

Maya Island Virtual Museum

A Virtual Learning Environment, Museum, and Library Exhibit

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Abstract— This short paper describes a collaborative virtual museum and library exhibit tour in the virtual world of Second Life. Colleagues from the University of Washington's Certificate in Virtual World course created Maya Island, a simulated environment which represents aspects of the ancient Mayan civilization. Through collaboration with librarians across the globe, the virtual museum was exhibited at the Community Virtual Library and live tours were provided for avatar visitors. This collaborative project demonstrates potential for virtual museums in libraries and education along with predictions for future virtual museum and library projects and environments.

Keywords-virtual worlds; Second Life; immersive learning environments; virtual reality; virtual museums

I. INTRODUCTION

Virtual worlds have been gaining in popularity over the past decade and show promise for educational immersive learning environments. Hill and Lee [7] identified fourteen tools which are useful for education, libraries, and museums through exploratory research. The Kzero report shows an increase in the use of virtual worlds and found Second Life to be the most widely recognized for learning in higher education at colleges and universities [9].

II. LITERATURE REVIEW

Technology has provided museums the format of digital content, which gives visitors the opportunity for virtual online field trips to websites; however, these web-based virtual field trips are usually not synchronous and do not provide the "sense of presence" found in virtual worlds [1]. A virtual field trip to the Internet may provide rich content and multi-media (videos, photographs, podcasts, and other formats), but the visitor is an observer and not an active participant.

Sylaiou, Karoulis, Stavropoulos, and Patias [14] studied five museums and found benefits of virtual field trips to include cost-effectiveness and convenience for people with physical disabilities or those who live far away. Five virtual museums were examined in the study, which included (1)

National Gallery of Art, USA , (2) Metropolitan Museum of New York, (3) The Museum of Modern Art , (4) Van Gogh Virtual Museum, and (5) Virtual Silver Screen, Cinema Virtual Museum. A questionnaire was developed to determine the "sense of presence" felt by visitors at each of the virtual museums.

A study by Saniye Tugba Bulu [3] compared three types of "presences" in virtual worlds: place presence, social presence, and co-presence. Place presence in a virtual world generally refers to the sense of being in a particular simulated space [12]. Social presence was first defined by Short, Williams, and Christie as "the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship" (p. 65). The final type of presence, co-presence) addressed not only the sense of nearness and interactivity, but also the psychological interaction of the individuals (Nowak, 2001; Schroeder, 2002) [3]. Bulu developed a questionnaire to examine students' scores on satisfaction perceived through the three types of presence. Findings of the study revealed that social presence affected the satisfaction of the students more than place presence or co-presence; however, all three types of presence were important to the satisfactory experience of virtual worlds.

Virtual reality role-play games (often called MUD's or multi-user domains) and online video games have been rising in popularity. Video games delivering historical simulations, such as *The History Channel: The Civil War – a Nation Divided*, give players a learning opportunity and are now considered "serious games" [6]. Gamers can interact with each other synchronously within the simulated historical era. As researchers develop games with realistic features for various learning purposes and simulations, librarians are beginning to catalog serious games as a literary genre and many contain cinematic graphics. The potential for utilizing serious games impacts education, libraries, and museums. Just as historical fiction provides readers vicarious experiences, video games enrich the participant's understanding of history through interactive role play and immersion [10]. Virtual worlds are often considered in the same context as video games even though there may or may not be a gaming scenario designed for a particular use or need. Video games

may be created within a virtual world; however, virtual worlds have potential for additional using beyond gaming.

III. VIRTUAL MUSEUM PROJECT

The University of Washington has offered a Certificate in Virtual Worlds program (UWVW) since 2009, which instructs students in 3D content creation, scripting, building, theoretical knowledge surrounding virtual environments and 3D instructional design. The UW Certificate in Virtual Worlds Class of 2011 chose to create a learning environment for the ancient Maya civilization. The motivation behind this decision included the world-wide online discussion surrounding the “end of the Mayan calendar” [2] as well as the desire to contribute to the tradition of modern Maya people worldwide.

