A Pilot Implementation of an Immersive Online 3D Environment for Collaboration Among Computing Students in a Scottish University

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*"..what is really important about today's massive multiplayer games is the ways in which…**people are creating new ways to build and share knowledge**. They are also forming **new forms of learning communities**. We have much to learn from these games about new ways to socially organize learning in tomorrow's classrooms, libraries, workplaces, and communities."*

Gee, J.P. (2008). Learning Theory, Video Games, and Popular Culture. *Informal Learning and Digital Media pp156-172.*

Phased Approach To The Research

- Phase 1 – Preliminary Survey*
  - UWS students
- **Phase 2 – Pilot Implementation**
  - Technical feasibility and pedagogical value
- Phase 3 – Large-Scale Implementation
  - Substantive empirical study

*Scullion, J., Stansfield, M.H. and Connolly, T.M. (2011). A Survey of Students' Improved Mastery of Game Playing Skills Through Informal Online Game-Based Learning, 5th European Conference on Games-based Learning (ECGBL), 20-21 October 2011, Athens, Greece.

Phase 1 – Preliminary Survey

Student Survey

- Online survey of all UWS students
- 720 responses
- Data gathered:
  - participation in virtual world communities
  - frequency and nature of online communication during game play
  - level of mastery of game play
  - the most effective means of increasing mastery of game play

Phase 1 – Preliminary Survey

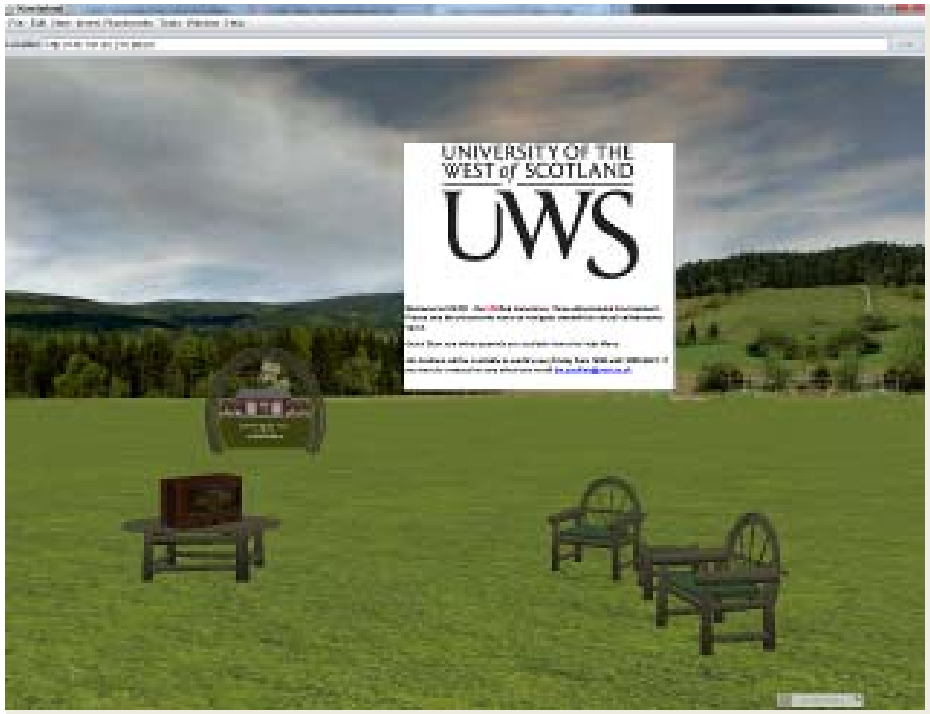
Findings

- Computer games are an important element in the lives of most students – around 8.3 hours per week
- More males (25%) than females (5%) play for 11 or more hours per week
- Differences between curricular areas
- Most (65.5%) communicate online with other participants
- Range of strategies to increase mastery
- Significant relationship between frequency of online communication and level of mastery of game playing skills
- Suggests that online communication and collaboration are used as part of an informal learning process which assists them in increasing their knowledge and expertise in game play.

