SECOND LIFE LEARNERS: AN EXPLORATION OF TEACHING AND LEARNING IN A VIRTUAL ENVIRONMENT

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ABSTRACT

Higher education and in particular Colleges of Education are viewed as falling behind in the use of technology for teaching and learning (Lederman & Niess, 2000). With today's student population identified as digital natives and the evening news discussing the potential of virtual worlds as new learning environments, an examination of the implications of digital games and virtual worlds by K-12 educators and Colleges of Education is warranted. This paper presents participant experiences in a graduate course in which Second Life was examined as a teaching and learning tool with a variety of educators. Participants in the graduate course ranged from K-12 teachers, state technology agents, higher education faculty and graduate students in instructional technology. The paper uses a case study to give voice to common concerns, unique participant experiences, and the understanding of virtual learning environments that developed from the interaction in a virtual world.

Keywords: Virtual environments, School Administrators, K-12 Teachers, Second Life, Digital Natives, Case Study.

INTRODUCTION

Higher Education and in particular Colleges of Education are often viewed as falling behind in the use of technology for teaching and learning (Lederman & Niess, 2000). With today's student population identified as digital natives and the evening news discussing the potential of virtual worlds as new learning environments, an examination of the implications of digital games and virtual worlds by K-12 educators and Colleges of Education is warranted. Colleges of Education faculty and future teachers must begin to explore, understand, evaluate and learn in virtual environments which are common to the learners that will comprise their future classrooms.

Technology continues to be seen as a means of revolutionizing teaching and learning. Educational technologists routinely provide research to support the use of technology to accelerate learning, to make educational practice more efficient and effective (Oliver, 2006) and enhance learning opportunities through online learning environments (Franklin & Vonderwell, 2002). Recently, digital games and virtual worlds have attracted educational researchers, curriculum developers, and school administrators as a means of providing an interactive environment for learning. These educators suggest that interactive games can empower teachers and learners by allowing learners to take greater responsibility for their own learning (Pelletier, 2005). Modeling a constructivist environment in which the learner has control over his/her learning a virtual world has a social context in which multiple learners can interact in a way that conveys a sense of presence which is typically not found in console-based games (Horizon Report, 2005).

When educators think of virtual worlds, their first thoughts are of games in which violence abounds, people shoot creatures from outer space and dragons fly and are played on game consoles. Console gaming has moved to the Internet and Web 2.0 is maturing, allowing for today's virtual reality to be created. Virtual reality can be used to create rich educational simulations of real world experiences through the use of Web 2.0 technologies (Skiba, 2007). The Horizon Report 2007states, "Virtual worlds are richly immersive and highly scalable 3-D environments" (p. 18). In a virtual world the user has a sense that he/she is actually there in the space a feeling of being there. This presence affords the user the capability of reacting in similar fashion within the virtual world as in the

real world (Skiba, 2007).

Users typically come into the virtual world as an avatar. An avatar is an animated graphical character that represents the user and in the case of an educational setting-the learner. Johnson, Rickel, and Lester (2000) have used avatars as tutors for engineering students in a virtual world (as cited in Morton & Jack, 2005). Earlier pedagogical uses of virtual worlds and avatars "have shown such agents to be effective in tutoring systems in which they can improve the learning experience by engaging students in effective conversations" (Lester, Converse, Kahler, Barlow, Stone & Bhogal, 1997b as cited in Morton & Jack, 2005, p.175).

Avatars along with the applied context of the virtual environment enhance opportunities for social networking, the sharing of content and media in rich formats, connections to friends, a feeling of presence and place. In the case of popular virtual worlds such as *Second Life* and Active Worlds, the number of people interacting is significant. These spaces can provide training opportunities, examples of democratic and civic participation and modeling of complex science and mathematical functions and are applicable to almost every discipline. Within K-12 education, these spaces can provide safe and secure role-playing experiences, problem solving and scenario building allowing learners to become the chemist, mathematician, politician or artist (Horizon Report, 2007).

