

# Virtual caries risk assessment workshop in COVID-19 era: Innovative game-based strategy

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## 1 | PROBLEM

Caries risk assessment (CRA) is a critical step in providing individualized treatment plans considering the burden of dental caries in the community.<sup>1</sup> Before the COVID-19 pandemic, dental students performed CRA on their classmates in small groups in clinic gathering information on caries indicators, risk, and protective factors as well as assessing salivary qualities (flow rate, volume, and pH) along with learning to use a Caries Susceptibility Test device to assess bacterial activity. Students as future dentists learn about CRA to establish critical thinking and treatment planning to improve community's oral health. Due to COVID-19 restrictions, dental schools switched to virtual education, a historic change in dental education, facing new challenges given limited in-person clinical interactions strategizing innovative teaching methods to provide clinical context virtually to engage students.

## 2 | SOLUTION

A flipped classroom approach was adopted in the new virtual format.<sup>2</sup> As with pre-COVID-19, a reading assignment

and a pre-workshop quiz were the session's prerequisite. The following innovative strategies were applied virtually during the workshop:

1. A short yet comprehensive presentation was conducted using the Zoom platform with embedded "Polls" every 15 minutes to engage students.
2. A game-based online platform, "Kahoot," was used to make learning CRA concepts fun and interactive.<sup>3</sup> Students competed answering 8 multiple-choice questions through Kahoot (Figure 1).
3. Four case-based scenarios were designed to simulate pre-pandemic CRA exercises. Students were randomly divided into teams of 6 using Zoom's "Break-out rooms" feature. Each team was given 20 minutes to collaborate, identify caries indicators, risk, and protective factors, formulate a treatment plan based on the caries risk of their cases, and use a drag and drop process to create a CRA diagram to categorize caries risk factors and indicators. The teams presented their cases and treatment plans to their peers and faculty, followed by instructors' comments and interactive discussion.

Students were given a 5-point Likert Scale post-activity survey to provide their opinion and interest on using the Kahoot activity and the workshop.

[Correction added on March 5, 2021 after online publication: Funding information was added.]

