

Experiential Learning Using Second Life®: A Content Analysis of Student Reflective Writing

Holli R. Leggette, Doctoral Student

Texas A&M University

Christy Witt, Ph.D.

Texas Tech University

Kim E. Dooley, Professor and Associate Dean of Academic Operations

Tracy Rutherford, Associate Professor and Associate Department Head for Undergraduate Programs

Theresa Pesl Murphrey, Assistant Professor

Texas A&M University

David Doerfert, Professor and Associate Chair

Texas Tech University

Leslie D. Edgar, Associate Professor

University of Arkansas

Experiential learning allows students to connect previous experiences with new ideas. Second Life (SL) is a virtual world that allows students to simulate real-world experiences. SL was utilized as an educational tool in an agricultural risk and crisis communications course. Weekly journal entries pertaining to the SL simulation were analyzed to understand the students' perceptions of the SL simulation. Content analysis within the qualitative research paradigm was used to analyze the student reflective journals. Although not prompted to do so, 14 of the 16 students discussed the SL simulation in their journals on at least three occasions throughout the semester. Upon analysis of the Second Life-related journal entries, six main themes emerged—simulation context, anxiety, capabilities, inabilities, Aha! moments, and suggestions for future simulations. Based on findings from this study, one can conclude that many students involved in the course under study found value in the use of SL as an educational tool. Student comments revealed a strong sense of application in the experiential process. This study sought to document best practices for SL as an educational tool in agricultural courses from the student perspective to allow more efficient and effective adoption for education.

Keywords: Second Life; experiential learning; crisis communication; content analysis

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Introduction

Preparing skilled, educated, and workforce-ready graduates who can address issues facing the agricultural industry in the 21st century has never been more important, according to the *American Association of Agricultural Education's National Research Agenda* (Doerfert, 2011). Although application, science

discovery, and technology have become more refined, agricultural industry issues continue to grow more complex and difficult to solve (Doerfert, 2011). Furthermore, structural, cultural, and economic factors that challenge the United States' educational system and threaten its position in science, technology, and agriculture production (Doerfert, 2011) present

unique challenges that create risks to human, animal, crop, or environmental health.

As university faculty members adjust their academic instructional efforts in response to these industry changes, they also find that the educational preferences and expectations of today's students have changed as the millennial generation has never been exposed to a world without technology (Solomon & Schrum, 2007). Although researchers are still investigating the impact of Web 2.0 on student learning, educators believe online collaborative activities, such as virtual worlds, can boost student motivation and encourage student learning (Davis, 2009).

Second Life (SL), a 3-D virtual world environment, provides students the opportunity to participate in real-world, hands-on experiences and gain knowledge and understanding of particular subjects or projects (Leggette, Rutherford, & Sudduth, in press). Further, students perceive SL as a valuable tool for experiential learning and the future of communications education (Jarmon, Traphagan, Mayrath, & Trivedi, 2009). Because "crises and risk are ... dynamic and unpredictable" (Seeger, 2006, p. 234), creating real-world crisis management experiences is difficult. Risks and crises can damage an organization's reputation, challenge stakeholders' trust in an organization, and cause negative reactions by the news media (Coombs, 2007). Crisis communication education can help lessen the effects of crises by providing crisis management guidelines and frameworks to protect an organization's reputation before, during, and after a crisis (Coombs, 2007). Thus, 3-D virtual worlds can help students "practice crisis management" (Davis, 2009, p. 229) and apply concepts learned in class to a real-world scenario (Jarmon et al., 2009).

Technology has brought a new dimension to experiential learning because students gain experience through a variety of exercises, including simulations and role plays (Kolb, 1984). Solomon and Schrum (2007) summarized the challenge facing faculty by stating "the changing nature of information and the new ways our students understand and make sense of the world signal that we need new strategies and new tools for teaching and learning" (p. 1). Even though virtual worlds are becoming increasingly popular in education (Davis, 2009), Jarmon et al.

(2009) stated research is lacking in "instructional design and practices in 3-D virtual worlds" (p. 169).

