

Chapter 6

Developing an Immersive Virtual Classroom: TeachLivE – A Case Study

Kathleen M. Ingraham

University of Central Florida, USA

Annette Romualdo

University of Central Florida, USA

Angelica Fulchini Scruggs

University of Central Florida, USA

Eric Imperiale

University of Central Florida, USA

Lisa Dieker

 <https://orcid.org/0000-0002-0789-580X>

University of Central Florida, USA

Charles E. Hughes

 <https://orcid.org/0000-0002-2528-3380>

University of Central Florida, USA

ABSTRACT

As virtual reality (VR) technologies continue to improve and become more accessible, educators are increasingly incorporating VR learning experiences in teacher education contexts. This chapter is a case study of TeachLivE™, a virtual classroom platform designed for practicing teaching in a safe virtual space. This chapter describes the system, development, and challenges faced when incorporating immersive VR technologies. Recommendations are provided for future research, development, use, and facilitation of immersive VR learning experiences.

DOI: 10.4018/978-1-7998-4960-5.ch006

INTRODUCTION

As virtual reality (VR) technologies continue to advance, opportunities emerge for simulation training to take advantage of new affordances to improve the effectiveness and efficiency of virtual learning experiences. This chapter will examine the development cycle and challenges of incorporating newer immersive VR technologies into existing VR platforms using the TeachLivE™ simulation platform as a case example. The objective of this chapter is to describe how new immersive VR technologies have been introduced to the platform and how these technologies have affected development, system use, and teacher learning. The authors also describe some of the challenges encountered in using an immersive VR system as well as recommendations for future research, use, and development.

BACKGROUND

The immersive VR classroom can provide a dynamic medium to promote meaningful learning. Since the early 1990s, VR has been promoted as a vehicle to facilitate learning across subject domains (Helsel, 1992; Psotka, 1995). The blank canvas nature of the virtual classroom enables developers and users to adapt the classroom, with “active participation, high interactivity and individualization” (Mikropoulous & Natsis, 2011, p. 770) as integral components of the dynamic space.

One such use of the virtual environment has been to prepare preservice teachers for the 21st century, accountability-driven classroom. As background, teacher preparation programs (TPP) ready novice educators for placement; well-prepared beginning educators enter the classroom with a strong background in evidence-based instructional practices and classroom management techniques (Brownell et al., 2010; Every Student Succeeds Act, 2015; Scheeler et al., 2016).

However, high rates of teacher turnover and burnout indicate novice teachers often are under-prepared for the challenge (Carver-Thomas & Darling-Hammond, 2019). First-year teachers may struggle to implement best-practice in both instructional methods and behavior management (Ingersoll, 2001; Cochran-Smith, et al., 2012; Hong, 2010; Lankford et al., 2002). To mitigate this gap, researchers at the University of Central Florida (UCF) implemented an innovative means to prepare beginning teachers (Dieker et al., 2008). Within a VR simulator (TeachLivE™), participants are immersed into a classroom of virtual students. The abstract spaces of the physical room fade (Mikropoulous & Natsis, 2011), and beginning educators use the classroom and its avatar residents to rehearse and hone research-based strategies of teaching practice (Dieker et al., 2007; Dieker et al., 2008; Dieker et al., 2014; Dieker et al., 2017).

This section discusses the evolution of VR, components and characteristics of current VR systems, and VR use in education. VR is described as an interactive virtual environment simulating real-life experiences accomplished in one of two ways: non-immersive and immersive. Non-immersive VR is displayed through traditional media or technologies, such as computer, keyboard, mouse, and/or screen. Users in the non-immersive environment are not required to wear any special equipment (Freina & Ott, 2015; Suh & Prophet, 2018).

Whereas, an immersive VR experience requires the user to wear specialized equipment to experience the simulation. As researchers began to promote VR for the education space, Psotka (1995) promoted the fully-immersive experience for its unique characteristics, including participants’ feelings of control and immediacy with its use. Once immersed, the virtual world becomes real-life as participants experience “the feeling of ‘being there’ or presence” (p. 405). A fading of the external environment promotes feel-

25 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/developing-an-immersive-virtual-classroom/259660

Related Content

Finding Liquid Salvation: Using the Cardean Ethnographic Method to Document Second Life Residents and Religious Cloud Communities

Gregory Price Grieve and Kevin Heston (2012). *Virtual Worlds and Metaverse Platforms: New Communication and Identity Paradigms* (pp. 288-305).

www.irma-international.org/chapter/finding-liquid-salvation/55414

The Emergence of Politicized Collective Identity in Online News Commentaries as a Form of Social Capital

Nahla Nadeem (2014). *Identity and Leadership in Virtual Communities: Establishing Credibility and Influence* (pp. 47-60).

www.irma-international.org/chapter/the-emergence-of-politicized-collective-identity-in-online-news-commentaries-as-a-form-of-social-capital/97600

Motion Cueing Algorithms: A Review: Algorithms, Evaluation and Tuning

Sergio Casas, Ricardo Olanda and Nilanjan Dey (2017). *International Journal of Virtual and Augmented Reality* (pp. 90-106).

www.irma-international.org/article/motion-cueing-algorithms-a-review/169937

Role of Immersive (XR) Technologies in Improving Healthcare Competencies: A Review

Prabha Susy Mathew and Anitha S. Pillai (2023). *Research Anthology on Virtual Environments and Building the Metaverse* (pp. 313-336).

www.irma-international.org/chapter/role-of-immersive-xr-technologies-in-improving-healthcare-competencies/316100

Business Process Modification Management

Benjamin Urh, Tomaz Kern and Matjaz Roblek (2008). *Encyclopedia of Networked and Virtual Organizations* (pp. 112-120).

www.irma-international.org/chapter/business-process-modification-management/17601