

2009


Immersive Virtual Worlds in Educational Practice: Introducing Educators to Second Life

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Recommended Citation

Zijdemans Boudreau, Anita; Headley, Scot; and Ashford, Robin, "Immersive Virtual Worlds in Educational Practice: Introducing Educators to Second Life" (2009). *Faculty Publications - George Fox University Libraries*. Paper 8.
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Abstract: This paper reports outcomes of the second iteration of a longitudinal action research study on the affordances of Second Life for enriched online teaching and learning. *Introduction to Second for Educators* was a professional development opportunity offered to graduate students, faculty, and administrators as a distance course in spring 2009. Participants' wiki reflections and exit questionnaires were analyzed to determine the effectiveness of a constructivist instructional design using guided discovery within a supportive Community of Inquiry [CoI]. Results indicate that the constructivist design ensures a level of facilitation requisite to successfully scaffolding novices' experiential learning inworld. The CoI model is well supported in the data, with some deficits in cognitive presence. Challenges persist in the areas of technology and time. Action items for the Fall 2009 iteration include increasing activities to maximize SL affordances for building, problem solving, and peer collaboration, and adjusting measurement tools for improved future data analysis.

Context

Imagine a world where the inhabitants actively co-construct their learning environment by engaging in a variety of rich sensory experiences such as simulation, role-play, modeling of complex scenarios, creative expression, tool building, exploration, and solving authentic problems. This is the promise of Second Life (SL) an immersive 3D virtual world imagined and created by its residents. A constructivist educator's dream? Absolutely! Too good to be true? Perhaps. Nonetheless, hundreds of educational institutions continue to invest significant resources in the development of virtual platforms for extending and enhancing professional training, distance programs, and student recruitment (Appel, 2006).

Educators also appear to be increasing their commitment to Second Life. The 2008 New Media Consortium survey of 358 educators – two-thirds of whom ranged from 36 to 55 years old – revealed that 71% stated an involvement in educational-related activities inworld, an increase from 54% in 2007. Other trends included: a transition from exploration to application of SL for teaching and learning; an increase in sustained networking with other educators; and a boost from 30% in 2007 to 56% in 2008 in educators who have been in Second Life for 1-3 years (NMC Survey of Educators in Second Life, 2008).

Those who watch from the periphery are not sure what to make of this phenomenon. What is it exactly that virtual worlds have to offer? Can they truly support authentic learning and communities of practice? Are they a viable educational medium or just another passing trend? Is there sufficient evidence of best practices in Second Life? In short, do educators really need a Second Life?

An Action Research Agenda Emerges

These questions initiated a longitudinal study on the affordances of Second Life for sustaining communities of inquiry and exploring a constructivist instructional design for enriched teaching and learning in distance education. The iterative implement–evaluate–plan cycle of action research seemed most fitting for this long-term investigation. Action research, in essence situated experiential learning, focuses on the effects of the researchers' actions within a community of practice. The goal is to improve the performance of the individual

practitioner and/or community, and often addresses a particular area of concern (Dick, 2002; McNiff & Whitehead, 2006).

Our initial foray looked at the roles of community, experience, and the educational viability of Second Life in a graduate level online course that explored religious communities inworld. Outcomes revealed that SL is a complex environment requiring a high level of facilitation as well as time commitment for participants to develop the competencies required for successful inworld navigation. While SL does not replicate real life, participants did experience personal and emotional connections to the residents and communities they engaged with. It was further recognized that SL has great potential for a variety of educational applications (Zijdemans-Boudreau et al. 2009).

From this experience, we developed a two-pronged action plan to: a) provide ongoing professional development opportunities for educators to gain experience in Second Life; and b) continue development of a Virtual Learning Environment (VLE) as a rich resource base for supporting learning and cultivating a community of inquiry for educational application in SL. We determined that these two strands should be developed concurrently and mutually support each other.

This paper reports outcomes on the implementation of the first strand of the action plan [second strand outcomes are reported separately]. The *Introduction to Second Life for Educators* course was designed to support exploration of the functions, processes, and relationships that exist, as well as the potential of virtual worlds for educational practice. The following outlines the theoretical foundations for our work.