Theoretical Framework

Experiential Learning Theory

The authors based the theoretical framework for this study on Experiential Learning Theory (Kolb, 1984) supplemented by a more in-depth look at Boud, Keogh, and Walker's Model of Reflection (1985b) because of students' reflection on their experience using SL as an educational tool in crisis communication. As stated by Kolb (1984), "Experiential learning theory offers something more substantial and enduring" (p. 3). Experience outside the classroom is essential (Kolb, 1984). It provides students with an "experience-based education" (Kolb, 1984, p. 3) and a robust learning environment through supplemental opportunities, which help students gain real-world experience and emphasize life-long learning and growth of productive world citizens (Kolb, 1984). Dewey (1933) and Kolb described the classroom becoming the real-world where students learn and experience material in an environment similar to what they would encounter as a professional. As students experience real-world scenarios and reflect on their feelings, senses, and knowledge of the situation (Kolb, 1984), their communication and critical thinking skills improve (Mabie & Baker, 1996).

Kolb (1984) identified four elements in the experiential learning process: concrete experience, reflective observation, abstract conceptualization, and active experimentation. For experiential learning to occur, students must struggle to use new knowledge and skills to solve a problem (Dewey, 1933; Joplin, 1981) and reflect on the problem-solving experience (Boud et al., 1985b; Lamm et al., 2011). However, problems cannot be overwhelming or beyond students' current knowledge base because they might become discouraged and resistant to the learning experience (Joplin, 1981). As students deal with and work through conflicts, they learn (Dewey, 1933; Joplin, 1981) and become better able to handle more complex situations because of knowledge gained through experience (Kolb, 1984).

“... [E]ducational outcomes are enriched, deepened, and expanded when student learning is more engaged, active, and relevant” (Bringle & Hatcher, 1999, p. 83). Learning through experience and opinion formation are gateways through which knowledge is created (Kolb, 1984). According to Joplin (1981), “anytime a person learns, he [or she] must ‘experience’ the subject—significantly identify with, seriously interact with, form a personal relationship with, etc.” (p. 17). Experience also provides students with a foundation to build new knowledge and a connection with prior knowledge (Boud, Keogh, & Walker, 1985a; Kolb, 1984). As such, experience unremittingly changes learning and modifies students’ thought processes (Kolb, 1984).

The context of the learning process defines experiential learning (Roberts, 2006) and helps shape ideas and opinions of the students (Kolb, 1984). Research shows learning is experiential, but the impact of experiential learning is based on the level of experience (Joplin, 1981; Townsend & Briers, 1990). For instance, students exposed to more concrete, direct, and purposeful learning environments will engage in a higher level of experiential learning because students interact with and make personal meaning of the experience (Joplin, 1981; Townsend & Briers, 1990).

Reflection model. According to Boud et al.’s Model of Reflection (1985b), “... [E]xperience alone is not the key to learning” (p. 7) because learning includes experience and reflection. Collectively, learning is emotions, feelings, observations, thoughts, experiences, and reflection (Boud et al., 1985a). Reflection is as important as the experience (Stone, 1994); it turns ordinary experience into experiential learning (Joplin, 1981). Students reflect to “recapture their experience, think about it, mull over it, and evaluate it” (Boud et al., 1985a, p. 19) and explore and gain new ideas, understandings, thoughts, and appreciations about the experience.

Effective reflection is structured and designed using specific outcomes (Bringle & Hatcher, 1999; Stone, 1994). The reflective process as explained by Boud, Keogh, and Walker (1985a) has three steps: (a) returning to the experience by looking back at the emotions and feelings associated with the experience; (b) attending to their feelings by working through

the negative emotions and enhancing the positive emotions that give students desire and persistence to learn; and (c) re-evaluating the experience to identify with their feelings and assess the experience in hindsight.

Journal writing is often used as a learning reflection tool because it helps students deeply and objectively reflect and accurately clarify and focus on the experience from a different perspective (Bringle & Hatcher, 1999; Walker, 1985). Often, in-depth learning experiences can be overwhelming, and journals give students the chance to dissect the experience and connect it to theory learned in class (Bringle & Hatcher, 1999). Through writing, students create meaning and understanding of the experience and compartmentalize the experience, which might be used as a point of reference when they encounter new experiences (Bringle & Hatcher, 1999; Walker, 1985).

