Chapter 12

Delivering Interventions to Individuals With Trauma-Induced Behaviors Through Immersive Virtual Learning Environments

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ABSTRACT

The purpose of this chapter is to provide information on immersive virtual interventions for children with behavioral problems. The closing of all schools in March 2020 due to a global pandemic exposed children with negative attributed childhood experiences to more trauma. The mental health services provided by their schools stopped. Although the international community gained insight into how schools were unprepared to educate students during a pandemic, schools were also unable to deliver mental health services. This chapter reviews research on a new generation of tools using XR in learning environments. The goal is to examine educational tools that are used to help trauma (violence, poverty, drugs, abuse) in people, specifically children. This chapter will seek to discuss augmented environments in student learning that may promote self-reflection, mindfulness, and meditation.

INTRODUCTION

This chapter's general perspective will be to define the causes of childhood trauma and identify the augmented reality (AR) technologies that can help these people. The objectives of this chapter are (a) to understand the history of these technologies; (b) to describe what technologies are being used now; (c) to define what future technologies are discoverable, and (d) evaluate if they will work. This chapter will describe AR applications that will reduce stress and anxiety and create mindfulness in children and adolescents with behavior disorders.

BACKGROUND

Adverse childhood experiences (ACE) can have lasting, adverse effects on health, wellbeing, and opportunity. According to Merrick et al. (2019), these indicators include emotional, physical, or sexual abuse, neglect, witnessing violence, parents addiction to alcohol or other substances, family members' mental illness, divorce, jailed family member, involvement with the foster care system, living in an unsafe neighborhood, bullying, experiencing racism, and poverty. Merrick et al. (2019) found these experiences can create health problems, change brain development, and affect learning. Children growing up with toxic trauma stress may have difficulty forming healthy relationships, have unstable work histories as adults, and struggle throughout their lives. The effects of ongoing traumas and the impact of poverty result from limited educational and economic opportunities. Merrick et.al. (2019) stated these children are at a greater risk for high school noncompletion, unemployment, and poverty.

COVID 19 has caused social isolation from school and society. The disease disrupted the economy as many businesses shut down and increased the number of jobless households. These traumatic times can trigger existing mental illnesses or cause new psychological symptoms (Fegert et al., 2020). Many students receive their mental health services from the schools. Ali et al. (2019) used a study from the National Survey on Drug Use and Health and found that 13.2% or three million adolescents received mental health services from the school setting. Ali et al. found many of these children are on public assistance from low-income households and a minority group (2019). Lux and Escobar (2019) examined the increasing numbers of mental health disorders because of natural disasters (earthquakes, tsunamis, hurricanes) and COVID19.

This chapter describes the need to provide students lessons in mental health, wellbeing, self-management, relationship skills, and social awareness. This chapter will discuss the tools available to assist adolescents with trauma caused by attributed childhood experiences. The chapter will be organized into types or tools using AR, MR, VR, or XR in an immersive environment.

DESIGN AND IMPLEMENTATION

Although there is still not enough evidence to fully understand how the curriculum will integrate with AR and VR programs or what will be needed in the adoption process (Meredith et al., 2018). Tzima et al., (2019) surveyed teachers asking if they had heard or read about augmented reality. Fifty percent responded with yes, and 50% answered no to the question. Data from Tzima et al.'s (2019) research indicate the learning process, motivation, and effectiveness of teaching increases when augmented reality is applied in education. In contrast, 100% of the teachers responded, they have never used augmented reality applications in teaching (Tzima et al., 2019).

From early childhood to the universities, all levels of education have researched AR and VR for educational purposes. AR and VR are being explored by Stanford Virtual Human Interaction Lab and Virtual Reality Lab, Oxford Virtual Reality Lab for mental health, Virtual Embodiment Lab, MIT Play labs, and Harvard Innovation Lab. AR and VR have the possibility of becoming the norm education (2019). In search of applications that would meet this chapter's requirements as the potential to support students with mental health issues, I found a lack of information in educational technology specific to this study that would benefit children and adolescents with trauma-induced behavioral disorders. Furthermore, the

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