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A VIRTUAL WORLD CASE STUDY – QUALITY, SOCIAL JUSTICE, AND ACCOUNTABILITY IN A SIMULATION-BASED EDUCATIONAL ENVIRONMENT

Abstract

This paper examines the application of quality, social justice/equality and accountability/responsibility of teaching and learning in an online educational environment. Components addressed in this paper include a brief inspection of online teaching and learning methods, qualities of online teaching and learning, and the responsibility of teaching and learning with virtual simulations. An appraisal of possible disparity between technology applications by institutes of higher learning and how to address concerns of inequality, in regards to utilization of distance education opportunities, will be discussed. Addressing issues of equality, responsibility and lifelong learning via distance education will be mentioned. Examples of one approach to address these concerns from a case study perspective will be provided. The approach will demonstrate simulation-based learning for a general education course using the virtual world known as Second Life.

Keywords: technology, simulation-based learning, online education, virtual world

Introduction

The hallmarks of any educational system are or should be quality, social justice, and accountability (Rossouw, 2015). These tenets have myriad meanings and applications across the various institutions and methods of teaching and learning. Determining the degree to which an educational system has achieved adequate or exemplary quality, social justice, and accountability may be from the success of her graduates, reviews from peer organizations, recognition from accrediting agencies, contributions to the body of knowledge, awards for academic, philanthropic, humanitarian, scientific, or technological advances. In regards to technology, new delivery systems of education have emerged, e.g. simulation-based learning, virtual reality, online compared to traditional classroom environments, blended course designs, etc., regardless of the mode of delivery, the ability to maintain the same degree of teaching excellence is requisite.

Online Learning

Online or distance learning provides students and educators from around the world unprecedented access to knowledge and information (UNESCO, 2015). Thus universal access to high quality education is the key to building peace, sustainable social and economic development, and intercultural dialogue for the benefit of all (UNESCO, 2015; Rossouw, 2015). This report examines a virtual world environment (VW), defined as existing where a user/student is logged on to a computer, populated by many users simultaneously, provides the impression of three dimensional space, avatars represent users in-(virtual) world, and with the capability

of communicating with other users via a chat function (Inman, Wright & Hartman, 2010). The example of a VW for this discussion will be Second Life (Linden Labs, 2003). Second Life allows students to design the appearance of their avatar and engage in activities that might not otherwise be possible in the real world due to physical conditions, living location, comfort level interacting with peers in face-to-face situations, as well as opportunities to meet individuals from other cultures and around the world (Ahern & Wink, 2010; Adbulova, Krylova & Minyurova, 2014).

According to Atchley, Wingenbach and Akers (2013) there were approximately 3.9 million enrollments in online courses in the United States in 2008 (Allen & Seaman, 2008). Nagel (2014) reports that students enrolled in exclusively online courses number one in ten and when combined with those taking part of their course load online equaling over 25 percent of student enrollments in the USA in 2012. Analysis conducted to compare student performance, course completion, and retention rates according to discipline found that more students received letter grades of A in online compared to traditional classroom style, students in online courses had the lowest course completion rates, and retention of students based on course discipline found finance the lowest and reading the highest retention rate among online delivery (Atchley, Wingenbach & Akers, 2013). When comparing traditional classroom instruction with online methods, the desire to create new learning opportunities, new approaches to skills development, and new ways of integrated communication, collaboration and information exchange are made possible within the digital framework of VW (Heid & Kretschmer, 2009). The transposition of role play, case-based learning, scenario-based learning, learning through storytelling, social learning, learning of languages, cultures, models, and feedback is possible within the simulation-based platform mimicking those practices within the traditional classroom (Bai, Lavin & Duncan, 2012). Online classroom management skills may involve slightly more attention to presumed or common knowledge. A list of supportive practices for online students includes (Houle, 2014):

- Be Responsive – return emails promptly, announce scheduled response times;
- Be Accessible – make adjustments in office hours for time zone differences;
- Be Friendly – be open and understanding in voice;
- Be Inclusive – address the online student equally with face to face students;
- Be able to familiarize them with the unique elements of the campus;
- Facilitate Collaboration – allow for group interaction;
- Be Accommodating – should students visit the campus be prepared to make their visit meaningful and memorable;
- Connect them with the institution – help provide a sense of belonging;
- Make Connections – other students, mentors, advisors, etc.;
- Be Welcoming – establish an orientation for your online students, virtual tour of campus, the school library, contacts such as your office staff and academic advising.