Experiential learning in agriculture. Experiential learning has been a foundation of agriculture for many years (Baker & Robinson, 2011; Knobloch, 2003; Roberts, 2006). Knobloch (2003) defined experiential learning in agriculture “as learning in real-life contexts that involves learners in doing tasks, solving problems, or conducting projects” (p. 26), which reflects Dewey’s (1933) experiential learning model. Bringle and Hatcher (1999) contend that experience, theory, and lecture combine as a foundation for deep learning. Kolb reported learning should occur beyond the barren classroom and emphasized that agricultural education is perfect for experiential learning because of the variety of teaching methods and aspects of the discipline (as cited in Baker & Robinson, 2011).

Even though education has changed, experiential learning is still an important piece to the puzzle because of its role in the meaningful learning process (Knobloch, 2003). Experiential learning is and should be a part of agriculture curricula (Roberts, 2006). Agricultural education must continue to look at ways to make science and education come to life and help students connect the dots between agriculture experience and real-life (Mabie & Baker, 1996).

Purpose and Objectives

To better accommodate students’ needs, educators need to determine the educational

effectiveness of using SL in crisis communications education and adapt the curriculum accordingly. Therefore, the purpose of this qualitative content analysis was to explore students' perceived educational experience using SL as a supplement in a risk and crisis communications course. The study was guided by two research questions:

1. What were students' perceptions of using a Second Life simulation as part of a risk and crisis communications course?
2. How did the use of Second Life impact students' learning in a risk and crisis communications course?

Context of the Study

Due to the challenges in creating a real-world crisis event as an experiential learning component, SL was utilized as an educational tool in a graduate-level agricultural risk and crisis communications course. Students were presented the opportunity to work through a simulated hurricane crisis on a SL island, virtual property designed and controlled by faculty and expert designers, appropriately named AgriCulture. This island was created to represent a coastal region of southeast Texas. The island contained geographical and structural representations for urban, suburban, and rural areas. The students had access to the county courthouse, city hall, county extension office, and the local bank to gather information about the community and assess possible risks and potential crises in the area.

Students were asked to complete a weekly journal entry assignment during the entire semester for a total of 14 entries each. No weekly prompts were given. Instead, students were given general directions at the beginning of the semester. The expectation was to write in an online journal, reflecting on the course and other relevant readings. Students were encouraged to also write about experiences in the SL simulation. Although they were not prompted to do so in any specific journal entry, 14 of the 16 students discussed the SL simulation in their journals on at least three occasions during the semester.

Methods

Population

The population for this qualitative study was graduate students enrolled in *Risk & Crisis Communications in Agriculture and Natural Resources* at Texas Tech University during the fall 2010 semester ($N = 16$). This is a graduate-level course designed for the master's level but is open to doctoral students. The course is designed for both resident and asynchronous distance student enrollment. It is taught annually as a three-hour, once-a-week course period during the 15-week fall term. In the fall 2010, the students enrolled in this course included 12 females and four males, 11 resident students and five distance students, and 15 master's students and one doctoral student. Majors of the students in the course included nine students in agricultural communications, five in agricultural education, one in mass communications, and one in interdisciplinary studies.

Procedures

Students were asked to write in their journal each week of the semester for a total of 14 journal entries for each student; however, some students wrote less and some more with the number of journal entries per student ranging from seven to 19. The researchers examined the journals entries, a total of 199 entries, for discussion of the SL simulation. Fourteen of the students discussed the SL simulation at least once during the semester with the number of journal entries discussing SL per student ranging from three to 12. Any entries that mentioned Second Life, AgriCulture Island, or a specific activity that occurred during the simulation in SL where included in the analysis. Based on these parameters, the researchers used 91 of the students' journal entries for analysis. Over the duration of the course, two students chose not to discuss the SL simulation in their reflective journals.

The journal entries were organized by student, and each student was assigned a code for confidentiality. The code included descriptors: M = male, F = female; D = distance delivery student, R = resident student; majors (AC = agricultural communications, AE = agricultural education, MC = mass communications, IS = interdisciplinary studies,

and EDD = doctorate of agricultural education); and a unique identifying number.

