Chapter 1
Online Learning Design:
Immersive Technology and Theory for the 21st-Century Learner

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ABSTRACT

This chapter will review prominent online learning theories to showcase how to design a virtual reality learning environment that enhances student community, cognitive learning, and student autonomy. Twenty-first-century student learning behaviors will be intertwined with the topics of discussion to support practical steps that professionals, researchers, and educators can use to design a learning environment that speaks to the needs of online learners. Finally, virtual reality will be highlighted in relation to learning and design principles to bridge synchronous and asynchronous learning and create an environment conducive to deeper learning.

INTRODUCTION

Providing online education to our 21st century learners has been essential to the growth of higher education. The demographics of online students vary, depending on fluctuating variables, creating a larger knowledge gap in how the educator can create an engaging learning environment that will enhance understanding of course material. There are many facets to helping the online learner succeed, from due date flexibility, to the students' experience with online learning, to the instructor's ability to facilitate a sense of community among learners. Among the attractions of online learning are the opportunity for students to complete schoolwork at their own pace, the accessibility to learn on-demand, and the flexibility to schedule learning around the demands of work or parenting (Ferguson, 2020; Shaw et al., 2016).

Online students often struggle with persisting in courses due to a disconnection felt in the student–teacher, student–student, and student–content relationships. Online learning requires a different type of learning environment to support student learning and course engagement (Ferguson, 2020; Goralski & Falk, 2017; Robinson et al., 2017). Teachers have to know how to engage learners and work with them

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on developing healthy self-regulation behaviors, so they can succeed when learning through a computer (Sumuer, 2018). Once the educator creates the optimal learning environment, a focus needs to be placed on the design of the space to work in conjunction with the teaching methods.

Communities of Inquiry (COI) and Transactional Distance (TD) are two of the main theoretical frameworks utilized to conduct research in distance education (Armellini and De Stefani, 2016; Giossos et al., 2009). The intersection between COI and TD focuses on how the online learning environment is designed to foster communication and provide learner autonomy, which leads to enhanced knowledge of the provided content. The theoretical frameworks do differ on the importance of establishing a community of learners and the impact it has on the online learning environment. However, the connection to both frameworks in relation to design, communication, and the impact of learning highlight the importance of structure for the learner and display of course content regardless of a predetermined time for learning.

The infiltration of technology within education has been on the rise since the information era of the 1990s. However, it was not until the millennial generation when students' ability to connect, seek information, and develop advanced technology skills through a mobile device pushed educators to blend technology with pedagogy (Lee et al., 2016). The influence of immersive technology in learning environments can transform traditional learning approaches that have failed to motivate students to learn (Ijaz et al., 2016). Specifically, virtual reality (VR)-based learning environment allow users to play, experience, and enhance cognitive learning skills utilizing real-world situations to interact with objects and understand feelings similar to the natural world (Lin et al., 2017).

Modernizing online learning to support the use of VR and immersive learning environments enhance the value of the learning and brings the online learner closer to the teacher, classmates, and the course content (Huang & Liaw, 2018; Yang et al., 2018; Zizza et al., 2017). Combining instructional design frameworks with immersive technology best practices allows online learners to experience learning in a way that is similar to a face-to-face environment and also models similar learning attributes that connect to increased student motivation, enhanced learning, and connection to a community (Despres-Bedward et al., 2018; Gregori et al., 2018; Mayer 2008). When the learner feels connected to the course content and engages with peers and the teacher provides the proper structure in the course, the student can navigate an environment autonomously and easily form connections to the learning material (Lee & Huang, 2018; O'Brien et al., 2017). Based upon the above mentioned parts, this chapter begins with an analysis of two prominent online learning theories to provide a framework that highlights how to create a learning environment that meet the needs of the distant learner. The dynamics of the online environment are explored and discussed to draw connections to the importance of the need for immersive learning environments that focus on the user experience. Finally, the chapter ends with a look at future trends to help transformational leaders in education design immersive learning environments that support the online learner.

ONLINE LEARNING THEORETICAL FRAMEWORKS

Communities of Inquiry (COI) and Transactional Distance (TD) are two of the main theoretical frameworks utilized to conduct research in distance education (Armellini and De Stefani, 2016; Giossos et al., 2009). TD focuses on the relationship between student to student, teacher to student, and student to content. COI has three interrelated components that are created in the online environment that create a community of learners. The three elements are (1) social presence, (2) teaching presence, and (3) cogni-