An Interdisciplinary Design Project in Second Life: Creating a Virtual Marine Science Learning Environment

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ABSTRACT

Virtual environments can resolve many practical and pedagogical challenges within higher education. Economic considerations, accessibility issues, and safety concerns can all be somewhat alleviated by creating learning activities in a virtual space. Because of the removal of real-world physical limitations like gravity, durability and scope, virtual space allows for an expansion of possibilities and approaches to knowledge transfer and discovery learning and becomes an "environment for information" rich with collaborative possibilities. Experimentation and participation in conceptual as well as applied projects is encouraged for both students and instructors. One of these virtual environments, Second Life, was used in a cross-disciplinary project for the creation of a Marine Science virtual class environment as an assignment for design students at a major southwestern research university in the United States. This paper reports on the findings from a project that utilized Second Life as a medium for enhancing and extending design education using a process of interdisciplinary collaboration.

Keywords: Design Education, Information Environments, Marine Science Education, Oceanography Education, Second Life, Smooth Space, Virtual Worlds

INTRODUCTION

Virtual environments allow for experimentation and participation in conceptual and applied projects by teachers and students together. In this paper, one of these virtual environments, Second Life, was used in a cross-disciplinary project for the creation of a Marine Science virtual class environment as an assignment for Design students at a major southwestern research university in the USA. The purpose of the study was to address five research questions:

(1) Was there a change from before to after the course in terms of what the participants reported they knew or understood about the key course concepts as described in

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the course objectives? (see below under Objectives of the Design Class).

(2) If participants reported prior gaming experience, did that prior experience play a role in participants’ understanding of virtual worlds and their impression of Second Life?

(3) How and during what kinds of situations and class activities does learning occur in Second Life?

Therefore, this paper reports on the findings of using Second Life (SL) as a medium for enhancing and extending Design education in an interdisciplinary and collaborative context.

**PEDAGOGY OF A DESIGN PROGRAM**

Design is an inherently heuristic pursuit which relies on processes that develop within the designer to generate solutions that are solved by intuition, or in other words, from a holistic reading of a situation using deductive and inductive reasoning concurrently to produce an optimal result (Gruson et al., 2000). In the Design program, a developed critical process of thinking and making is the desired result under examination in this study more than any single set of manual skills or mastery of a specific medium or particular tangible product. This approach equalizes the value of teaching of critical thinking with the teaching of content or product, and, since each faculty member has a background in a different design discipline (including graphic design, typography, industrial design, design writing and architecture), this approach also equalizes the exposure and practice of disciplines within Design.

The placement of equal emphasis in the program on ‘design thinking’ suggests that it is similar to a visual liberal arts program in that it produces well-rounded graduates with the ability to contextualize information and to communicate, or to make sense of that information visually with sophisticated complexity and appropriateness across various areas of engagement. This ‘design thinking’ is largely taught through a process of ‘thinking through making’ that encourages understanding to be achieved through the creative act or crafting process itself. The result of combining the critical thinking and ‘thinking through making’ components creates graduates who are able to operate across fields of inquiry with equal alacrity because they are able to approach the problem to be solved without the restrictions or burden associated with using a single medium. The application and practice of this skill, therefore, are incidental to the desired learning experience of the methodology itself, and because of this, the Design program’s curriculum is inherently suitable for cross-disciplinary experiences.

**VIRTUAL WORLDS AND SECOND LIFE**

Three-dimensional virtual worlds such as Second Life (SL) are rapidly being accepted and used in instructional settings. Indeed, the New Media Consortium and the EDUCAUSE Learning initiative (2007) identified virtual worlds as an emerging technology that is likely to have a large impact on teaching and learning within higher education in the near future.

Thus far suggested positive instructional effects of virtual worlds include the common and uncommon benefits of games, such as accommodating learning preferences of Net Generation students, enhancing student motivation and engagement, providing opportunities for social interactions and facilitating collaboration. To this we can also add, increasing a sense of shared presence and experience, dissolving social boundaries, and allowing free exploration, creation, and use of the environment, data and media content (Craig, 2007; Dede et al., 2005; FitzGerald, 2007; Gee, 2003; Jarmon, 2009a; Jarmon et al., 2009; Jenkins, 2007, cited in Craig, 2007; Kirriemuir & McFarlane, 2003; Lamb, 2006; McGee, 2007; Prensky, 2006; The New Media Consortium, 2009).

In SL, users’ avatars move around and interact with one another in virtual space. Users also can create buildings and materials in SL.
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