

Teacher education through online 3D virtual environments

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Theme 4. Teacher Education: A Futures Perspective

Abstract

Students are engaging with online 3D virtual environments as creative social spaces but virtual environments are foreign to many educators. Second Life is a popular virtual environment and is being evaluated for its potential in facilitating online education. This paper describes the range of educational applications being explored within the Second Life environment and highlights the issues involved in the development and implementation of a virtual environment at Griffith University. Presented are findings of a trial of the environment comparing the effectiveness of the Second Life environment with the BlackBoard environment to support small group discussions. Findings suggest a substantial difference in participant discussion during online tutorials between the two environments. While individual responses were less considered and detailed from students using Second Life than those in using BlackBoard, the interplay of ideas and collaborative contribution to discussion threads resulted in an overall increase in the depth and breadth of discussions using Second Life. Both prompted and unprompted contribution to discussion were greater in the Second Life group and this was attributed to the sense of physical presence providing pressure on participants to respond to points raised in discussions.

Keyword: innovation, education, virtual environments, second life

Introduction

Students are engaging with online 3D virtual environments as creative social spaces (Dicky, 2005) but virtual environments are foreign to many educators. Second Life is a popular virtual environment and is being evaluated for its potential in facilitating online education (Dede et al., 2005). This paper describes the range of the educational applications being explored within the Second Life environment and highlights the issues involved in the development and implementation of a virtual environment for Griffith University. The findings of a trial of the environment are presented comparing the effectiveness of the Second Life environment with the BlackBoard environment to support small group discussions.

Second Life

Second Life is one of several dozen virtual worlds (SLED, 2008a) currently available for use or under development. As a Virtual Learning Environment (VLE), Second Life is being used for a wide variety of educational applications. Current categories include Distance and Flexible Education; Presentations, Panels and Discussions; Training and Skills Development; Self-paced Tutorials; Displays and Exhibits; Immersive Exhibits; Roleplays and Simulations; Data Visualisations and Simulations; Libraries, Art Galleries and Museums; Historical Re-creations and Re-enactments, Living and Immersive Archeology; Computer Programming; Artificial Intelligence Projects; Artificial Life Projects; Multimedia and Games Design; Art and Music Projects; Literature, Composition and Creative Writing; Theatre and Performance Art; Photostories and Photo Scenarios; Machinima; Treasure Hunts and Quests; Virtual Tourism, Cultural Immersion and Cultural Exchange; Language Teaching and Practice, and Language Immersion; Social Science and Anthropological Research; Awareness/Consciousness Raising and Fund Raising; Support and Opportunities for People with Disabilities; Politics,

Governance, Civics and Legal Practice; Business, Commerce, Financial Practice and Modelling; Real Estate Practice; Product Design, Prototyping, User-testing and Market Research; Interior Design; Architectural Design and Modelling; and Urban Planning and Design (SLED, 2008b).

GUSL

Development of the Griffith University Second Life (GUSL) environment was focused on supporting a range of educational activities. It was comprised of a virtual island containing lecture facilities and tutorial spaces (Figures 1, 2 and 3). While the Griffith University Second Life (GUSL) environment contained other facilities such as experimental zones, social spaces and a database of links to other Second Life educational locations, this paper focuses on the use of the tutorial spaces in comparison with a traditional online tutorial environment. The GUSL environment was developed with the support of an eLearning Fellowship in Semester 1, 2007 and used for courses in Semester 2, 2007.



Figure 1 GUSL



Figure 2 GUSL Presentation Space



Figure 3 GUSL Tutorial Space

The development of the GUSL environment was focused on addressing shortcomings in traditional online courses. In particular, support for small group discussion was addressed through the construction of specific environments that would facilitate these discussions. In order to focus participation within the environment on discussions, minimal use was made of traditional building structures beyond that necessary to assist in identifying locations and bounding the purpose of specific locations such as a discussion spaces, presentation spaces, recreation spaces or resource spaces. To provide these boundaries, natural formations such as ridges, plateaus, and canyons were used with bush land foliage providing screens between locations. With the predominant navigation mode within Second Life being to fly between locations, this provided an effective means of participant transition between locations and in establishing the form of interaction that would occur in various locations. It was found however that during initial orientation with the GUSL environment, participants needed additional assistance in learning the location and purpose of each location. This was facilitated by prominent signage and a system of teleportation booths that enabled participants to select from a list of locations and instantaneously move to that location. In addition, participants were provided with Second Life Location Based Links (SLURL) which functioned as a website URL, provided in their course notes they allowed participants to enter the GUSL environment at specified locations.