Framing a Constructivist Instructional Design within a Community of Inquiry

As scholarly-practitioners committed to designing theoretically-grounded distance education programs, the underlying pedagogical principles for our work are informed by a social-constructivist instructional design within a Community of Inquiry. Social constructivism, as proposed by Vygotsky (1978), emphasizes the primacy of intra- and inter-personal interactions, cultural tools, and the role of instructor as facilitator. The instructor designs learning opportunities that empower learners to actively construct their understanding within a supportive learning environment. "Practice in discovering for oneself teaches one to acquire information in a way that makes that information more readily viable in problem solving" (Bruner, 1961, p.26). Our previous experience, taught us that acquiring basic mastery of SL for novice users requires a high degree of facilitation and resource support. From this, we determined that a guided discovery approach would provide the structure and guidance needed to foster identity formation and collaborative community building while also encouraging participants to explore some of the rich experiential learning opportunities particular to SL (Lavine, 2005; Jarmon & Sanchez, 2008).

These constructivist principles are likewise inherent in the Community of Inquiry model which was developed to provide a comprehensive framework for technology-based education. The Community of Inquiry (CoI) model describes three key overlapping elements for online learning: social presence; cognitive presence; and teaching presence. Social presence is defined as the ability of participants to project themselves purposefully and socially within a community of inquiry as measured by the dimensions of affective expression, open communication, and group cohesion. Cognitive presence is the extent to which participants critically reflect, (re)construct meaning, and engage in discourse for the purpose of sharing meaning and confirming understanding along the dimensions of a trigger event, exploration, integration, and resolution. Finally, teaching presence is the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes. The dimensions here are design and orientation, facilitation, and direct instruction (Garrison, Anderson, & Archer, 2000; Swan et al., 2008).

The COI model embedded in a constructivist instructional design provides an inclusive theoretical framework for supporting our interest in acquiring knowledge about both the possibilities for teaching and learning as well as some best practices for Second Life in distance education.

The Study: Introduction to Second Life for Educators

Introduction to Second Life for Educators was a graduate level distance course designed to introduce Second Life (SL) and help participants to navigate, communicate, and learn other basic skills necessary for exploring and investigating the educational possibilities of this virtual world. An emphasis was placed on introducing participants to examples of educational applications (via SL tours) as well as providing fun and engaging opportunities for networking and professional development (via inworld educational groups). Ultimately we sought to provide foundational preparation activities and knowledge needed for educators to move beyond the initial stage of gaining familiarity and competence with SL. The overall learning objectives set for the course were to: a) learn how to survive as a resident in SL; b) experience a community of inquiry within SL; c) become familiar with basic resources for possible educational use in SL; and d) engage in a critical evaluation of the viability of SL for educat

The course was advertised as a professional development opportunity for exploring Second Life and was delivered as one-hour classes over a fifteen-week period from January to April 2009. The study included 11 registered students, the instructor, and 2 SL mentors. Participants came from a range of backgrounds including doctoral students, faculty, administrators, and research practitioners. A typical session involved meeting in SL at the skydeck resource area then attending a tour, presentation, or participating in another activity. After each session, participants engaged in critical thinking and reflection by documenting their inworld journeys, experiences, and accomplishments on their individual page on the course wiki.

The study focused on the following key questions:

1. Did participants' experiences reflect or substantiate themes outlined in the theoretical framework?
2. How did participants evaluate their learning experience, their ability to engage and interact in SL, as well as the educational potential of Second Life?
3. Is the theoretical framework useful for understanding affordances of SL for sustaining communities of inquiry and exploring constructivist instructional design for enriched online teaching and learning?

These questions were addressed by gathering the following qualitative and quantitative data: the students' post-session critical reflections; instructor notes; a participant exit survey; and an instructor exit questionnaire. Using the CoI model as an organizing framework, the following themes for analyses were used: a) Social Presence: affective expression, open communication, group cohesion, SL residency, community; b) Cognitive Presence: trigger event, exploration, integration, resolution, educational viability, experiential learning; and c) Teacher Presence: design & orientation, facilitation, direct instruction, guided discovery, resource support. Our hypothesis was that an introductory course focused on providing highly facilitated hands-on learning experiences would help develop basic skills and encourage critical thinking about SL in educational practice.