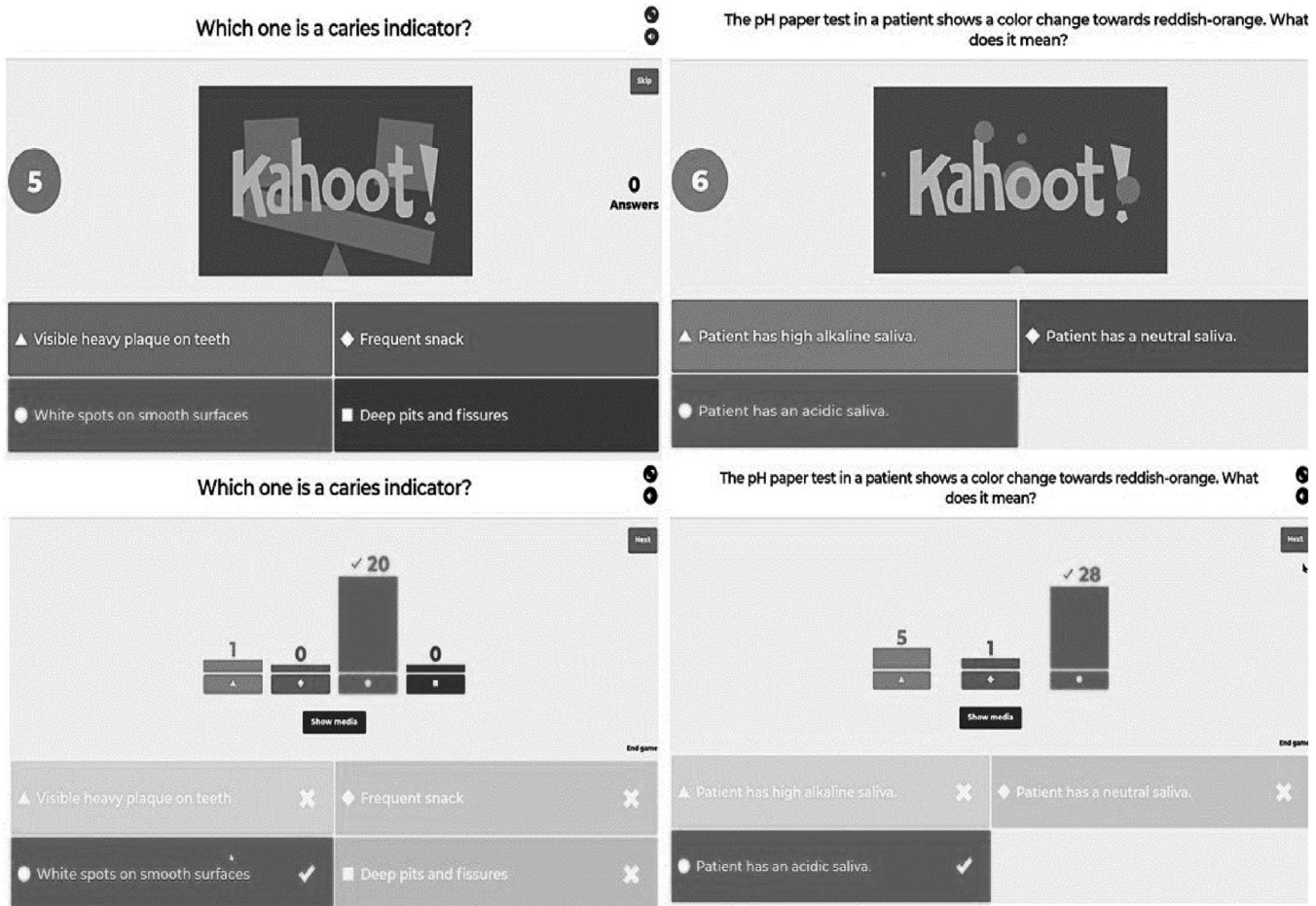


FIGURE 1 Examples of Kahoot online game questions in the Caries risk assessmen (CRA) virtual workshop

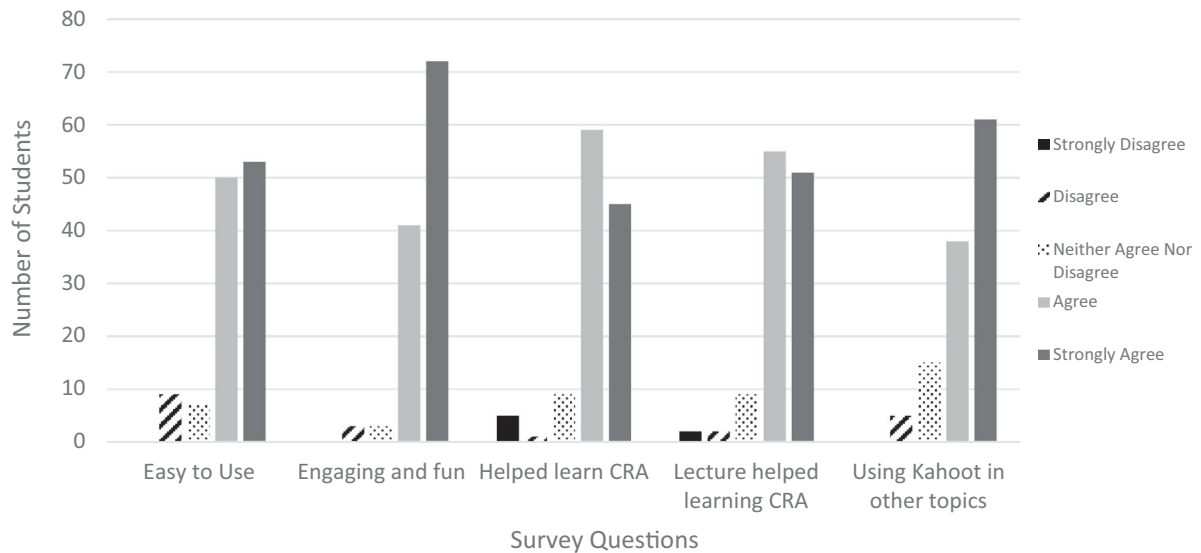
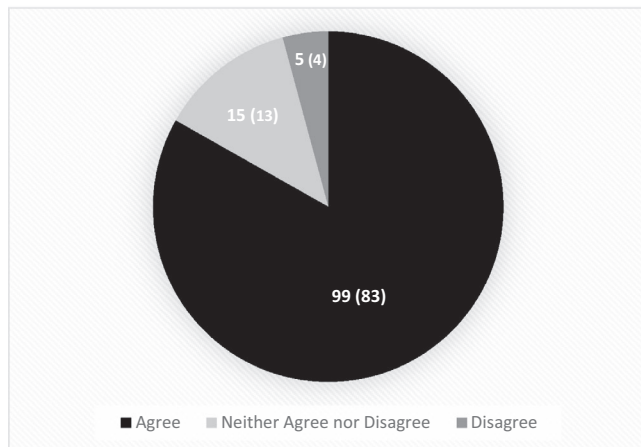


FIGURE 2 Students' responses to post-activity survey about Kahoot and the CRA workshop



**FIGURE 3** Number (%) of students recommended using Kahoot in other topics

### 3 | RESULTS

Multiple teaching strategies were used in our virtual CRA workshop engaging students in various activities. The survey results of the 119 students who rotated through the workshop in 3 sessions, on using Kahoot in CRA workshop, showed that 113 students (95%) found CRA virtual workshop engaging and fun; 99 students (83%) suggested to use Kahoot in other topics; 103 students (86.5%) agreed on Kahoot being an easy-to-use game (Figures 2 and 3). Using Kahoot as well as the “Breakout rooms” feature in Zoom provided the opportunity for students to practice CRA in small groups as their practice in the clinic pre-COVID-19.

A few students needed additional instructions to complete the Kahoot quiz. Even though the lack of tactile learning is an intrinsic shortcoming of virtual classes especially in dental education, using innovative strategies such as gamification via online platforms and case-based scenarios, provided a unique interactive virtual course that engaged dental students effectively. We are optimistic that students’ knowledge about CRA could be structured via innovative virtual workshops and reinforced by their clinical experience when they start patient care.

### REFERENCES

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