Maya Island was designed and built by thirteen (13) students in four (4) groups within nine (9) weeks between March - June 2011 in the virtual world of Second Life. It presents an immersive learning environment for the ancient Mayan civilization applying a variety of instructional design strategies such as digital storytelling, context- and game-based learning, scavenger hunt, free content exploration applying the composite instructional model for 3D learning experiences [8]. Designers of learning experiences in virtual worlds are directed to take into account Sensibilities, Affordances, Macrostructures and Learning Archetypes in Virtual Worlds . The immersive experience is comprised of areas with different focus areas of the Maya civilization such as Medicine, Agriculture, Language, Astronomy, Mythology, Sports, Art, Pottery, Fishing. In the Medicine area of the UW Maya Island visitors are encouraged to participate in a narrative; as apprentice Maya physician they have the challenge to complete a series of tasks so as to acquire new skills and save their tribe from an epidemic break-out. In the immersive learning environment called “Three Stone Place” users have the option to play a memory game so as to learn ancient Maya glyphs. The Ancient Maya Ball Game Challenge invited the visitors to experience and play the Maya ball game in a accurate 3D representation of an actual ball stadium in Yucatan, Mexico. Then learners are presented with the challenge to follow the footsteps of the Twin Heros, two legendary Mythological figures into the underworld to prove his/her championship against the Gods. There visitors need to learn and understand the ball game and its connection with mythology so as to win the game and be awarded with prizes.



Figure 1. Maya Island aerial view.

Since its public opening in June 2011, UW Maya Island was featured as an Editor’s choice in the virtual world Second Life and it attracted more than 5.000 visitors worldwide within two months. It has been visited by university professors, higher education classes, school students groups and even international scout teams.

The second author, Speaker of UWVW 2011 Class and Manager of UW Maya Island, foresaw the public interest in Maya Island and created the Maya Island Society. Maya Island Society is a global community on Maya civilization, participating in innovative learning practices in 3D Virtual Worlds as they are demonstrated on UW Maya Island. The community organizes events, such as guided tours and discussions with the creators of the island, live events (conferences, panel discussions etc.) and training workshops. In technical aspects, Maya Island is a group in Second Life (<https://my.secondlife.com/groups/d8c8109a-be25-cb30-ba4e-504566fc3a50>) that users can join freely so as to be informed and communicate among themselves. The Maya Island Community, apart from the activities it organized in Second Life, extensively utilized social media (e.g. blog <http://uwmaya.wordpress.com/>) to market and promote the 3D learning activities. The echo from Maya Island Society’s activities made it to the media, such as CNN’s ireport (<http://ireport.cnn.com/docs/DOC-638652>).

Librarians collaborating in the virtual world of Second Life contacted the creators of the Maya Island build, asking to share the immersive experience through a virtual 3D exhibit and to provide tours for library visitors. This collaboration included librarians in Texas working with 3D builders in Greece, New York, and several other locations. Participants were provided landmarks for self-paced tours as well as two live tours conducted with tour guides in January and March of 2012. The tours began at the Community Virtual Library Exhibition Area where the librarians explained the purpose of the exhibit, the revolutionary changes taking place in libraries, and the goal of providing virtual learning experiences through interactive simulations and virtual museums.



Figure 2. Visitors to Maya Island on a virtual field trip.

The Maya Island Virtual Exhibit and Museum was the third exhibit organized on Info Island in Second Life by the Texas Library Second Life Community Group. Machinima videos (videos shot in a virtual game or environment) from the first three library exhibits organized by the group archived the live tours and resources displayed at the Community Virtual Library. Virtual Texas, an exhibit and live tours featuring The Alamo and other Texas historical simulations, was the group's first project and was displayed in spring of 2011 (see machinima at <http://youtu.be/uJ6uxSaS3io>). In the fall of 2011, the TLA SL librarians sponsored Virtual Tornado, a library exhibit with two live simulations of a tornado disaster (see machinima at <http://youtu.be/kXwSwInQULk>). Archiving the experiences through machinima provides documentation of virtual librarianship in a dynamic space. A machinima created during the Maya Island Exhibit and Tour won the award for Best Educational Video at the Virtual Worlds Best Practices in Education Conference 2012 (VWBPE, 2012). Similarly, a poster created by UWW Class 2011 members based on the aforementioned exhibit won the award for Best Educational Practice in the same annual international conference [15]. Also an extended version of Astronomy section of UW Maya Island was a finalist in the Federal Virtual Worlds Challenge 2012.