Findings

This section provides general details on the participant exit survey results. The three Community of Inquiry model elements Cognitive Presence, Social Presence, and Teacher Presence are then used to organize and present data outcomes in the following order: a) quantitative results from the participant survey along with sample responses from the open ended questions; b) excerpts from the participants' wiki postings; and c) excerpts from the instructor exit questionnaire. A final section on emergent themes is also presented.

Participant Exit Survey: The participant exit survey was comprised of 8 rated and open-ended questions and 1 final open-ended question to yield both quantitative and qualitative data.

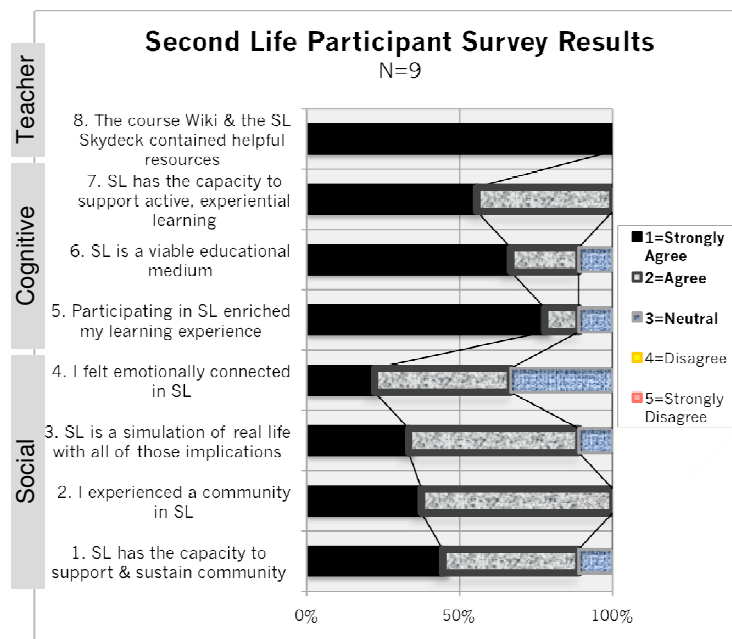


Chart 1. Participant Exit Survey Results

A total of 9 participants completed the survey. Mapped to the Community of Inquiry [COI] framework were four questions for social presence, three questions for cognitive presence, and two questions for teacher presence. An overall analysis of the chart above indicates that the highest rate of 1 [Strongly Agree] was associated with questions related to teacher presence and cognitive presence while all four social presence questions scored consistently well at score 2 [Agree]. 5 out of 8 questions received a rating of 3 [Neutral] though it should be noted that there were no scores assigned at 4 [Disagree] or 5 [Strongly Disagree].

Social Presence: Social presence was analyzed for connections to the dimensions of affective presence, group cohesion, community and SL residency. Question #1 yielded the highest response in this category at 4=Strongly Agree, 4=Agree, and 1=Neutral. More critical perspectives were: *"I would say that I agree with this to a point but, would strongly emphasize this caveat: the sense of community is based on fictional names and appearances, and possibly, personalities and attitudes."* and *"I would probably never say 'strongly' agree as I believe that SL can support community as long as it is one aspect of a person's support network."* Other views were: *"It has been great fun getting to know the other avatars and the people behind them."* and *"Voice and text interaction made the circle of friends more enjoyable."*

Question #2 was rated at 3=Strongly Agree and 5=Agree with responses: *"Didn't have time to be inworld nearly as much as I would have liked."* *"We had a great group. Loads of fun and interesting personalities."* and *"I entered class late but came to look forward to the entire hour...the fastest hour of my week. I wished it was longer."*

Question #3 was rated 3=Strongly Agree, 5=Agree, 1=Neutral and feedback included: *"I experienced each of those things."* and *"I did not experience the depth of emotional connection as others who have long-time friendships and working relationships in SL, but I was VERY moved when I read about a funeral service and memorial for a beloved SL librarian (I think that was the person)."*

