

Chapter 12

Virtual Reality (VR)–Based Teaching Strategies for Kindergarten Classes

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ABSTRACT

This chapter will delve into the world of virtual reality (VR) and its profound impact on kindergarten education. By offering young students immersive experiences that pique their curiosity, encourage exploration, and improve learning outcomes, VR-based teaching strategies present a novel way to engage students. In addition to discussing the many advantages of virtual reality in kindergarten classrooms, this chapter offers educators helpful advice on how to incorporate VR technology into their lesson plans. Furthermore, this chapter contains several sections of VR-based teaching strategies for kindergarten classes.

1. INTRODUCTION

Virtual reality (VR) technology has emerged as both an exciting gaming tool and a technology with a plethora of possible new uses because to the rapid expansion of technological advancements such as high-speed computers, high-resolution graphics, and interface devices (Allcoat & Adrian, 2018). A three-dimensional (3D) computer-generated environment known as virtual reality helps the viewer see the content more realistically. With this technology, the user has a sense of inclusion

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in the virtual world and gains the ability to perform physical actions and interact with virtual items. (Smith, 2015).

Compared to other forms of media, creating a computer environment that is difficult to tell apart from the actual world enhances the user experience and increases presence and incentive to utilize it (Urech, Krieger, Chesham, Mast, & Berger, 2015).

Virtual reality technology makes it possible to establish an engaging and enjoyable learning environment where students can build their knowledge through active participation, teamwork, and exploration. This increases students' attention and engagement during the learning process (Farahmand, Yadav, & Spafford, 2013).

Research indicates that virtual reality (VR) holds promise as an immersive learning environment and pedagogical tool for students. It offers an authentic context where students can expand their understanding, visualize concepts and situations that cannot be displayed on other media, and gain deeper understanding (Chen, 2016; Huang, Rauch, & Liaw, 2010; Ibáñez et al., 2011).

Moreover, knowledge provided repeatedly and in different ways helps people retain it better, giving educators the chance to cater to each student's "preferred" method of learning (Mayer, 2003). A virtual reality system has the ability to display content repeatedly through many channels or senses and with a variety of delivery methods. In addition to being very visual and aural, it has nonverbal auditory stimuli, which is something that standard teaching approaches lack. This is maybe most significant. Higher levels of cognitive functioning (e.g., interpreting, analyzing, discovering, evaluating, problem-solving, reflective thinking, and memorization) are achieved when learning experiences are more realistic and include auditory cues like the sound of chemical reactions or objects falling to the floor. (Bell and Folger, 1995).

The ability of virtual reality (VR) to present objects that are not typically visible or tangible in the real world is another crucial feature. Examples of such objects include mathematical theories represented on a surface that students can walk on, or students can walk around or inside the nucleus of a cell as it divides or look inside a heart artery in biology class (Persky & McBride, 2009). Students become more engaged with the subject matter and the learning process is enhanced when abstract concepts are represented in a more concrete way. It becomes simpler to interact with and absorb theoretical ideas, which are frequently dry and occasionally challenging to understand.

One important result of this technology is that it fulfills the principles of constructivist learning (Piaget, 1974). Constructivism is a theory that connects learning to the process of making meaning from experience. Its guiding principles include the use of interactive teaching techniques and the development of meaningful learning environments that encourage, inspire, and stimulate students' construction of knowledge (Piaget, 1974). Both immersive and non-immersive virtual reality (VR) can meet these goals by providing students with authentic, contextual, and

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