Second Life

With the foregoing tenets in mind Second Life (SL) may create additional barriers to students' online learning/learning experience. Barriers to successful learning in SL are attributed to both objective issues, such as the complexity of

accessing and learning the navigation capabilities, technical difficulties in computer-processor interface, time-consuming, and subjective, not what the students were expecting (SL did not live up to preconceived notions), boring, frustrating, tedious, and overwhelming (Sanchez, 2009). Other researchers have found that SL did not contribute to hypothesized meaningful growth and realization of goal-oriented, collaborative, conversational, and immersive characteristics (Keskitalo, Pyykkö & Ruokamo, 2011). Proponents for SL in education suggest that the SL experience can facilitate innovations in pedagogy through:

- Extended or rich interactions – social, human-object, human-artefact;
- Visualization and contextualization – content not accessible by other means;
- Exposure to authentic content and culture;
- Individual and collective identity play;
- Immersion – affective, empathic, and motivational aspects of the virtual 3D embodiment;
- Simulation – manipulating real world situations too costly or dangerous to reproduce by other methods;
- Community presence – promotes a sense of belonging and purpose that coheres around groups, subcultures, and geography;
- Content production-opportunities for creation and ownership of learning (Warburton, 2009).

While these facets of SL teaching potentiate the stage for improved learning, the learner traits must be considered for meaningful interactions and knowledge retention to occur. Specific characteristics of SL learning environments for student success mandate cognizance of learners' needs, cultures, prior learning, previous experience and personal circumstances. Also there is the pre-requisite ability for instructors to learn *from* SL as well as provide for students to learn *within* SL (Bell, 2009). Use of SL across multiple disciplines has been explored with positive outcomes in the fields of health, medicine, nursing, education, aviation, criminal justice, creative writing, literature, foreign language, sociology, anthropology, and industrial safety management (Hughes & Oliver, 2010; Mahon, Bryant, Brown & Kim, 2010).

Practice-based learning is especially important for fields of study where physical techniques are critical elements of the curriculum, e.g., medicine, nursing, emergency response professionals. Second Life can intertwine comprehensive learning materials with effective pedagogy for simulated clinical experience in an immersive social environment (Rogers, 2011). Technical skill simulation, while not replacing the need for real-world practice, can allow for team-based exchanges and appropriate application in the instructor provided scenarios. Similarly, work by Loke, Blyth and Swan (2012) found that dispositional behaviors could be evaluated in scenario-based activities by measuring the frequency with which students recognized or omitted an opportunity to engage in a particular dispositional behavior, i.e., compassion. Typical of professional practice in medicine is the team or collaborative system for patient-centered care. Di Blas and Paolini (2012) discovered that multi-user virtual environments (MUVEs), like SL, prove highly effective in fostering transversal skills, especially collaboration (both locally and remotely). They conclude the following seven MUVEs lessons for fostering collaboration:

Lesson 1 Provide a common, overarching goal perceived as meaningful;
Lesson 2 Split activities into doable tasks;

Lesson 3   Link tasks together;
Lesson 4   Support the expression of diverse talents;
Lesson 5   Provide (mandate) collaborative "sparks";
Lesson 6   Deal with multi-faceted rather than "square" topics; and
Lesson 7   Give space to the teachers' contribution (Di Blas & Paolini, 2012).

Collaboration begins with interaction and interaction with setting the stage, e.g., social "lounge", cultural orientation, technology integration with the outcome evaluation revealing cultural identity, evidence of collaborative process and affect (Yang, Huiju, Cen & Huang, 2014). Additional qualities identified with improved learning using SL delivery system hinge upon the degree to which the student can identify with their selected avatar, how confident and proficient they feel with learning by teaching and how they receive recursive feedback (Okita, Turkay, Kim & Murai, 2013). Ultimately, all learning rests within the teacher-student connection, however well that is forged, along with the accountability and responsibility for the efficient exchanges experienced therein (Kuhlenschmidt & Kacer, 2010).

Case Study

One course from the general education curriculum (Personal Health – PH) and one from within the Health Studies degree program (Health Program Planning and Evaluation – HPPE) were diagnosed for online delivery. The general education course, PH, had previously been instructed as a strictly face to face course while HPPE was created as an online course. Faculty met with instructional technology developers to consider possibilities for creating rich online learning environments incorporating similar activities from the face to face for PH and for enhancing the online HPPE course while simultaneously achieving course objectives using SL.

Personal Health

Demographics for PH are typically first time freshman students with a mean age of 19 years and slightly more female than male students. Class enrollment ranges from 25-35 students. The course topics address the history of health and welfare, dimensions of wellness, stress, psychological health, fitness and exercise, alcohol, drug, and tobacco information, cardiovascular health, nutrition, weight management, the immune system, reproductive health, sexually transmitted infections, environmental health, personal safety, aging, and death and dying topics. When teaching the face to face class various in-class activities were utilized to capture students attention and prevent the course from becoming monotonous or boring, as little if any learning takes place when students are bored or out of focus.

