Chapter 9
Augmented Reality: An Educational Resource for the Nursing Graduate

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ABSTRACT

Augmented reality is on the rise in education. This case study focuses on its incursion in the training of health professionals. The author has chosen this focus to address situations that the students do not do in the classroom because of the complexity or lack of laboratories. Thus, the author proposes to develop a mobile application with augmented reality. In the first phase, the proposal includes aspects of the technique of urethral probes, including videos and animations. The proposal also includes markers on mannequin present the information of the process for application with mannequins and patients. The results of the application are that the author identified that the augment reality enrich the process of learning for the valuation by the students and teachers. It showed that the virtual contents contribute to the education of the students of the infirmary.

INTRODUCTION

Universities should prepare to use emerging technologies by promoting new skills as a strategic element in achieving academic success for students. Some of these technologies include augmented reality (AR) and virtual reality (VR). This chapter focuses on augmented reality, which Martínez, Martínez and Navarro (2018) define as the visual combination of real and virtual elements that interact with each other. These elements usually are supported by the camera on a mobile device. According to Martins et al. (2019), this type of technology uses various channels and supports the benefit the creation of suitable environments for different learning styles. This technology favors a higher capacity for perception, abstract reasoning, and spatial reasoning.

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Likewise, Arteaga and Pino (2018) point out that augmented reality introduces this technology use into various areas of education, which allows for the development of innate skills in the formation of the individual during his or her educational life process. Cabero-Almenara, Vázquez-Cano, and López-Meneses (2018) confirm these positions, expressing, "Augmented reality can help to increase the value of other technologies in the formative and practical aspect of the development of professional and academic skills of university students (p. 29)".

The area of health is no exception incorporated this technology, and there are various studies on augmented reality applied in nursing. Among these studies is the research of Wüller et al. (2019), which detected various case studies that make use of technology to support their tasks as well as their processes that they adopted. Some of the issues addressed are remote monitoring of temperature and heart rate, teaching anatomy, observing students during the process of medication to patients and wound care, and determining the devices (such as the clock, glasses, or the smartphone) that were tested in each study.

This chapter presents the proposal of a mobile application with augmented reality called Urethral Catheter Application Technique (UCAT), which incorporates technology in the teaching-learning process in one of the essential processes for nursing students, the urethral catheterization technique. This chapter addresses the use of augmented reality in higher education and the rationale for the process model used for its development. This model allows to researchers to identify the phases, to design a mobile application, and to recognize the role of each of the participants in the teaching-learning process (teacher-technology-student) in each phase. The objective of writing this chapter was to develop a mobile application with elements of augmented reality that address the technique of female and male urethral catheterization in human patients and dummies.

BACKGROUND

Education

Constantly updating devices leads to a more significant user-interface relationship and allows more people to have access to technologies that increase and enrich professional, academic, and daily life (Badilla & Sandoval, 2015). The Tecnológico de Monterrey (2017) indicates, "The best practices respond to a pedagogical approach oriented towards active learning (learning by doing) since it is the students who decide how to combine the increased information" (p. 13). Cabero, Barroso, and Llorente (2019) express that students show high levels of satisfaction when they participate in augmented reality experiences, regardless of the level of studies or curricular content they are dealing with; also, students find their use in different educational contexts interesting as a resource that promotes creativity, imagination, and curiosity of the person, in addition to building new knowledge and interacting directly with the virtual what contribute their learning (Cabero-Almenara, Vázquez-Cano & López-Meneses, 2018).

Some authors (Villalustre & Del Moral, 2018; León, Duque, & Escobar, 2018) point out that the experience in university training classrooms has been an innovative and motivating practice and serves as support to enhance teachers' roles. León, Duque, and Escobar (2018) mention that students are capable of developing skills based on discovery, research, and construction of knowledge in a dynamic, creative, and reflexive way using augmented reality. This is confirmed by Cabero-Almenara, Vázquez-Cano, & López-Meneses (2018), who express that the didactic experience of applying augmented reality with