The research team incorporated independent corroborative techniques to determine interpretations from student reflective journals. The journal entries were analyzed using content analysis, which is “a technique that enables researchers to study human behavior in an indirect way, through an analysis of their communications” (Fraenkel & Wallen, 1999, p. 405). The content analysis process allows researchers to unobtrusively study written documents to provide “a passport to listening to the words of the text, and understanding better the perspective(s) of the producer of these words” (Berg, 2001, p. 242).

Content analysis is a “qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings” (Patton, 2002, p. 453), which requires precise interpreting skills and theme recognition. These skills ensure variations can be “rigidly and consistently applied so that other researchers or readers, looking at the same messages, would obtain the same or comparable results” (Berg, 2001, p. 241).

This study utilized an open coding technique (Strauss, 1987). The reflective journals were read all the way through first to determine the concepts and categories, using words, phrases, sentences, and paragraphs as the units of analysis. The researchers immersed themselves in the student reflective journals to recognize themes (inductive) and used categorical schemes or social and theoretical paradigms for assessment (deductive) as suggested by Abrahamson (1983). The constant comparative method was also utilized for data analysis (Lincoln & Guba, 1985). According to Glaser and Strauss (1999), this method includes four stages: “(1) comparing incidents applicable to each category, (2) integrating categories and their properties, (3) delimiting the theory, and (4) writing the theory” (p. 105).

The reflective journals were coded by two researchers who worked on the Second Life research project. Both researchers were familiar with the class and the materials presented. Although the researchers had personal contact with the students throughout the semester, every effort was made to conceal the identity of the

students by using unique identifying numbers on each journal.

During the first stage of the content analysis, each reflective journal was read and highlighted individually by three researchers to determine initial categories or themes. Further, inter-rater reliability (Ary, Jacobs, Razavieh, & Sorensen, 2006) was established in stage two by comparing individual categories and reconciling differences through consensus. Additionally, the instructor for the course conducted a two-hour “debriefing” with students at the conclusion of the course. Field notes from the debriefing were collected by the researchers (designated DB in the coding) and compared to themes that emerged from the reflective journals. Triangulation of the journals and debriefing notes were used to enhance credibility as noted by Lichtman (2006). Theoretical triangulation as well as a thick description of the findings using selected quotes from the students’ journals provided a framework for the narrative.

In the *Handbook of Qualitative Research*, Hodder (1994) discussed that documents, such as the student reflective journals analyzed in this study, require contextualized interpretation. “Somehow it is assumed that words get us closer to minds. But...meaning does not reside in a text but in the writing and reading of it” (Hodder, 1994, p. 394). Hodder also discussed using theoretical or social criteria for analysis:

The material culture may not be able directly to ‘speak back,’ but if appropriate procedures are followed there is room for the data and for different levels of theory to confront interpretations. The interpreter learns from the experience of material remains—the data and the interpreter bring each other into existence in dialectical fashion. The interpretations can be confirmed or made more or less plausible than others using a fairly standard range of internal and external. (social criteria; p. 401)

Because the researchers cannot separate the study from its context, they will provide descriptive examples so readers can draw inferences of transferability. An audit trail consisting of initial data analysis, a compilation of units, and a coded writing sample were kept by each investigator to ensure dependability and conformability (Lincoln & Guba, 1985).

Results/Findings

Due to the experiential learning aspects of the SL simulation component of the course, the researchers chose to focus on the analysis of journal entries discussing the SL simulation in order to understand the students' perceptions of the SL simulation. Upon analysis of the Second Life-related journal entries, six main themes emerged. Themes included simulation context, anxiety, capabilities, inabilities, Aha! moments, and suggestions for future simulations.

Simulation Context

When describing the scene, one student (16FR-AC) said, "AgriCulture is a very interesting island. It has a lot of different components and I like how educational it is, the filing cabinets full of information and the paintings with disaster pictures have both caught my attention." After doing some research on the island and assessing possible risks, another student (12FR-AC) wrote:

It was kind of neat reading about the town, where it was located. I decided to do more digging of risks off the island. I looked quite a bit at the town website and discovered there was a nuclear power plant close enough to be considered a danger. How terrible would it be if something happened there? It could very well be a huge threat to agriculture as well...Other than that, it's kind of cool and challenging to figure out this virtual town!