To prevent an inattentive brain, a VW was created in SL that simulated a typical mid-western USA city, e.g., medical clinic, gas station, car dealership, health food store, art gallery, senior assisted living facility, factory, residential, Public Park, and fast-food establishments. Various tasks were given to the students to navigate around the virtual town, traversing from medical clinic to fast food to residential areas while avoiding being hit by traffic (run over by a bus). Students were provided opportunities to be creative by taking a taxi or bus to different locations, renting a scooter to explore the virtual town, or walking. Instructions on how to fly were not included in the directions for completing assigned tasks but if they read carefully they could discover how this option was possible in a VW.

The original vision impairment exercise deployed in the face to face class utilized cardboard eyewear with certain areas of vision restricted either by a solid piece of material or obscured with clouded plastic, simulating various common types of age-related vision loss. When adapting this exercise for the online environment, the first concept was to simply create a downloadable pdf version of the cardboard eyewear, and instruct the students to print and cut out each version of the eyewear used in the face to face equivalent. A possible liability issue was identified as students in the face to face exercise are assisted by another student (non-visually impaired), preventing the temporarily vision impaired student from injury while negotiating the real world classroom. However, in the first online variant, no such guarantees can be assumed. What would be the institution's responsibility if an online student, while wearing visually restrictive eyewear as part of an assignment, steps out into traffic and is injured or killed? A solution was identified to move this activity into a virtual world simulation. The student may still maneuver their avatar into virtual traffic, but no one is injured, not even the avatar.

The objectives of the assignment were to introduce students to different physical (mobility and vision) impairments, providing a virtual experience that everyone in the class could undertake in a consistent manner. To complicate these excursions various impairments were embedded in the simulation-use of a wheelchair for the mobility impairment and for vision disabilities those commonly associated with aging, such as simulations of macular degeneration, various retinopathies, and cataracts. Students commented that a cataract was the worst sensation of all. Comments included statements like "I wanted to clean the computer screen or my glasses to remove the cloudiness from my field of view". Students were asked to travel up a short set of stairs using a virtual wheelchair, a near impossible task in the real world. This was designed as an exercise in frustration, yet most students assumed it was possible or it would not have been assigned. In frustration one student asked, "Is this even possible?" The response was in the form of a question, asking the student, "Would you be able to climb a few stairs in a wheelchair in 'real life'?" Students felt that the experiences within SL provided them a deeper understanding of what these aging situations "felt" like and increased their empathy for individuals afflicted with mobility or vision impairments. The overarching goal of this simulation-based learning was for students to examine their behavior and attitudes for increased empathy towards others and how to investigate strategies to achieve life-long positive health outcomes.

Health Program Planning and Evaluation

Demographics for this course include junior or senior level students prior to their internship component of a Health Studies degree. Age ranges are usually 20-22 with more female than male enrollments. This online course was designed to empower students to work in groups as well as individually to accomplish course objectives. Assignments included such tasks as assessing the virtual community for positive and negative health risks. Their navigation was not hindered by any disability or impairment but they were required to use critical thinking evaluating advertisements in the health food store and healthy food choices from the fast food restaurant and convenience store. They were also to use their text content to evaluate the needs of the community with current epidemiologic data. Students were instructed to select a community health service they would like to explore in more detail and

provide that service to the SL simulation. Students created pdf files of posters that could be mounted in the art gallery for the class to view announcing the health service they were going to provide. This activity created the ability to synchronously compare and contrast peer work, an ability that would not have been as evident within the typical classroom environment. This project developed over the entire course and culminated with a short PowerPoint presentation delivered within the art gallery. This course also provided the instructor with a formative assessment opportunity to determine the depth of knowledge students represented by their performance with food purchases, environmental surveillance, community needs, ability to contribute to group assignments, etc. The goal of this exercise was to have students apply the course text to a typical setting while learning via simulation within SL. The use of a virtual world simulation places each student on near equal status as social/racial/economic diversity are reduced or removed in entirety.

Conclusion

One of the best examples for how education can be designated as of substantial quality, upholding social justice, and be accountable for the trust imbued is through the attributes, capabilities and motivations of her graduates. "These are some of the capabilities that should be identified as part of our graduate attributes and woven into the fabric of our courses in the activity design. We need to have transformation at the core of what we do as teachers, if it is all about the students" (Carrington, 2015). Among the plethora of teaching modalities, mediums, curricula, and frameworks there is a need to look across disciplines and cultures, to explore deeply, for methods that connect teacher and learner. The optimization of the educational experience, whether online or face to face, is an opportunity for all to grow, to advance in embracing lifelong learning. Where that learning is scrutinized by both internal and external validating professionals or agencies for adherence to published objectives, while instilling that somewhat nebulous albeit altruistic quality of life-long learning is the epitome of quality, social justice, and accountability in education (Brandenburg & Wilson, 2013; Rossouw, 2015).

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