Phase 2 – Pilot Implementation

Pilot Empirical Study

- Immersive online 3D Environment – UNITE
- Created using Open Wonderland open source java-based toolkit
- Hosted on server provided by UWS (Windows Server 2008 r2)
- Virtual world created specifically for online communication and collaboration
- Participants were provided with a range of in-world tools and facilities:
  - synchronous text chat
  - voice chat
  - interactive whiteboard
  - sticky notes
  - audio and video playback and recording
  - screen sharing
  - drag and drop display of image and PDF files
  - drag-and-drop conversion of any MS Office Open Office or Libre Office file to PDF format for display in-world.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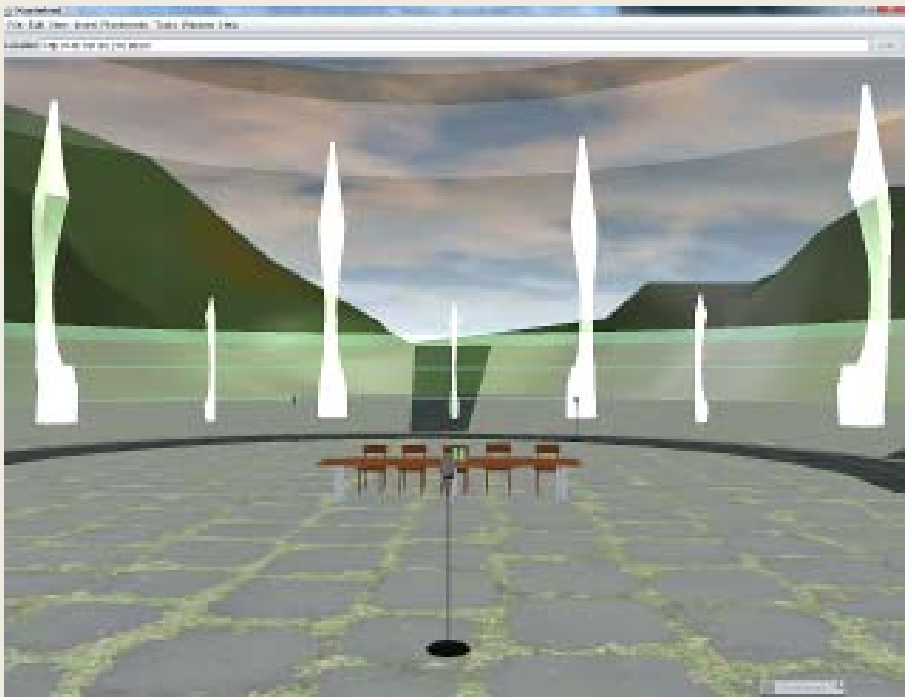
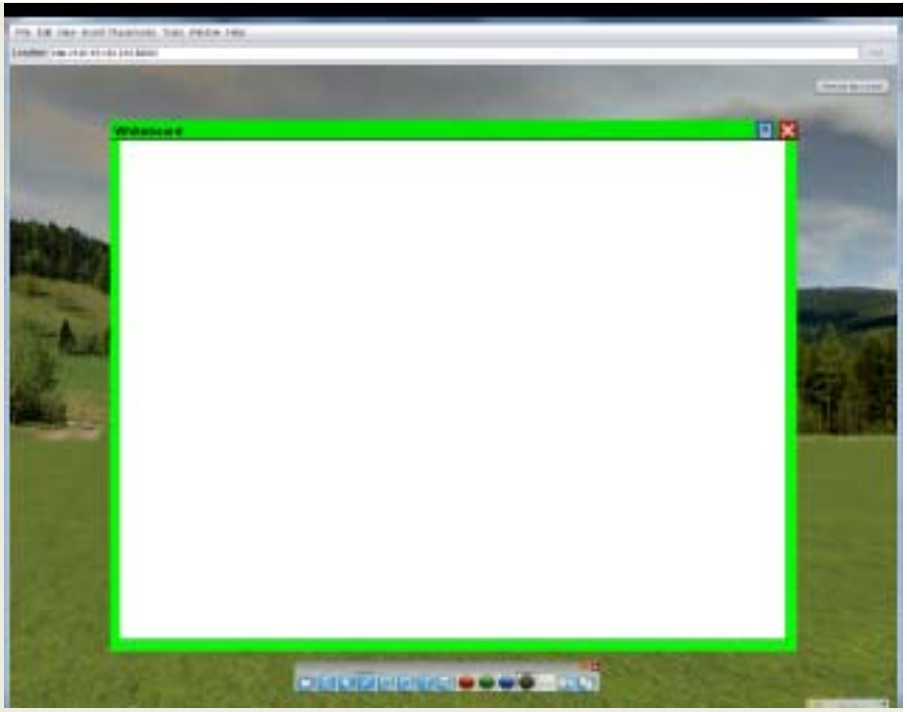
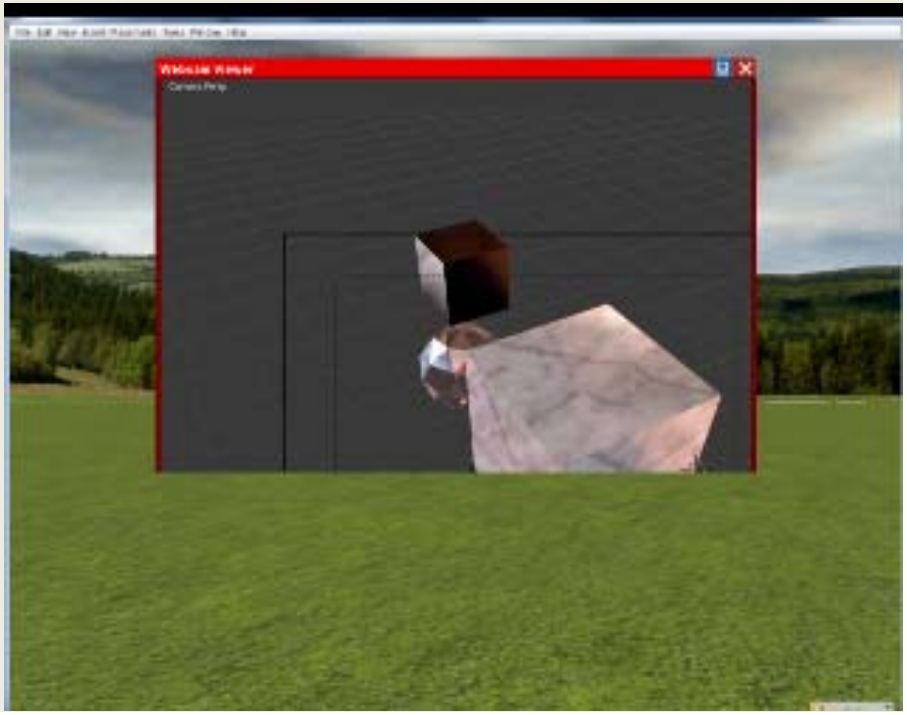