Other students (4FR-AC, 11FD-IS) also made mention of the AgriCulture island environment and the resources available on the island. Some of the students (1FR-AC, 5FR-AC, 8MR-MC, 14FR-AC, 16FR-AC) evaluated the island, looking for the possible crisis situations. One student (8MR-MC) made this assessment: "...one potential hazard I see is the power box near the water plant indicates the power source for the island is underground. Another observation is that both bridges on the island are in depressed areas." Another student (14FR-AC) discussed how availability of resources would affect the residents during the crisis:

I noticed that All-Mart only has 2 First-Aid kits and very little options for food purchase. If crisis struck, the town would be in trouble in terms of the purchase of needed food and supplies. I also noticed only one ambulance and fire truck.

Anxiety

Students in the course also voiced their anxiety about SL and the simulation throughout their student journals, especially in their first journals before beginning the simulation (1FR-AC, 4FR-AC, 6MD-AC, 9FD-AE, 10FD-AE, 11FD-IS, 12FR-AC, 13FR-AC, 14FR-AC, 16FR-AC). Students discussed having mixed feelings, or being apprehensive, skeptical, or unsure about SL. One student (1FR-AC; DB) stated, "As for Second Life, I'm not quite sure how I feel about it yet. I am excited to be a part of the study of this program, but the idea behind Second Life kind of creeps me out!" Sources of anxiety ranged from unfamiliarity with SL in general (6MD-AC, 12FR-AC, 13FR-AC) to interactions and communication with others in SL (4FR-AC, 14FR-AC) to the crisis simulation and assignments that they would face (11FD-IS, 16FR-AC). Students' comfort level with using technology in general shined through in their anxiety. One student (10FD-AE) commented, "Second Life...Whoa! This is not what I expected to participate in. Virtual gaming or social interaction??? It's going to take me a while to get use to this all." Another (9FD-AE) stated,

As for Second Life...not really impressed yet. Initially, I blamed it on being old and not wanting to see the value of a video game for class...but now that my computer has apparently decided that it doesn't like it either and I'm downloading the software on my laptop, I'm just annoyed and impatient.

Capabilities

As the semester progressed and students became involved in the simulation, they began to comment in their journals about some of the capabilities that SL provided in furthering their understanding of the content. In general, students discussed that the simulation in SL provided a real-world feel and served as a "great learning tool in crisis management" (14FR-AC; DB) that helped students to feel more prepared

as a crisis communicator and in developing crisis management plans. One student (5FR-AC; DB) commented,

Overall, I believe that the simulation was effective. Although it was not real, it helped with the senses of a true scenario. It gave me an idea of what I would be dealing with, should that occur under my direction...I am walking away from this class far more prepared than I previously was, and part of that is due to SL. Even through the ups and downs of in-life meetings and press conferences, being able to be a part of the mock situation was very educational and has potential to be a great tool for crisis education in the future.

Specifically, many students (5FR-AC, 8MR-MC, 9FD-AE, 11FD-IS, 13FR-AC, 14FR-AC) discussed the benefits of the press conference activity conducted by the students in SL. When journaling about the press conference activity, students made the following comments: "...students had to answer questions without knowing them ahead of time. While it was stressful, at the time, being in the 'hot seat' was a valuable experience, especially when follow up questions were asked" (13FR-AC; DB), and "I enjoyed answering the tough questions and seeing what it was like to take them from the press...I felt like this experience was worthwhile" (14FR-AC; DB).

One final area discussed by students was the real-world feel that SL provided. A journal entry by one student (12FR-AC) said, "WOW. Second Life just went up significantly in my book. The water damage is unreal. Considering I have never been remotely close to anything like a flood or hurricane, I can't believe all of the damage it has done." While other students wrote the following in their journals: "I thought the simulation of the hurricane in Second Life was executed great by the designers. I was impressed with the graphics and all the changes that were made" (14FR-AC), and "The developers have done a great job of simulating a real life experience" (16FR-AC).

