

Transitioning clinical rotations to a virtual experience: Problem, solution, and results

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1 | PROBLEM

Closure of predoctoral and postgraduate dental clinics during the coronavirus 2019 (COVID-19) epidemic prevented Doctor of Medicine in Dentistry (DMD) students at Tufts University School of Dental Medicine (TUSDM) from participating in periodontal rotations. Under normal circumstances, third- and fourth-year dental students spend 5 sessions each year in the postgraduate periodontal clinic observing and assisting advanced periodontal procedures. The goal of these rotations is to expose every dental student to a broad range of periodontal treatment modalities.

2 | SOLUTION

Virtual periodontal rotations for groups of about 20 DMD students were developed with the help of periodontal faculty and residents, based on andragogical practices integrating virtual platforms available at TUSDM.¹

The phases of a typical session were as follows:

1. A brief review of the topic (i.e., root coverage procedures) were presented by the faculty.
2. Students were asked to answer 7 questions related to the topic using an audience response system (the Poll feature of the Zoom platform).
3. To allow students to experience a step-by-step periodontal procedure, Touch Surgery virtual reality (VR) mobile application was demonstrated, as shown in Figure 1.²
4. The periodontal resident presented clinical cases related to the topic, integrating a person-centric

approach when discussing the case, as shown in Figure 2.³

5. A question/answer session was opened.
6. Students' knowledge retention was assessed again using the same poll questions.

3 | RESULTS

3.1 | What went well

The virtual rotations were recorded as a valuable experience appreciated by all stakeholders: students, residents, faculty, staff, and administrators. It highlighted the capacity to adapt to the posed challenges, such as clinic closure and integrating new teaching formats with the use of technology. Both faculty and residents were eager to use VR, which encouraged student participation through the use of audience response systems. The resident case presentation provided real-life examples for the VR application, and elicited case-specific questions. Poll questions encouraged student participation and provided feedback on the level of knowledge retention.

3.2 | What did not go well

The scheduled 60 minutes may be too short to cover all planned activities. One of the 2 presenters could have served as moderator of Zoom's chat function and some of the questions could have been answered simultaneously. Also, only the last set of data was retrievable from Zoom's poll report, precluding any comparison between pre- and post-presentation performance.