Background Supporting Course Development

This case study grew out of a National Science Foundation GK-12 grant in which the software *Second Life Teen Grid* was being use to create educational standard-based science digital games for middle schoolers in the Appalachian region. The *Second Life Teen Grid* is a virtual environment in which avatars interact with an environment designed and built by the residents within *Second Life*. The *Second Life Teen Grid* is for students between the ages of 13 and 17 (Rymaszewski, Wagner, Wallace, Winters, Ondrejka, Batstone-Cunningham & Second Life Residents, 2007). There is an expectation that adults are not in this virtual world and that adolescents are interacting in this environment to create, socialize and learn. Private islands may be purchased within the *Second Life* and *Second Life Teen Grid* to control participation and membership of various locations on the virtual world. The researcher was a primary investigator in National Science Foundation GK-12 grant called Science and Technology Enrichment for Appalachian Middle-Schoolers (STEAM). The STEAM grant was designed to provide middle school teachers an opportunity to use digital games and virtual worlds in their science classrooms and to work with graduate students in engineering. The participant schools were all low socio-economic schools in which the free and reduced lunch rate was over 30%. STEAM participants hypothesized that the use of virtual worlds and games would motivate low achieving students to learn difficult science concepts. Middle school teachers were asked to identify concepts that were difficult to teach and difficult for students to learn in their classrooms from which a series of virtual simulations in *Second Life* were created. Along with graduate students from the College of Engineering, these science teachers acted as content specialists in the development of the digital science games on a private island on the *Second Life Teen Grid*.

As the grant progressed and digital games were developed in *Second Life*, it became apparent that many K-12 teachers, technology coordinators, and school principals lacked an understanding and background in the use of educational simulations and games for enhancing teaching and learning of difficult content. They lacked an even greater knowledge and understanding of the virtual worlds found online. In fact, principals and technology coordinators were reluctant to open up network ports for internet access to the virtual environment for their students. Teachers were hesitant to use classroom time for simulations and games. Another issue that appeared was the open nature of a virtual world such as *Second Life*. The lack of control over who enters and participates in the *Second Life* environment as students were working on the science content of the games was seen as a possible problem as online adult contact with minors could be unsafe. A private island was purchased to limit access to the science games so that

control over participants could be maintained. This relieved the worries concerning possible sexual predators lurking in the virtual world and work on the grant progressed.

However, this attitude and reluctance to use games was somewhat disheartening as educational games and simulations have been a part of education since the mid 1980's. With this in mind, the researcher decided to offer a graduate course to allow teachers, higher education faculty, technology coordinators, school administrators, and future faculty (graduate students) to explore the use of virtual environments for teaching and learning. For the purpose of this paper, the course development and findings within the course are presented.

The Course

The graduate course developed and examined in this research was a five quarter hour course in *Advanced Topics in Instructional Technology* at a Midwestern College of Education offered within a nine week quarter system in which 17 participants enrolled. Participants were asked to login to the internet-based virtual software called *Second Life* (http://www.secondlife.com) and create an avatar. The software and participation in *Second Life* is free. An avatar is a representation of the person within the *Second Life* environment. An avatar can take any form -- from the benign average-looking individual to the extreme science fiction creature. An avatar is meant to represent the individual; however, at times the 'alter-ego' may appear as the representation of an individual. Participants can use a MasterCard/Visa to secure Linden Dollars for in-world purchases but this was not a requirement of the course.

During the nine weeks of the quarter, participants (n=17) in the course were responsible for readings focusing on the use of games, virtual worlds in education and industry, readings from the Second Life Blog (http://blog.secondlife .com), and responding to research questions developed through the collaboration of the instructor and participants. The research questions (RQ) and minimal requirements developed by participants were as follows:

? How is the decision on the selection of an avatar made? What prompted a participant to change the avatar from the original to other formats? (Requirement: Creating an avatar and discussion of the number of times the avatar changed (clothing, personal characteristics) over the 9 week period.)