Inabilities

Students also recognized the inabilities of using the SL technology, including both technology-based barriers and other personal

barriers. One student (8MR-MC) summed it up by stating: "Listening to other students, it seems there were quite a few misunderstanding about what they were looking for, [technological] problems, and basic issues with the [Second Life] program." Students discussed that technological problems, as with any course incorporating technology, were a barrier to participation in SL activities. Students reported technological problems such as incompatible headsets (4FR-AC, 16FR-AC), computers freezing or not meeting the system requirements (5FR-AC, 6MD-AC, 9FD-AE, 10FD-AE), and an inability to log on due to Internet or network issues (1FR-AC, 16FR-AC). One student (9FD-AE) noted several difficulties throughout the semester: "I mentioned previously having problems with Second Life. My PC stopped running it suddenly so I loaded it on the laptop where the anti-virus moved into action and caught 'something'" and "For the practice session, I actually left work early only to be unable to login (after several successful logins in the previous days). I've had to load and reload the software." Another student (10FD-AE) commented, "Slowly learning to use SL but it freezes up the computer all the time...I wish I had better Internet service to explore the simulation with better quality."

Besides technology issues, students faced other barriers to using SL. Although the simulation provided a real-world feel, many students believed it could not replace real-life interactions. One student (15FR-EDD; DB) stated,

As I strolled through AgriCulture yesterday to see what, if anything had changed, I was struck by the apathy I felt, knowing the crisis had come and gone, and we had survived, relatively unscathed...It occurred to me, however, that in real life, I would feel none of that sense of relief, as clean-up would not end with the press conference, but would merely begin.

When comparing SL with face-to-face interactions, one student (11FD-IS) noted that in the simulation, there was a "lack of non-verbal cues, which make up 90 percent of communication," and "The simulation has a place in learning, but it cannot replace face-to-face communication." Another student (1FR-

AC) wrote, “I found it difficult to stay focused on the meeting without being able to be face-to-face with the others in the meeting, especially my team.”

One final barrier noted by students was the basic issues that students had with the SL program. Students expressed their frustration with their inability to complete tasks in SL: “I’ve figured out how to run, walk, and fly in SL, but I spent over an hour trying to figure out how to change my outfit with no success” (5FR-AC) and “After following the directions, the shirt never showed up on my avatar. More than once, I tried to put the shirt on, and the simulation would not allow me to do that” (14FR-AC). Another student (11FD-IS) wrote, “I’m finding this experience more and more frustrating. I can’t get into AgriCulture land even though I was sent the landmark. I’m now wondering if I’m going to be able to do the simulation. AAGGGHH!!”

Aha! Moments

Throughout the process of working through the crisis simulation, many students had Aha! moments, in which they came to realize the point of simulation in helping them understand the roles of a crisis communication in agriculture. One student (15FR-EDD) wrote, “This would be a difficult job, as it seems you are constantly in a state of heightened awareness. Where do you find time to sleep, eat, leave the office even?” Another student (1FR-AC) discussed that SL “is a really good way to show that when a disaster hits it can cause many different crises...Some of the things that are happening on the island are crises that I would never have thought would have occurred.” While another student (3FR-AC; DB) thought the simulation “really broadened my perspective and forced me to think about the situation more realistically...It forced me to evaluate the crisis from every angle—the impact on people, animals/livestock, the crops, and the environment.”

When evaluating the things she had been through with the simulation, one student (16FR-AC; DB) summed up her experience this way,

I think I am beginning to understand the importance of using Second Life in this class. It is becoming more evident to me that the questions, concerns, and anxieties I have

concerning Second Life are similar to those I would have if I was dealing with an actual crisis. With this, we are concerned with the infested water, commodity markets, and the health and safety of the inhabitants of the island. I read on Twitter that there was a mandatory evacuation of AgriCulture and was later confused when I could not get on to the island. I thought something was wrong until I realized that I was an evacuee.