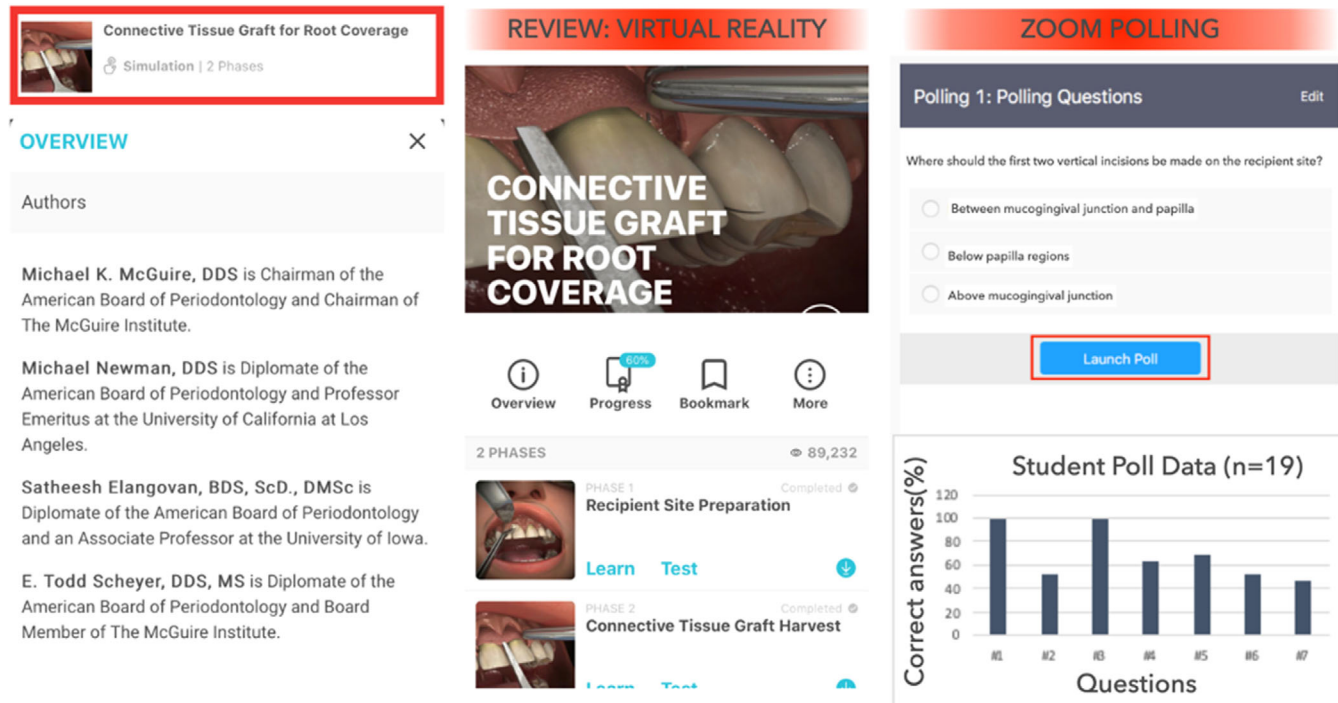


FIGURE 1 Overview of some of the technologies used to facilitate the session (VR-Touch Surgery and Zoom--Polling). Bar chart shows the percentage of correct answers to 7 Poll questions at the end of the virtual rotation



Acknowledgement: Dr. Carl Carlamere, Dr. Tofool Alghanem. This is part of the Complex Cases Library.

FIGURE 2 Overview of 1 of the clinical cases presented, highlighting the need to integrate a person centric approach and apply critical thinking in daily practice

3.3 | Lessons learned

There are unique characteristics to online learning and certain components need to be integrated to ensure an interactive course that will lead to the students' knowledge retention (Figure 3).⁴ The components inte-

grated by this virtual rotation were: communication--via Canvas/Zoom, content delivery--VR and case presentation, collaboration (faculty/residents and groups of students) and assessment (Zoom polling). If the pandemic continues, future virtual rotations may include the use of augmented reality and individual student participation

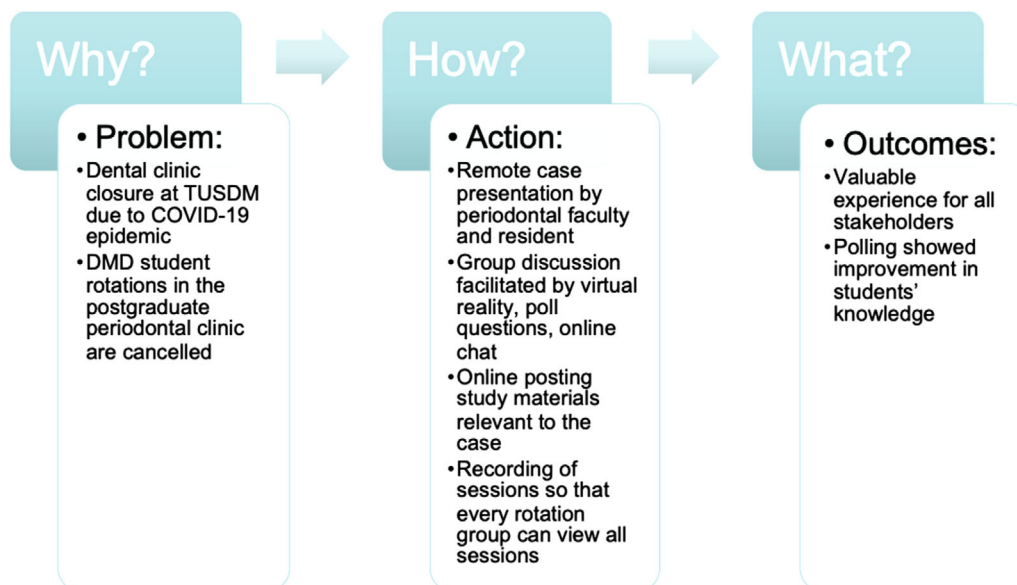



FIGURE 3 Overview of the transitions of the clinical rotations to a virtual experience

to “perform” the surgical procedures. The Commission of Dental Accreditation standards on distance learning need to be considered in planning the transition from “in-person” to virtual exercises.⁵ Physical participation in actual live periodontal surgeries will still be necessary, as virtual education cannot fully replace real-time hands-on experience.

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