Powerpoint
SLIDE 1
SLIDE 2
SLIDE 3



Phase 2 – Pilot Implementation

Data Gathering

- A focus group discussion to collect information on participants' experience of using the UNITE virtual world.
- The meeting was also attended by an observer who is experienced in using academic focus groups for data collection.
- A verbatim transcript of the focus group discussion was imported into the NVivo software package for analysis using the interpretative phenomenological analysis (IPA) framework.

Phase 2 – Pilot Implementation

Pilot Empirical Study - Findings

- Problems with UWS server – UNITE itself stable
- Use of virtual worlds such as UNITE within tertiary education is of educational benefit, and should be more widely used to complement more traditional teaching methods
- Facilities within UNITE were superior to those that were available for face-to-face communication and collaboration
- Communicating and collaborating in-world helped to build confidence
- Pilot study has established the technical feasibility of using the UNITE environment for a small number of simultaneous participants
- Pedagogical value of the environment for enhancing collaboration, communication and confidence among participants has been demonstrated.

Future Work

Future Themes And Issues To Be Explored

- Potential of virtual worlds to enhance the self-efficacy of higher education students in relation to communication and collaboration with others, and participation in team-based tasks;

- Generate a substantial amount of empirical evidence which currently is lacking within the literature and

- Further investigation and analysis of the literature, coupled with the outcome of the substantive empirical phase of this research, will allow the development of a framework for evaluating 3D virtual worlds for communication and collaboration among tertiary education students

Phase 3 – Large-Scale Implementation

Substantive Empirical Study

- Extends the use of the UNITE environment to substantially larger numbers of participants based in geographically separate locations
- Locations will include 3 of the 4 UWS campuses together with participants from external tertiary education institutions
- Effectiveness will be measured by pre and post online surveys of the self-efficacy beliefs of participants in relation to communication and collaboration in team-based tasks
- Data resulting from the survey will be analysed using SPSS