

No skills left behind: Online teaching and learning in preclinical dental hygiene

Martha J. McComas RDH, MSDH¹ | Adam K. Barragato PhD² | Janet Kinney RDH, MSDH³

¹ Division of Dental Hygiene, Department of Periodontics and Oral Medicine, The University of Michigan School of Dentistry, Ann Arbor, Michigan, USA

² Dental Informatics, The University of Michigan School of Dentistry, Ann Arbor, Michigan, USA

³ Division of Dental Hygiene, Department of Periodontics and Oral Medicine, The University of Michigan School of Dentistry, Ann Arbor, Michigan, USA

Correspondence

Martha J. McComas, Division of Dental Hygiene, Department of Periodontics and Oral Medicine, The University of Michigan School of Dentistry, Ann Arbor, MI, USA.

Email: mccomas@umich.edu

1 | PROBLEM

In March 2020, the COVID-19 pandemic forced dental hygiene (DH) educators to shift hours of face-to-face (F2F) learning online without sacrificing achievement of student outcomes. One problem became immediately evident: How can DH educators teach fine motor skills in a way that complies with CODA accreditation Standard 2-10, stating that DH students must have at least 6 h of preclinical practice per week?¹

2 | SOLUTION

To answer this question, we embraced a Just-in-Time Teaching (JiTT) methodology via a hybrid format. JiTT is a learning strategy that motivates students through purposeful and timely feedback online and F2F.² Using this teaching strategy, the instructor reviews assignments “just-in-time,” structuring their feedback according to the level of skill demonstrated.² Throughout the semester, students obtained just-in-time feedback on their instrumentation techniques by their assigned clinical instructors via video submissions and synchronous Zoom breakout sessions via the use of iPads.

At the beginning of the week, students were introduced to new clinical skills, asynchronously, via a variety of learning materials including short video modules,

readings, hands-on demonstrations, and annotated PowerPoint lectures. During the synchronous F2F lab, students practiced while receiving hands-on help with their assigned instructor, who corrected critical errors. The following day, students worked in “teams” of eight, facilitated by an instructor for a 3.5-h synchronous Zoom session. The first 30 min were spent reviewing material practiced the prior day. Next, students entered breakout rooms where they would practice and provide peer feedback. Between sessions students were expected to practice and submit formative assessment videos (FAVs). FAVs were 10-min recordings of the student demonstrating and narrating instruments on specific assigned teeth. Videos were evaluated by their instructor before their formative feedback session. During this session, the instructor and student would review the FAV together, correcting critical errors. A more detailed weekly schedule for this hybrid design can be seen in Figure 1. Skill competency was determined at week 8 of the semester using a F2F summative assessment (OSCE)³ of each instrument.

3 | RESULTS

End of semester focus groups were conducted to analyze the perception of the quality of teaching and learning of both faculty and students. Faculty repeatedly stated that the hand skills, understanding, and confidence were



Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Weekly content was released on Canvas. Content contained pre-recorded power points, and demonstration videos revolving around the instrument/skills the student would be practicing on Wednesday in the F2F simulation lab time.	Students would have a 20-30 minute virtual one- on-one formative feedback session with their lead instructor. During this <u>time</u> they would discuss and correct critical errors of the previous week's Formative Assessment Videos.	Students would attend a 3-hour F2F session in the simulation lab. Students would practice the instruments/skills introduced in the Monday Canvas modules.	Students would have a 3.5 hour virtual "team" session with their lead instructor. The first 20-30 minutes would be spent as a group reviewing "muddy points from the newly introduced content. Pairs of 2 would spend time in breakout rooms practicing and giving peer to peer feedback.	Students had individual practice time	Students had individual practice time	Student Formative Assessment Videos (FAV) were due on Canvas by Noon. Lead instructors would "grade" the FAV and give formative feedback that would guide their formative feedback sessions on Tuesday's.

FIGURE 1 Example of Pre-clinical new hybrid schedule for DH students. **PHOTO 1:** First-year dental hygiene student practicing instrumentation at home via Zoom with her team. *Photo courtesy of Leisa Thompson Photography. **PHOTO 2:** Course director working with the typodont and teaching instrumentation with her team via Zoom. *Photo courtesy of Lynn Monson, Associate Director of Communications, University of Michigan School of Dentistry

noticeably better than cohorts in years past. Students repeatedly stated how they were motivated to practice as a result of the FAVs. Students also felt that because they were required to narrate their steps in the videos, the skills “stuck” more in their heads. Finally, students indicated the breakout room sessions were beneficial as they could ask questions from their peers. The average OSCE score was 88%, 6 points higher than the 2019 OSCE and within 1 point of the average OSCE scores from 2016–2019. The combination of JiTT in a hybrid format and incorporating narration into student-created demonstration video assignments created an environment where no skill was left behind. The strategies developed to overcome the problems brought on by COVID-19 were validated by successful student outcomes and will continue long past the COVID pandemic.

REFERENCES

1. Commission on Dental Accreditation. Accreditation standards for dental hygiene education programs. https://www.ada.org/~media/CODA/Files/dental_hygiene_standards.pdf?la=en. Published Revision 2019. Accessed 11-12-20.
2. Bailey T, Forbes J. Just-in-time teaching for CS0. *ACM Sigcse Bull.* 2005;37(1):366-370.
3. Rushforth HE. Objective structured clinical examination (OSCE): review of literature and implications for nursing education. *Nurse Educ Today.* 2007;27(5):481-490.

How to cite this article: McComas MJ, Barragato AK, Kinney J. No skills left behind: Online teaching and learning in preclinical dental hygiene. *J Dent Educ.* 2021;85(Suppl. 3):1936–1937. <https://doi.org/10.1002/jdd.12585>