?. What activities did the avatar participate in during the week between meetings? (Requirement: must log in at least for 1 hour between class meetings and explore other locations in *Second Life*.)

? Who did you encounter when in *Second Life*? Did you find a wide variety of cultures represented? (Requirement: note/describe the nationalities, characteristics of participants other than your classmates in *Second Life*.)

? What other universities can be found in *Second Life* and what activities are they involved in? (Requirement: Visit at least 10 other university and/or college sites on Second Life and describe their activities.)

? What educational activities are taking place in Second Life? (Requirement: Locate educational activities, describe these activities. Provide "pros" and "cons" of the value of offering this educational endeavor in a virtual world such as *Second Life*.)

? What are the strengths and weaknesses of this environment from an educational perspective?

?. Develop one research question to be examined within *Second Life*. Support your research question with a literature review and present your findings to the class at the end of the quarter.

? Share *Second Life* with a colleague at your place of employment. Describe their impression of the site, its use, and how he/she might conceive the virtual world within his/her lifetime as an educator.

? Final Essay Question given on the Last Day of Class: Now, that you have explored this virtual world, what do you see the future holding for education? Support your answer with evidence from your own personal research in *Second Life*, journal research, and colleague's experiences.

Over the 9 week period, the participants met both face-

to-face and virtually in *Second Life*. The virtual aspect was interesting as all avatars had to meet at the virtual campus and an identified designation within the campus. At the beginning of the course, just finding all of the classmates was a challenging experience. Flying, walking, chatting, IM, and locating objects within *Second Life* has a new meaning when the keyboard and mouse are used to control interaction in this environment. In the first four weeks of the course as participants learned of Linden Dollars and shopping malls, the avatar persona and clothing changed almost weekly and sometimes daily with inventories of virtual scooters, hats, torches, and pets increasing.

Method

This research used phenomenology as a methodological choice based on the nature of the research questions that aimed to explore, describe and understand the nature of the virtual environment (*Second Life*) implemented in nine week course in a Midwestern College of Education. Phenomenology's major characteristic is that it "focuses on descriptions of how people experience and how they perceive their experiences of the phenomenon under study" (Glesne, 1999, p.7). A case study was used as a framework for data collection with the course acting as the case of reference. While one of the concerns of a case study is the lack of generalizability, Lincoln and Guba (1999) suggest that capturing the details of the context in rich descriptive detail fosters transferability in which the findings can be applied to similar situations and contexts. Yin (2003) suggests that a case study should be used to reach analytic generalization and not statistical generalization. Case studies can provide insights that can directly influence policy, practice, and future research in an organization such as a school.

Participants: Participants in the case study were from those selected to participate in the Science and Technology Enrichment for Appalachian Middle Schoolers (STEAM) project sponsored by the National Science Foundation (NSF) GK-12 grant, technology coordinators from area schools, school administrators, an e-Tech Ohio representative (state education agency representative), faculty members from the campus and graduate students in instructional technology who plan to enter Higher Education as faculty in the future. A total of 17 people participated in the research. Participants were warned at the beginning of the course about the openness of *Second Life* and the opportunities for lewd and vulgar representations that might be found and viewed in-world. Informed consent was established to make sure that participants were fully aware of the possibility of inappropriate and mature content.

The Researcher: The researcher is an Associate Professor in instructional technology at a Midwestern College of Education in a university of approximately 22,000 students. The researcher teaches technology related courses at the undergraduate and graduate level in the College of Education. The researcher was a middle school and high school science teacher for 18 years. The researcher taught and was a participant observer in all activities of the course.

Data Collection: Data was collected through the examination of written work presented as part of the course syllabus and research questions developed by the researcher and participants. Each participant kept a weekly wiki journal of his/her work in *Second Life*, discoveries made, and reflections on the virtual world which were reviewed throughout the course and at the end of the course to identify any changes and comments that may have been placed in the wiki by casual web reviewers and course participants. Each of the research questions posed by the instructor and participants listed earlier were evaluated as participants submitted their reflections on these questions. Themes were identified, organized, categorized, coded, and compared to research found within the literature review on gaming, virtual worlds and education. Finally, observations were collected during the class and through a reflective journal written by the instructor at the end of each class meeting.

