Chapter 9
OnSite:
The Virtual Site Visit as an Environment for Construction Learning

Robert Sean Pickersgill
University of South Australia, Australia

Rameez Rameezdeen
University of South Australia, Australia

Jennifer Harvey
University of South Australia, Australia

ABSTRACT

The chapter summarizes the educational pedagogy researched and developed in the OnSite project, a multi-year trial of a blended virtual learning environment, situating it in the context of immersive learning environments generally and discussing the specific challenges in designing and creating environments suitable for introductory construction courses. It documents and reports the challenges in creating a virtual learning environment (VLE) for use within an introductory construction course for architecture and building students at the University of South Australia. In addition, the chapter will reflect on issues of technical development for immersive learning environments, discussing the purpose and value of high-fidelity modelling, texturing, and lighting to achieve learning "authenticity." Finally, the chapter looks at the implications for VLEs of this sort in terms of larger issues regarding the potential for game engine (GE) environments as cooperative spaces within the AEC industry.

DOI: 10.4018/978-1-5225-8452-0.ch009

INTRODUCTION

A total of 280 students over a three-year period were involved in the *OnSite* Project within the School of Art Architecture and Design at the University of South Australia, undertaking it as a component of their first-year introductory course on Australian domestic construction practices. Courses of this nature tend to be similar across Australian architecture and building courses, and *OnSite* was designed to be applicable, even with regional differences, across the country. A number of the questions related to Australian Standards of building practice that it was important for students to be introduced to.

Within introductory construction courses, the core body of knowledge concentrates on the student acquiring familiarity with conventional domestic construction practices. This information usually assumes that students have no prior knowledge and, as such, need to be introduced to the simplest and most ubiquitous methods being undertaken. While, in Australia, there are some regional differences regarding the use of masonry and timber frame methods, Australian Standards govern all construction methods and levels of performance and are consistent nationally.

METHODOLGY

Two questions emerge from this situation: How does an educator meaningfully address the structural requirements of 'seeing' the reality of domestic construction processes, and; what alternatives exist for this experience if a physical site visit is not feasible? It was the opinion of the authors that developments within Virtual Learning Environments (VLEs) in education would provide a model for simulated experience that successfully managed the manifold challenges of 'real life' learning while also allowing for focussed pedagogical aims that successfully measured the effectiveness of the process. While literature on the subjects of VLEs, gamification, constructivist learning and LMS strategies is currently broad (Zheng, 2015), there is currently little substantive analysis of projects that attempt to syncretically incorporate the full range of capabilities within the digital education space for architecture and construction. Maghool, Moeini and Arefazar, have identified and summarized the relationship between learning styles within architectural education and the potential implementation of VLEs (Maghool et al, 2018). Their LADUVR project addressed similar concerns as those that have premised OnSite, but there are significant differences that OnSite addresses, in particular those relevant to site visits and to the parallel incorporation of LMSs. Projects tend to concentrate upon the employment of gamification methodologies at the expense of visual authenticity, rehearsing a philosophical question that exists within digital game theory of the difference