

## Chapter 9

# Nursing Education in the Era of Virtual Reality

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### ABSTRACT

*Today's new technologies have impacted many different areas of education, with nursing education one such area. Nursing education, as a learning process, targets the combination of cognitive, affective, and psychomotor learning domains. However, traditional teaching methods may not meet all of the Y and Z generations' learning needs. Today's learners are accustomed to multimedia learning environments and have come to expect a certain level of technology integrated into their curricula. Virtual Reality (VR) technology enables students to become immersed within a 360-degree view experience of scenes that have been completely digitally created, whilst no longer viewing the real world around them. Virtual simulation has been used to teach communication, disaster relief, teamwork, and interviewing techniques, among other skills; and can also provide immersive personalized learning experiences. This chapter presents some of the many facets of VR in today's nursing education.*

### INTRODUCTION

Traditional teaching methods may not meet all of the Y and Z generations' learning needs (Somyürek, 2014). Today's learners are accustomed to multimedia environments and have come to expect technology to be integrated into their curricula (Lee & Wong, 2016). Nursing education is one of the fields that has benefitted from Virtual Reality (VR) being incorporated within teaching and learning methods. VR technology enables students to become immersed in a 360-degree view experience of a scene that

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is completely digitally created (Izard et al., 2018). Particularly in nursing education, VR has been used to provide virtual scenarios in a simulated environment in order to teach communication, disaster relief, teamwork, and interviewing, among other skills; as well as to provide an immersive personalized learning experience (Ferguson et al., 2015). VR-based learning provides learners with experiences in contextually rich environments that encourage reflection. Environments that support learning activities designed to authentically replicate clinical practice settings can be used to replicate clinical environments. Such environments may support and provide a foundation for learning during students' future clinical nursing experiences (Gore & Loice, 2014; Korhan et al., 2018). VR has become one such technique by creating a higher degree of fidelity in nursing education by employing realistic methods. Therefore, the aim of this chapter is to discuss the intended and unintended results of nursing education with VR, and to emphasize the importance of VR in the context of cognitive, psychomotor, and affective outcomes that guide today's clinical teaching and evaluation of nursing students.

## **BACKGROUND**

VR-based learning provides learners with experiences in contextually rich environments that encourage reflection. Environments that support learning activities designed to authentically replicate clinical practice settings should be seen and treated as clinical environments. Such environments are seen to support and provide a foundation for learning during future clinical experiences (Chen & Teh, 2013; Gore & Loice, 2014). Practitioners engaged in VR are required to integrate knowledge of anatomy and physiology whilst performing and validating clinical competency in specific procedures such as intravenous catheterization, nasogastric tube placement, urinary catheterization, and pain management (Choi, 2017; Guo, Deng & Yang, 2014; İsmailoğlu & Zaybak, 2018; Jöud et al., 2010). In 2017, Wolters Kluwer Health published results of a survey on technology utilization within nursing education. The study showed a significant increase in the use of virtual simulation. Specifically, the "Future of Technology in Nursing Education" report revealed that 65% of nursing education programs employed virtual simulation, with VR utilization predicted to increase from 10% to as much as 45% over the next 5 years in response to a worsening shortage of clinical training sites (Wolters Kluwer, 2017). The VR teaching approach has become recognized as one of the most effective clinical teaching/learning strategies currently available to ensure caregiver competency in terms of clinical knowledge and critical thinking, as well as the technical application of psychomotor skills through the use of technology. Regardless, the VR approach has great potential as a powerful tool in healthcare education of the future. This chapter aims to present some of the many facets of VR in the scope of nursing education.

## **Nursing Education**

Education is a process that primarily involves teaching, but also facilitates the gaining of certain behaviors, values, and attitudes by learners, helping them to form a lasting view of the world, and to learn how best to approach problems (Hacıaloğlu, 2011). Nursing education is a combination of theoretical and practical elements that involve cognitive, affective, and also psychomotor fields of learning, and as such necessitates the integration of theory and practice specific to the field (Eker, Açıkgöz, & Karaca, 2014).

Nursing education has evolved throughout history. In Ancient Egypt, Mesopotamia, the Hittite Empire, and in Rome, nursing education started with the concept of training based on the master-apprentice

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