Findings

To the research question, "(RQ1) How is the decision on the selection of an avatar made? What prompted a participant to change the avatar from the original to other formats?" participants acknowledged that being able to select your persona independent of your actual body was

a big "plus" in the virtual world. As Participant [10] noted, "*who wouldn't want to be a few pounds lighter, a few inches taller with gorgeous hair that is always in place?*" Lengthy discussion ensued when Participant [3] commented on how a virtual world might change the perception of a wheelchair bound individual who could walk in *Second Life*. He wondered aloud as to the "*use of Second Life not only to help people understand what it is like to be disabled but to also free participants of their disabilities*". Most of the participants noted that the changing of clothes, hair color, shoes and hats was "just fun". Fifteen of the seventeen participants noted that as the course progressed, there were fewer changes as people became more involved in the other aspects of the course and that only if [Participant[3]] "*a great outfit was found as part of my research*" did he/she continue to change the avatar.

During the week between meetings (RQ2: What activities did the avatar participate in during the week between meetings?), participants typically searched for unusual locations in *Second Life* in hopes of stunning their classmates with their location. Participant [12] stated (to which others agreed), "*I want to find the weirdest, neatest, coolest site on Second Life each week so everyone will want to go there*!" This behavior appeared weekly as the participants shared the locations examined during the first 5 weeks of the course but tapered off in the final weeks as the participants became more serious about their own personal research question. Others indicated that they tried to find sites that would match up with their work site or the area of study they were presently involved in. Participant [16] noted that she could "*travel the world without leaving home*" and "*this could be a great place to go and look at a travel destination and then decide if you want to go there*".

The vast size of the *Second Life* world left many in the class wondering about representations of various cultures (RQ3: Who did you encounter when in *Second Life*? Did you find a wide variety of cultures represented?). The number of religions and countries represented with *Second Life* was astonishing. Participants noted that other avatars were very eager to talk to them and often asked if they were Americans or from the US. Several participants noted that the avatar they spoke with took a long time to type in the chat window and once they found out he was from another country, they realized that the chat was being translated to English. Weekly participant reflections noted the wide range of religions found and what he/she had learned by going to the site that was unknown before a visit. The international make-up of the course prompted cultural concerns from the participants in the course. Many participants were curious about the Muslim participants' reactions to the obscene and vulgar portrayals found in *Second Life*. One Muslim participant [8] noted,

> "*I visited Second Life with my wife. She had never seen a place on the computer like this. I wanted her to see a virtual world. We walked around together and came upon some areas marked 'mature'. We decided to see what was there. It was embarrassing for us so we left. But that is the interesting thing about Second Life, you make the choice to view the area or not. I now see why you [instructor] spent so much time warning us about the possible content. I am an adult and can make this decision. I do wonder how we teach students about this world. I am sure there are people that are not over 18 that go into Second Life. What do we tell them? They are not going to stop going into virtual worlds. My youngest daughter playsWebkinz [http://www.webkinz.com/] and has virtual animal friends. How real is that? [Laughs]*".

A lengthy discussion on the school's responsibility to 'police' these sites and the education of parents in the materials found on the site ensued. The difference between the *Second Life*, the *Second Life Teen Grid* and private islands in both worlds was re-clarified with all participants. A final statement coming from a school administrator [Participant [3]] captured the thoughts of the group:

> "*I think it is impossible to keep children out of these sites; however, as an administrator, parents expect students to be safe at school. I have to be very careful [in] my consideration of allowing this sort of virtual space into the school as educational. I have a whole*

school to think about and liabilities to be concerned with. That said, I think Second Life is a great opportunity for students to explore the world in a virtual setting because most of my students will never leave the area [Appalachia]. Maybe by using the [Second Life] Teen Grid there is the ability to have control over who comes and goes and who builds what in the world that possibility could be great!".