Figure 3. Maya Island Astronomy Center and Library.

Maya Island Exhibit & Tours

CVL Exhibition Area January-March 2012



Figure 3. Poster publicizing the Maya Island Exhibit & Tours.

Planning for the Maya Island Exhibit began in the fall of 2011 and the TLA librarians met with the Maya Island builders three times to plan the workflow. The Maya Island builders were given specifics on the space allowed for the exhibit to be displayed and permissions to build on the Info Island *sim*, the term for an area on a virtual world computer grid. The librarians publicized the exhibit and the two live scheduled tours on the librarians listserv, googlegroup, and through Second Life group communication tools. Near the exhibit, the Community Virtual Library reference desk area featured the Maya Island Exhibit on a current events bulletin board. The Maya Island builders also sent notices and invitations to educational groups, partners and social media.

Progress on the workflow, from initial plans through publicizing, building, and evaluating the project was documented on a wiki. Work done on virtual world projects can be accomplished individually or collaboratively, which allowed the librarians (based in Texas) to work at convenient times in various time zones and also meet the Maya Island team (based for the most part in Greece and New York).

Numerous *inworld* (in Second Life or a virtual world) tools were utilized for collaboration, research, design, and implementation of the project. Notecards and textures were exchanged between the avatar-colleagues. For example, a similar tool, called *brainflowing* (not used on this project but exemplifying the workflow process) was developed in Second Life for utilizing four major virtual world steps: (1) researching, (2) creating, (3) showing, and (4) selling. The tool's creators maintain that "users from around the globe can enter Second Life and other such environments without restrictions, establishing and maintaining relationships in a manner similar to real life [5]. The author validates the salient "features of the metaverse" through discussion of the processes required for authentic simulations. Gomez-Diego believes that a virtual world, as a simulation tool is cost effective because constructing and mounting an exhibition (or

an art gallery) is easier and less expensive in a virtual world than in the physical world (p. 56).

Initially, the Maya Island Exhibit was to be on display from January through March of 2012; however, the exhibit was not removed until May as there was no other exhibit ready for the CVL Exhibition Area.

In 2012, Linden Labs (the company which owns and operates Second Life) announced plans to discontinue educational discounts in the virtual world [4]. This news caused a good deal of concern among academic users of the virtual world and many universities are reporting exploration of other grids, many of them based on the same program code which is open source. In fact, graduates from the University of Washington Certificate in Virtual Worlds (calling themselves *avalumni*) began exploring other grids (or *gridhopping*) and documenting the exploration through machinima at <https://vimeo.com/user10568377/videos>.

So, although the Maya Island exhibit was taken down, Maya Island remains currently on the University of Washington Island in Second Life and plans are underway to transfer the island to another virtual world grid using an opensource platform called Opensim.

Also, owing to the open communication and marketing strategy, Maya Island attracted the attention and has come in contact with interested institutions to form partnerships and collaborations. At the time of this writing, the following developments have taken place:

- B'ahlam Chaahk, a Maya scholar volunteered to undertake a close examination of the virtual environments and provided tips to refine authenticity.
- University of Arizona, Department of Languages, expressed its desire to partner and hold language courses and regular visits to Maya Island.
- Chabot Space & Science Center, a Smithsonian affiliate which is located near Oakland, (<http://www.chabotspace.org/>), produced the 3D documentary "Tales of the Maya Skies" (<http://www.mayaskies.org/>) and provided models - exact copies of scanned original 3d Maya buildings- so as to incorporate them into the virtual environment.

IV. PREDICTIONS FOR THE FUTURE

The Horizon Report predicts growth over the next two to five years in game-based learning and gesture-based computing [11]. As serious gaming continues to expand through creation of historical simulations and other immersive learning experiences, the future of serious gaming, augmented reality, and virtual museums may include a merge of formats

and opportunities to provide virtual experiences on a global scale.

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