Design and methods*. (3rd ed. Vol. 5). London: Sage Publications.