In order to maximise tutorial time on learning activities directly related to their course, participants were required to acquire a Second Life account, construct an avatar (3D representation of the participant), name it (for many the most challenging aspect), and complete an automated introductory tutorial, before commencing the first course tutorial. This minimised technical disruptions during the course but as the Second Life environment is undergoing continuous development, did not entirely eliminate technical problems. These were mitigated to some extent by pre tutorial testing sessions, preparation of alternative avatars, and establishment of alternative meeting locations. Alternative communication methods were also established to assist in resolving technical problems that included email and Skype, and if all else failed, transcripts of sessions were available to participants. During the course of twelve sessions involving eight participants and a tutor, 108 individual opportunities for technical disruptions, participants were not able to participate twice and a further three disruptions occasioned a delay while technical issues were resolved.

Study

In this study, the Second Life Virtual Learning Environment (VLE) was compared with a Learning Management System (LMS), BlackBoard. Two cohorts of a Masters level course on ICT Pedagogical Leadership separately used these in sequential semesters. The environments were used to provide a context for discussion on the pedagogical implications of the environment, and as a tool to facilitate the online course. Action learning was used for both groups and topics, assessment and activities were equivalent. While all participants in the LMS group were familiar with the BlackBoard environment, none of the students in the VLE group had previously used the Second Life VLE before, but all participants in both groups could be described as enthusiastically engaged with possibilities of technology to support teaching and learning. Each group was comprised of eight participants with an equivalent mix of gender, teaching experience, and ICT skill.

During twelve two hour sessions, participants met synchronously in the environment and participated in text based online discussions to support their readings, action learning projects, and assessment tasks. The tutorial sessions were facilitated by a tutor who provided

directed questions to participants to prompt inclusion in discussions, the same tutor was used in both courses. These discussions were recorded, with each contribution identified by the contributor and time stamped. In addition to a post course survey on perceived effectiveness of the environment to support small group online discussion, six elements of online discussions were analysed in the study. The percentage of sessions attended roughly compared participant engagement and acceptance of the environment. Discussion contribution was measured by the number of discrete discussion topics generated during the course by all participants. Discussion sustainment was measured as the average number of characters contributed to a discussion thread by all participants. Discussion inclusion was measured by the mean number of characters contributed by each participants to each discussion thread. The average length of time from when a directed question was put to a participant to when they submitted a response was measured in seconds, and the average length of this response measured in characters (Table 1).

	LMS	VLE
Attendance	75%	88%
Discussion Contribution (discrete discussion threads generated)	64	98
Discussion sustainment (average number of characters contributed to a discussion thread)	87	210
Discussion Inclusion (mean contribution in characters (Standard Deviation))	25 (8)	57 (15)
Average time before response (seconds)	35	8
Average length of response (characters)	139	40

Table 1 Comparison of LMS and VLE

Findings

The study suggests that for participants using the LMS, discussions tended to be shorter but individual contributions were more carefully thought out with a longer preparation time and lengthier responses than with the VLE group. For participants using the VLE, discussions tended to be sustained over a longer period of time but with less consideration given to individual responses in terms of time taken to formulate responses and the length of the response. Overall however, discussions in the VLE group were substantially longer, involved more overall contributions from more participants, and through multiple contributions from participants, sustained discussion longer and generated increased contribution to the discussion.

During discussions, participants in the VLE would generally contribute short responses with an expectation established that participants would contribute to each new point in the discussion thread as it was raised. The sense of physical presence generated by the visual depiction of participant avatars provided pressure on participants to respond to points raised in the discussions. Within the LMS, even when prompted to contribute, conversations would

often continue past the opportune moment for a participant to add their contribution to the flow of discussion. This was exacerbated by the tendency of some participants to spend considerable time developing detailed responses. In contrast, within the VLE visual cues were provided of a participant preparing a response - their avatar (3D representation of self) would appear to be typing. This prompted pauses in discussions while awaiting responses and encouraged responses as all participants were aware if a response was being prepared or not, and felt greater pressure to provide a contribution than those using the LMS chat system.

Overall, the study found a substantial difference in participant discussion during small group tutorials. While individual responses in the Second Life VLE were less considered and detailed than those in the BlackBoardLMS, the interplay of ideas and collaborative contribution to discussion threads resulted in an overall increase in the depth and breadth of discussions in the Second Life VLE. Both prompted and unprompted contribution to discussions were greater in the Second Life VLE group and this was attributed to the visual representations of participants generating a greater sense of presence in the discussion group and increased pressure to contribute to discussions.

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