Finally question #4, yielded the weakest responses with 3=Neutral, 4=Agree, and 2=Strongly Agree. Participant input included: *"Surprisingly so..."* *"I don't even always do that in real life"* and *"Not in the way I am in real life, and not in ways I see with some. I was/am very curious about how I do not view my avatar as 'me'. Rather, I view 'me' as the caretaker of my avatar, and I feel very maternal towards her."*

Participant Wiki postings reinforced similar themes of time and skepticism. However, as seen in the following excerpts, there was strong consensus on the capacity of SL to support social presence:

My big learning event for this course was the sense of connectedness I've felt in this group, going through the material. It's an experience I've felt has been absent from my on-line posting format classes in the Administrators License program. They're all good classes, but my big hook into education is the social aspect. Second Life brings that in a way that's made me feel more connected to this course than any other I've taken on-line. There's an immediacy and almost tactile quality to experiences generated in SL that an entirely text-driven course will fundamentally be unable to provide.

One surprising discovery for me, came as we said our goodbyes. First, some background... I am a big proponent of actual "seat time" and the interactions that can only come from such a [f2f] environment. I really only took this online class begrudgingly as I didn't want to be gone another night from my wife and our newborn. That said, I fully expected to be able to say in my final reflection of this class that the closeness that is formed in a "real" classroom wasn't there due to the vastness of cyberspace, the impersonalness of the internet... But that wasn't the case. I actually felt more connected to this class than any regular class I have attended [here]. Maybe that has something to do with the nature/style of those classes (lecture, note-taking, etc.), but maybe there is something more to this inworld interaction than I give it credit for. I do still hold fast to the idea that nothing will ever beat actual human interaction, but this was still a valuable learning experience and time well spent.

Cognitive Presence: The dimensions analyzed were trigger event, exploration, integration, resolution, educational viability, and experiential learning. The highest score went to question #5 at Strongly Agree=7, and Agree and Neutral=1. Representative responses included: *"Second Life WAS my learning experience."* *"I learned SO much!"* *"A new way of learning."* and *"Assuming the computer requirements are not so demanding that many/most are excluded from using it (i.e. schools, people with older computers, etc.)"*

Question #6 rated at Strongly Agree=6, Agree=2, and Neutral=1 had these comments: *"Within the technological limits!"* *"The distance learning component and the off campus piece are very student friendly."* and *"My mind is buzzing all the time about the possibilities as I am projecting 10 years down the road... I think today's tech challenges could disappear with the next wave of advancements"*

The third highest rated was question #7, Strongly Agree=5 and Agree=4 with the following statements: *"I think it has amazing potential for those whose technology will support the process."* *"Lots of 'hands' on*

exploration and discussion.” “I would say 'strongly agree' but due to tech limits, the 'sustained' part feels more like its potential, not its current reality.” and “Great unknown and known opportunities.”

Participant reflections also spoke to the nature of learning in SL and its viability for educational practice as in the following:

There's a certain harmony to a well-designed island in Second Life – a balance between infinite complexity and clean lines. Each of the sites we visited seemed to reflect a combination of wide-open spaces and then richly convoluted nests of ideas, each taking a physical form for interaction...This is what Second Life seems to be. I see SL as a chance for students to make deeper connections between content and themselves. And if challenged to build something representing their learning, students would be excited to have at it.

The instructor observed the following about how learning occurred during the course:

The most satisfying elements were related to seeing growth in everyone, including myself. Watching the lights go on regarding the possibilities of virtual worlds and education. Experiencing the excitement that comes from being so fully engaged in learning. Learning from each other, what was working, what wasn't and why. Since all in the class were educators, the reflections on our course wiki were in the context of education, which was most helpful. We were able to have rich discussions both synchronous (inworld) and asynchronously (on wiki and email) in which we could all participate and learn from each other.