RQ4 and RQ5 examined educational processes found in *Second Life* (What other universities can be found in *Second Life* and what activities are they involved in? What educational activities are taking place in *Second Life*?). The participants were delighted by the many universities both representing universities in the United States and universities internationally. At the time of the course, approximately 347 institutions of higher education had built a replica or some representation of their university. Most were not complete and many were small portions of the institution. Only a handful of those represented were actually involved in instructional activities. It was noted by several participants that the major technology corporations (Apple, IBM, & CISCO) had already built office building with information and links to their websites. Banks, savings and loan organizations, shopping (GAP, Old Navy) and car dealerships (Ford, Pontiac, Jeep) were identified as providing services within *Second Life*. Participant [17] had this to say about several sites,

" It is interesting that you can go out with your avatar and test drive a car or go to the Apple store and check out a Mac. I wonder if once people go to these sites they return time after time or are they only interested in the one-time experience. Would a company have to constantly change the site to keep people interested?".

Participant [2] noted "*it does not seem that many people are really doing in depth educational things at the moment. There is lots of advertising but I have yet to find a real class that is meeting on a continuous basis with a full curriculum. I did find several seminars that had met or plan to meet for a 1 or 2 hour discussion and a concert*".

The educational strengths and weaknesses were many (RQ6: What are the strengths and weaknesses of this environment from an educational perspective?). Most participants concentrated on access and the need for greater bandwidth and more sophisticated machines with a separate video card in the schools and homes to make this a tool for everyday use. Cost was another factor for concern. In the region of this Midwestern University, many students are on free and reduced lunches indicating an high poverty community. A frustrated Participant [12] stated, "*How can digital equity be enforced or a reality when money is not available for Internet access and computer equipment in the homes? The money in my families has to go for food and clothing! Not Second Life!*" Five of the participants questioned whether there was a need for *Second Life* when distance learning was available at a lower bandwidth. Others felt that the virtual 3-D capability of the world offered the ability to simulate real world applications and training for the workforce.

The participants unanimously agreed that virtual worlds are going to be part of their educational future (RQ9). Most indicated that they believed this could occur in the next 5 years. All agreed that the 3-D capabilities added realness to the virtual space/world and that simulations built in these environments would be realistic and therefore more motivating to learners. Participant [2] exclaimed, "*I really felt like I was sliding down the waterslide in the theme park. The use of the camera to follow my movements and the water sound … it all made me think I was in a water park*".

Research questions 7, 8, and 9 examined individual research, the sharing of Second *Life* with colleagues, and writing a final essay on the participant's thoughts concerning virtual worlds and their impact on education. Several themes were common to all the research documents reviewed. Overwhelmingly, the course participants were interested in the social impact of *Second Life* on those participating in the virtual environment. The short nature of the course only allowed most to scratch the surface, but participants found that they did not create the lasting friendships in *Second Life* as they had expected. Many concluded that the fluid nature

of the space may not really be conducive to long term friendships but rather more likely the interactions would be with acquaintances.

Participants discovered they could become part of a group and be identified as a member in a 'bubble' above the avatar's head and quickly established a group with the course name to make identification of fellow course participants easier. One participant stated, *"I kept asking other avatars if they were in my class. I got lots of blank responses where the people just walk away so I decided there must be a way to keep us together. I found the answer on the Second Life Blog http://blog.secondlife.com and quickly emailed everyone to join the group. Now I know who knows what is going on with our class and who not to ask!"*

The group identification issue prompted a lengthy discussion on group membership, organization, and ownership within school settings. How did this differ in a virtual world? What happened when you walked up to an avatar not in your group? Did you seek to talk to those in your group first? Participants stated this was reminiscent of their own school days and 'the popular crowd'. Insights into how students must feel in the 'real world' of K-12 provided thoughtful discussion on how teachers and parents might discuss gangs, friendship, and diversity using the virtual environment as a backdrop. The participant researchers were also concerned about deviant behaviors and unethical behaviors and the opportunity for such behavior to be normalized in virtual worlds.

