Chapter 79
Students as Designers of Virtual World Learning Environments

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ABSTRACT

Virtual worlds provide pre-service teachers with the opportunity to study teaching and learning in an immersive 3D computer based environment. The pre-service teacher is able to become a designer of learning environments in ways that were previously impossible in a traditional bricks and mortar classroom. The learning environment that pre-service teachers create can, in turn, inform established educators about the usefulness of virtual worlds for education. In the School of Education at Southern Cross University, Australia, pre-service teachers have been given the opportunity to design and build virtual world learning environments. This chapter presents the story of one pre-service teacher and her tutor as they discuss the design of a virtual world learning environment for maths. This particular design project resulted in virtual worlds being integrated across a number of pre-service teacher courses and extended into the K-6 classroom. An overview of these other projects is also presented.

INTRODUCTION

Information Communication Technology (ICT) literacy has been an important professional competency for teachers for over a decade (Kirschner & Davis, 2003; Steketee, 2005). National and state based curriculum include core subjects such as computing in the UK or the integrated use of ICT as in the National Curriculum in Australia. The Australian Curriculum, Assessment and Reporting Authority (ACARA) outlined the importance of ICTs.

Increasingly, ICT permeates every area of our society and lives. Students need to be equipped with the necessary knowledge and skills to use ICT to support contemporary learning and living. ICT affords the opportunities to personalise learning and to learn both within and out of school (ACARA, 2012).

In order to prepare teachers to integrate ICTs in their future classrooms pre-service teacher programs have mandated the inclusion of ICTs and designed specific ICT focused courses. However, the inclusion of ICT courses in pre-service teacher education programs has not always fulfilled the promise that pre-service teachers will be equipped to affectively integrate ICTs. Studies have shown that there has been a tendency to focus on developing pre-service teacher's technological skills more than the pedagogical uses of ICTs (Jaipal & Figg, 2010; Lim, Chai, & Churchill, 2011). Bower, Highfield, Furney, and Mowbray (2013) suggested that "consideration of learning design and design thinking offers unique possibilities for technology integration, to enable pre-service teachers to move beyond being technological consumers to being creative and effective designers with technology" (p. 40). With the exponential increase in the use of ICTs in children's personal lives the need for pre-service teachers and teachers to feel confident about integrating ICTs is ever more pressing.

One of the ICTs that children are using outside of the classroom are Virtual Worlds (VWs). There are currently 2.356 billion registered VW user accounts with over 200 VWs used for education, gaming, socialising, medical, entertainment and creative pursuits. Ten to fifteen year olds are the highest growing sector of VW users with 225 million *Club Penguin* accounts and 313 million in *Poptropica* (KZero, 2014).

Pre-service teacher education is a sector of higher education that is beginning to introduce VWs as a computer mediated environment in which to explore discipline content and pedagogy. The unique position of the pre-service teacher program when integrating VWs is that the students are learning about an ICT that they will use in a classroom with school age children as well as using the ICT to enhance their personal study of particular discipline content. The pre-service teacher is well placed to inform the research that is focusing on new ways to teach in VWs through the development of their own VW teaching and learning resources. Other disciplines that are using VWs such as architecture, medicine, midwifery or psychology are more likely to be using the VW to deliver new ways to explore complex discipline based concepts, with students not required to think about VW pedagogy or to use a VW in their future professional practice.

As with most new technologies when they are first introduced in education the main concern of both the student and the teacher is mastering the skill of the ICT and not necessarily about how to use it effectively to create learning tasks that are well designed or that extend what is already being taught. Dalgarno and Lee (2010) suggest "well-designed 3-D Virtual Learning Environments can enable learning tasks that are not possible or not as effective in 2-D environments" (p. 16). For pre-service teachers both the mastery of the ICT and the ability to create new learning experiences with the ICT are fundamental to how engaged their students will be in their future classrooms.

This chapter presents two case studies of projects undertaken by the authors when one was a pre-service teacher and the other was her tutor in the Bachelor of Education program at Southern Cross University, NSW, Australia. Their exploration of VWs and the design of a 3D immersive, interactive maths learning-environment and the subsequent use of Sim-on-a-Stick (SoaS) in a primary school setting illustrate the potential of VWs to engage pre-service teachers in the design of teaching and learning environments. The following reflections demonstrate the potential of VWs to assist in the development of creative and ultimately well-designed teaching and learning environments in pre-service teacher education.

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