Teacher Presence: Themes for analysis were design & orientation, facilitation, direct instruction, guided discovery, resource support. The highest score overall was on question #8 with all 9 participants selecting Strongly Agree. The following quotes exemplify the support for the VLE – Wiki and SL skydeck – created for the course: “These resources were essential to my existence in SL.” and “That wiki is incredible! Robin has done an amazing job of creating a treasure chest of useful and fascinating information. And the skydeck - what a wonderful 'retreat' to ponder, talk, think and play together - wonderful setting!”

In response to the one open-ended question asked, **What are some suggestions for other activities/resources that might have helped increase your learning during the course?** some noted: “I liked the idea [of] class members going out, finding resources in SL, and then sharing them with the class...a slightly longer class period would work well too.” “More projects. Inworld scavenger hunts to many areas.” “Additional share-outs of new discoveries.” “Try more, spend more time--then practicing makes perfect. But still, mentoring is very needed.” “The wiki/course support materials were extremely helpful and very complete. This will provides a very strong framework to build upon.” and “Simply wish to continue learning and experiencing SL.”

In the Instructor exit questionnaire the instructor spoke about her role as facilitator and how she supported guided discovery:

I decided that along with an emphasis on learning SL basic skills, students could benefit from inworld tours where an experienced user was along with them. In taking them on tours and arranging interviews with other educators, I could not only introduce them to the different types of interactive and immersive environments and how & why educators are using them, but I could also be there to assist them as needed...I let students know I would be there watching and ready to assist with any questions. Before we left the skydeck we went over how to send a private Instant Message [IM] and how to ask for a teleport if they got stuck somewhere. I went with them and after making sure they all made it to the welcome area and were clicking to get notecards, I sent them on their own to explore and hovered above the build. Using camera controls I was able to keep track fairly well (felt a bit like a mother hen trying to keep track of her chicks). If they ran into problems I could quickly be there to help. This worked very well and some students did Instant Message me for help, or even to share their excitement about what they were experiencing.

Other Emergent Themes: Technology and time constraints continue to be the number one source of frustration in using SL. As One student posted: “Biggest hurdle? Well, I'd say it had less to do with SL, but more to do with 'glitches.' At one point I was struggling though a virus that had the effect of logging me off from programs, including SL. It made it difficult to stay patient with the program, but was able to work through it and fix things up before it really got bad.” The instructor also noted: “This is an ongoing problem with SL and one which must be addressed before SL will be able to become a mainstream teaching and learning environment.”

Finally, another participant wrote: “My difficulty with Second Life is the same one I lug everywhere I go: Time. I found I really needed to go in more on my own and really get to know the place. It's a little weird to think of myself plugged in to a virtual world for any amount of time. I found I had to make time to be here, and it worked out better at times, worse at others. But I've never felt I'm wasting my time when I'm here.”

Summary

Overall, our analysis demonstrated that the theoretical framework was well supported. The strongest representation was in the elements of teacher presence and social presence. One solution to the complexity of measuring cognitive presence may be to more closely align future learning activities with the trigger event, exploration, integration and resolution dimensions. As this is an introductory course, however, and participants' lack experience with SL – and in some cases with technology in general – the main focus is on basic skill mastery and consequently only the first two or three dimensions. This said, the participants' educational expertise contributed to a higher level of integration and resolution in the Wiki reflections and critical evaluations of SL for practice. Using the CoI framework and constructivist instructional design both ensured a level of facilitation requisite for scaffolding novices users' learning in SL and provided a solid analytical model for exploring the possibilities of SL for teaching, learning, and professional development.

Action Plan

- 1) Continue to require a mandatory orientation before the first live SL class but add an assessment to ensure all students are closer to the same minimum level of adeptness in using SL before our group classes begin. SL is complex with a fairly steep learning curve. Time must be invested in learning the basics before one can fully benefit from the learning environment.
- 2) Maximize SL's playful collaborative environment to increase class activities that are engaging while learning some valuable skills as well as use sandbox (practice area) where some students can take the lead and others can actively share their learning in SL in addition to their post-session postings in the course Wiki.
- 3) For the next course in Fall 2009, there will be more required participation in live SL events during the one-hour weekly assignment students complete on their own time.
- 4) Adjust measures more closely to the dimensions of the COI model and constructivist instructional design.

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