RQ8 requested that participants share Second Life with a colleague. The comments from colleagues were similar to the participant comments at the beginning of the course, "Why work in a virtual world?" Many participants indicated that it was interesting to see their initial perceptions mirrored in the colleagues and now how their perceptions had changed after exploring the site. Graduate students were much more tolerant of the wide variety of activities in *Second Life* as compared to the school administrators, with teachers falling in the middle of the continuum. Participant [6], a school administrator, stated:

> *" I shared this with the other principals at my district at our weekly meeting. One said, 'What happens if they go beyond limits"? This is what we [principals] worry about! [laughing] Unfortunately, those will also be the first questions from our middle and high school parents. I told them [principals] this …. I look at it this way; we have a very clear acceptable use policy at our school. This technology falls under that acceptable use policy and every child that touches a computer has to have a parent sign the document and the student has to sign the document. We have to get ready for this and things like My Space and Facebook so use the acceptable use policy to take care of these issues. I think next year, I will ask the superintendent and legal to review the acceptable use policy and to put these things…Second Life, Facebook, and My Space as examples. That will at least alert parents to the possibilities ".*

Common themes identified within RQ9, included continued discussion of concern over the digital divide, that virtual worlds are only the beginning of a 3-D Web environment in which we may all act as avatars, and a common question posed by technology use was how can we all keep up? Many discussions included the need to involve parents so that they too might begin to understand more clearly the implications of technology and the future employment of their children. Finally, concerns over face-to-face communication skills and the ability to problem solve 'people relationship' issues that are often part of the job skills necessary for successful employment were identified as common themes. What were not found in the discussions were comments concerning world connections. When the participants were queried concerning this the issue of global connections in virtual worlds, most of the participants agreed with the statement from Participant [11], *"that is a given, Dr. [instructor]"*. This suggests that these educators have come to realize that schools and students do not operate in isolation from today's global connections.

Discussion

The *Second Life* experience for these educators was not without conflict. As one participant noted, *"this is just one*

more internet hole to pour my time into!" *Second Life* is indeed time consuming and as the participants found, there is a never-ending world to explore with new materials being built, new groups being formed and worlds that mimic our own to explore. Several participants described experiences in which they visited a *Second Life* site or viewed places they had visited in the real world internationally. One participant exclaimed, *"I was standing outside this building in Second Life and I kept thinking I have been here before; I've seen this but I knew I had not been to this location in Second Life. I showed it to my friend and she laughed. Of course, you have been there you went on vacation to Germany last year and took a picture of that place!"*

Learning how to manipulate the avatar to walk in the virtual environment without running into things and then to fly without running into things took practice and was at time frustrating for those with limited technology experience. For many, the avatar was their persona which laughed, talked with many, other avatars and made connections in each site visited. For others the avatar was basically a 'doll' that was used to experience the environment without real connection to the world.

Upon leaving the course, the participants indicated that they would continue to visit *Second Life* to examine the changes and to further think about possible used for this technology in the teaching and learning process. Four months after the course had ended; the participants were contacted to determine if they had continued to participate in the *Second Life* community. Nine out of the seventeen original participants had continued to visit *Second Life*. Of the nine, most were visiting *Second Life* as stories in the newspaper or television were presented. Participant [15] had continued to login approximately once per week and continued to be the most engaged in the virtual environment. When asked, "What was the appeal to continue to work in this world", Participant [15] answered, *"I am constantly amazed at the new building and ways people are presenting information and materials in Second Life. I think there will be others [virtual worlds] that leap frog this site and build even better sites soon. This is the future and I do not want it to pass me by"*.