The SL crisis simulation helped students think about the implications that a crisis would have in a similar real-life situation and become more prepared as a crisis communicator, which this student (11FD-IS) expressed in her journal,

I didn’t expect to feel this way, but I can now say that I’m looking forward to the next phase to see how well I can implement the knowledge I’ve gained so that I cannot just survive the crisis, but successfully manage it.

Suggestions for Future Simulations

At the end of the semester, students were able to reflect back on their experiences in SL and give suggestions for what should be done differently in future simulations. In general, students suggested having more clear explanations and/or expectations of SL activities and incorporating more SL activities into the course. One student (13FR-AC; DB) stated it this way,

Second Life should definitely remain part of the course, and should be a larger part. I think if expectations are more clearly defined and the Second Life experience is part of the course earlier, the benefits in future semesters will be even greater.

Other students wrote: “The context of the meeting was essential and missing for most of us. It would also be helpful to discuss the next simulation earlier than the class immediately prior” (9FD-AE; DB) and

I do think the actual ‘goal’ was not clear...I too misunderstood the ‘nature’ of the meeting; I was not aware that I was the ‘newby’ in town. I went into the meeting

thinking everyone there was on the same page (11FD-IS; DB).

Others students discussed incorporating SL activities as part of the students' class grade and requiring students to spend a certain amount of time in SL. One student (1FR-AC; DB) stated,

If I could have done something differently, this would have been it. Since it wasn't technically for a grade, I didn't do as much as I could or should have because I had other things going on this semester that I focused much of my time on... A suggestion I have would be to require 20 min. or so a week to get familiar with SL. I feel that this would make the simulations go by more smoothly, and it would help people to gain a better understanding of the purpose of SL.

Another student (9FD-AE) wrote, "For the next class, I'd recommend a 'mandatory' simulation [or] orientation to shape expectations from the beginning." A few other minor changes to the logistics of SL were also mentioned as suggestions; however, these were the most dominant suggestions from the students' journals.

Conclusions and Recommendations

The adoption of new technologies in the agricultural classroom requires careful thought and consideration to avoid disruption of the learning process. Based on the findings, one can conclude that many students involved in the course under study found SL to be a valuable educational tool and an effective way to teach crisis communications, which was also noted by Jarmon et al. (2009). The intricate world of crises and crisis communications (Seeger, 2006) makes creating a crisis experiential learning opportunity outside of a simulation difficult. Unlike many experiential learning activities, a crisis cannot be created without causing substantial damage to an industry and its reputation. Because students applied the knowledge and skills they learned in class to a project-based experiential learning environment (Jarmon et al., 2009), they had a deeper understanding of crisis communications. Activities, such as the live press conference in SL, provided students the opportunity to apply

the knowledge they learned during lecture to a real-world exercise thereby creating experiential learning. It was concluded that students struggled with how to address the situational problems presented in SL as Dewey (1933) and Joplin (1981) articulated as being part of the experiential learning process.

While new tools are needed to meet the needs of new generations (Solomon & Schrum, 2007), educators need to use care when selecting and employing new technologies and ensure such new technologies add to the learning experience. Students experienced anxiety and nervousness much like a real crisis situation. However, some of the anxiety resulted from using an unfamiliar program. Therefore, more student support and technology orientation throughout the experience is needed to overcome the anxiety of using SL as an educational tool. SL orientation is needed to address students' insecurities with using the highly interactive program. Technical issues can be disruptive and must be handled carefully to avoid interruption in the experiential learning process. Further, high speed Internet access and computers with sufficient memory and attributes are needed for students to use SL efficiently and effectively.

Davis (2009) suggested that Web 2.0 technologies can boost student motivation, which was evidenced in the SL crisis simulation. Students connected with the AgriCulture Island community in SL and were anxious to find out how it survived the hurricane. When the students saw the water damage, they immediately showed concern for the community revealing that the simulation accomplished the goal of immersion and the forming of "personal relationship[s]" (Joplin, 1981, p. 17). SL provided students with an emotional connection to the crisis that analyzing case studies cannot provide. It is believed that SL activities encouraged students to make connections between personal, professional, and educational experiences— noted by Kolb (1984) as being a critical part of the experiential learning process. SL provides a platform that when combined with application of knowledge creates an effective experiential learning environment, as discussed by Jarmon et al. (2009). Comments regarding role playing revealed that students felt the simulation had a sense of reality. Students processed their emotions, feelings, observations, thoughts, and

experience through reflective journaling, which was identified by Boud et al. (1985a) as an important piece in the experiential learning process.

