Chapter 9
Virtual Learning:
A Study of Virtual Reality for Distance Education

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ABSTRACT

Virtual reality (VR) is now becoming a major player in education. When first introduced into schools, computer technology and multi-media content were riveted by its newness. Over time, more higher education institutions began to use newer technologies online or distance classes that could be taken from home. Unfortunately, many students have difficulty acquiring the same experience when learning with most classroom management software (CMS). Virtual reality technology is taking user involvement to the next level of immersion and is postured to change the landscape of education in a very significant way. This chapter examines methods of employing VR to maximize benefits to the student as well as the challenges and opportunities for using VR for distance learning. Finally, emerging research and developments in VR is discussed.

INTRODUCTION

In the past decade, the focus of constructivist learning environments has expanded from actual classroom experiences with directed instruction to virtual settings where the instruction is more self-directed (Tenenbaum, Naidu, Jegide, & Austin, 2001). In today's culture, computers and media content are the norm, not the exception, and students expect and want cutting-edge technology to replace the online

material that they had in the past (Cohen, 2014; Angrist & Lavy, 2002; Walker, 2015). Studies have shown a direct and meaningful correlation between the student's sense of social, interactive presence and how well they perform in an online class (Lowenthal & Parscal, 2008; Garrison, Cleveland-Innes & Fung, 2010). The role of social, interactive presence as defined by the community of inquiry framework is critiqued through a review of recent literature. Evidence is presented that questions the actual extent of knowledge co-construction that occurs in most higher education settings and therefore challenges the framework's underlying assumption of the need for sustained, contiguous, two-way communication in higher-level online learning environments.

An approach is needed that can more closely recreate an actual in-class experience, where all the students and the teacher are somehow together at the same time. Virtual reality has reached a maturation point where it is now feasible to provide these kinds of collaborative classroom experiences while still filling the necessity of distance learning for students who are not physically in the same location.

BACKGROUND

Education is changing as rapidly as the technology we use to teach with. Since the early days of the internet, we quickly realized it was possible for post-secondary students to learn remotely with little face-to-face interactions with the instructor. There are a host of reasons that will be discussed in this chapter and one can argue that we now have the means to change–our instructional design. A new generation of technology that includes Virtual Reality provides, possibly for the first time, a means of allowing students to truly experience community and interactive presence in remote classroom lessons. Technology comes in the form of the first generation of virtual reality devices that are becoming more and more mainstream (Willer, 2017).

Virtual Reality

In 1993, arguably before we had a clear idea of how VR would develop, researchers were already trying to understand what exactly VR was and the role it might play in our society. Steuer (1993) claimed that VR is more than the technology that is used to provide "the experience" and that it is better to define the VR experience instead. We adopt this policy in this paper and do not focus on the technology but rather the "virtual educational experience" that the current technology provides that include visual and audio along with the immersive experience of movement tracking and haptic feedback. This experience is significantly more immersive than what is currently possible with today's CMS applications used in most distance learning institutions.

Classroom Management Software (CMS)

Probably the most widely used CMS package today is the Blackboard suite. Blackboard allows instructors to load course content in the form of Power Point slides, videos and other types of media. While we can argue that VR is new and much more immersive, we should also note that VR would only replace the media of the educational content, not the management portion of today's CMS solutions. One would expect to log into Blackboard, read an assignment, then click a link to startup the VR lecture or class meeting.

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