Conclusion

Second Life is a virtual world that is created, owned, and imagined by the in-world residents. It is an interesting examination of the possibilities of our imaginations to create a new environment within the educational arena. *Second Life* provided many unique experiences for the participants in the STEAM project, school administrators, teachers, technology coordinators and graduate students who chose to take the course. While those participating indicated a lingering curiosity about virtual environments, most K-12 connected participants commented that the K-12 school environment was not quite ready for this technology due to legal issues and equipment needs. Those participants from higher education and state agencies saw this virtual environment as "the future of teaching". This somewhat decisive difference in viewpoints is worrisome in that in order for K-12 to take advantage of the wide variety of Web 2.0 collaborative tools built to encourage collaboration and social learning, internet access and internet use must be expanded rather than tightly controlled. There is a critical need for education at all levels to develop digital citizens that know and understand the ethical and legal uses of internet content so that wider access to Web 2.0 applications can be supported. Without this educational effort, today's digital natives will not have the opportunity to use the internet in meaningful ways within the learning environment of school and may use the internet inappropriately outside of school. In many ways, the case study was a small glimpse into the future of the Web and the educational and communication opportunities for our learners. Unfortunately, if educators do not take the reservations and concerns presented earlier seriously, limited access to virtual worlds, simulations and learning environments on the web will continue to impede possible learning opportunities in K-12 schools.

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References

[1]. Franklin, T. & Vonderwell, S. (2002). Use of asynchronous and synchronous conferencing tools: Implications for teacher practice. *Society for Information Technology and Education Proceedings 2002,* (Vol. 1). Association for the Advancement of Computing in Education, Charlottesville, VA.

[2]. Glesne, C. (1999). *Becoming a qualitative researcher*. New York: Longman.

[3]. Johnson, W.L., Rickel, J.W., & Lester, J.C. (2000). Animated pedagogical agents: Face-to-face interaction in interactive learning environments. *International Journal of Artificial Intelligence in Education. 11*, 47-78.

[4]. Lester, J.C., Converse, S.A., Kahler, E.E., Barlow, S.T., Stone, B.A., & Bhogal, R.S. (1997a). The persona effect: Affective impact of animated pedagogical agents. In *Proceedings of CHI '97*, 359-366. Atlanta, GA.

[5]. Liderman, N.G. & Niess, M.L. (2000, Nov). Technology for Technology's Sake or the Improvement of Teaching and Learning? *School Science and Mathematics, 100*(7), p. 345-348.

[6]. Lincoln, Y.S. & Guba, E. G. (1999). Establishing trustworthiness. In A. Bryman & R. G. Burgess IEds.), *Qualitative Research.* (pp.397-444). London: Sage.

[7]. Morton, H. & Jack, M. (2005). Scenario-based spoken interaction with virtual agents. *Computer Assisted Learning, 18*(3), 171-176.

[8]. New Media Consortium and EDUCAUSE Learning Initiative. (2007). *The Horizon Report*: 2007 edition. [Online]. Available: http://www.nmc.org/publications

[9]. Oliver. R. (2006). Exploring a technology-facilitated solution to cater for advanced students in large undergraduate classes. *Journal of Computer Assisted Learning, 22*, 1-6.

[10]. Pelletier, C. (2005). Reconfiguring Interactivity, agency and pleasure in the educational and computer game debate using Žižek's concept of interpassivity to analyse educational play. *E-Learning, 2*(4) 321-325.

[11]. Rymaszewski, M., Wagner, J., Wallace, M., Winters, C., Ondrejka, C., Batstone-Cunningham, ***B & Second Life Residents.*** (2007). *Second Life the official guide.* New Jersey: Wiley.

[12]. ***Second Life. (2007, October).*** *Second Life Community*. Retrieved January 10, 2007, from http://www.secondlife.com

[13]. ***Second Life. (2007, October).*** *Second Life blog*. Retrieved January 10, 2007, from http://www.blog.secondlife.com

[14]. Shaffer, D. W. (2006). *How computer games help children learn*. New York: Pelgrave Macmillian.

[15]. Skiba, D. (2007, May/June). Nursing education 2.0: Second Life. *Nursing Education Perspectives, 28*(3), 156-157.

[16]. Yin, R.K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.

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