Students revealed that the experience facilitated through SL was perceived as direct, concrete, and purposeful, which Townsend and Briers (1990) reported as being important in experiential learning. The use of reflective journals throughout the experience greatly enhanced the experiential learning process by encouraging the students to work through and re-evaluate the experience as outlined by Boud et al. (1985a). Through their time spent reflecting in their journals, students were able to put it altogether, as emphasized in the study by Lamm et al. (2011), and realized the point of simulation through Aha! moments. This study revealed that use of SL is yet another option for helping students make connections between the agriculture experience and real-life (Mabie & Baker, 1996).

Implications for research and practice were revealed throughout the study. Based upon the students' recommendations for practice, more opportunities to interact with each other, the simulation, and community members need to be included, as well as more mandatory meetings in-world. Educators should make SL an important part of the grade and provide students more opportunities to participate in SL activities. Additionally, clearer explanations and expectations of SL would help the students better understand their roles as crisis communicators and citizens of AgriCulture Island. Students need more training and

orientation to SL before they are expected to analyze the crisis situation. Therefore, it is recommended that sufficient training be provided for students expected to utilize SL as part of their education. SL should not be used as a standalone delivery method but rather as a tool to allow experiential learning for specific instructional needs. Due to the technical requirements and learning curve required to use the technology, SL is not recommended as a replacement of other learning tools but rather as a tool that can meet the needs of experiential learning when real-life options are not viable.

The researchers recommend further analysis of students' perceived educational experience using SL as a supplement in education. Students' reflective journals revealed an anxiety of using SL in the beginning and then an adoption of the platform later in the semester. Therefore, a future study needs to be conducted comparing students' perceived educational experience using SL and not using SL as a supplement in crisis communications education. A similar SL simulation could be used in another area of education and compared to the results of this study. More research needs to be conducted on the effectiveness of using SL as an educational supplement in crisis communications education based upon student perceptions. Additionally, further documentation of methods that can be used to assess SL within the agricultural education process needs to be investigated. Documentation of best practices and uses for SL as an educational tool within agriculture could allow more efficient and effective adoption as an educational tool.

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HOLLI R. LEGGETTE is a doctoral student in Agricultural Communications in the Department of Agricultural Leadership, Education, & Communications at Texas A&M University, 600 John Kimbrough Boulevard, College Station, TX 77843–2116, holli.leggette@agnet.tamu.edu

CHRISTY WITT is a recent graduate of Agricultural Education in the Department of Agricultural Education & Communications at Texas Tech University, Box 42131, Lubbock, TX 79409–2131, christy.witt@ttu.edu

KIM E. DOOLEY is a Professor and Associate Dean of Academic Operations for the College of Agriculture and Life Sciences at Texas A&M University, 600 John Kimbrough Boulevard, College Station, TX 77843–2116, k-dooley@tamu.edu

TRACY RUTHERFORD is an Associate Professor and Associate Department Head for Undergraduate Programs in the Department of Agricultural Leadership, Education, & Communications at Texas A&M University, 600 John Kimbrough Boulevard, College Station, TX 77843–2116, rutherford@tamu.edu

THERESA PESL MURPHREY is an Assistant Professor in the Department of Agricultural Leadership, Education, & Communications at Texas A&M University, 600 John Kimbrough Boulevard, College Station, TX 77843-2116, t-murphrey@tamu.edu

DAVID DOERFERT is a Professor of Agricultural Communications and Associate Chair in the Department of Agricultural Education & Communications at Texas Tech University, Box 42131, Lubbock, TX 79409-2131, david.doerfert@ttu.edu

LESLIE EDGAR is an Associate Professor in the Department of Agricultural & Extension Education at the University of Arkansas, 205 Agriculture Building, Fayetteville, AR 72701, ledgar@uark.edu