

# Faculty perceptions of virtual reality as an alternative solution for preclinical skills during the pandemic

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## 1 | PROBLEM

The COVID-19 pandemic has created an historic and significant disruption of education systems worldwide.<sup>1</sup> Many dental institutions were forced to close and suspend their preclinical curricular and clinical activities. There are many options which comply with social distancing in reducing the transmission of diseases. The current pandemic crisis highlights the need for an alternative solution for preclinical dental education to prepare students with psychomotor skills in a safe and viable environment. This crisis has stimulated innovation in the pedagogic methodology. Virtual reality (VR)-based simulation has been commonly used in medical education to improve the clinical skills and students' self-confidence.<sup>2-4</sup> However, the use of virtual reality in predoctoral dental education is still limited<sup>5</sup> and needs to be explored further. Both learners' and teachers' perspectives are critical for this pedagogy to be successful. The dental faculty's mindset and adaptation to this novel technology is essential to support this revolutionized pedagogy, particularly with the Millennial generation, and in this challenging time. Therefore, this qualitative study aimed to evaluate the dental faculty's perceptions of using VR for teaching.

## 2 | SOLUTION

Our research group has developed an immersive VR program for dental implant surgery training using Oculus Quest (Figure 1). This VR technology offers the poten-

tial to revolutionize dental education. Predoctoral faculty's perception regarding this novel educational pedagogy was investigated. Ten faculty members (6 prosthodontists, 2 periodontists, and 2 general dentists) participated in the study to assess the application and subsequently a focus group discussion (FGD). FGD questions aimed to address 4 domains: opinions about the immersive experiences, the advantages and disadvantages of this project, features to add or delete on this project, and the future of dental education using VR. A short orientation on maneuvering the Oculus Quest was conducted before the study. The IRB office approved the study.

## 3 | RESULTS


All faculty enjoyed the immersive experiences and commented that the virtual set-up provides a holistic and realistic view of a dental operatory for students. Several faculty worried that this VR exercise might provide a false sense of confidence for learners. Most of the faculty agreed that this pedagogy offers 24/7 access for the students to perform virtual rehearsal, particularly meeting the demand of the Millennials. All faculty recommended a better ergonomic positioning, correct hand grasp of the instruments, better tactile response, and more appropriate tools to maneuver the application instead of the Quest controller. All advocated multi-user function, where both learner and teacher can be in the same VR room to assess and provide rapid feedback to the learners. Several faculty had recommended the magnifying function of the anatomical structure to pro-

**FIGURE 1** Virtual reality for dental implant surgery



vide better viewing. None of the faculty reported motion sickness from using the apps. All faculty also believed that this novel pedagogy is beneficial and can promote student engagement and participation, especially during this challenging time. All acknowledged this tool to be supplemental to traditional pedagogy. The rich descriptions of faculty beliefs and perceptions presented in this study will be of interest to dental educators considering VR adoption in the future of dental education.

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**How to cite this article:** Sukotjo C, Schreiber S, Chun Yuan JC, Santoso M. Faculty perceptions of virtual reality as an alternative solution for preclinical skills during the pandemic. *J Dent Educ*. 2021;85(Suppl. 1):964–965. <https://doi.org/10.1002/jdd.12499>