CTLD Instructional Technology Fund
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I purchased Kahoot! to enhance student learning and engagement. I chose Kahoot! for two reasons. First, answering questions has a positive impact on student learning, where participants who answer questions about information perform better on delayed tests than participants who re-read the information (for reviews see Adesope et al., 2017; Roediger & Karpicke, 2006; Rowland, 2014; Schwieren et al., 2017; Tolentino Moreira et al., 2019). This testing effect has been consistently demonstrated in the laboratory (Chan, 2009; Woodridge et al., 2014) and classroom (Batsell et al., 2016; McDaniel et al., 2012; Shobe, 2021). Several studies have observed comparable learning advantages for paper quizzes, survey monkey, Quizziz or Clicker response systems to Kahoot! (Goskun & Gursoy, 2019; Tan & Saucerman, 2017; Wang et al., 2016), strongly suggesting that any questioning activity has learning advantages over traditional lecture. The questioning approach using Kahoot! has also been observed to be superior to other activities in the context of a flipped classroom (Dolezal et al., 2018) or group discussions (Iwamoto et al., 2017), suggesting that simply increasing in-class engagement is not sufficient to explain the learning advantages from using Kahoot! or other questioning methods. Rather, the questioning approach has learning advantages that are different from other flipped classroom activities, beyond that which would be expected if their only effect was to increase engagement.

My second expectation was that Kahoot! will enhance student engagement. Increasing student engagement leads to better learning outcomes (Csikszentmihalyi, 2008; Shernof et al., 2017; Wang and Eccles, 2012), even though those learning advantages may be similar across a variety of more engaging pedagogies (e.g., flipped classrooms, discussion groups, questioning). Techniques aimed at enhancing student engagement and motivation achieves goals such as class participation, improving connectedness between classmates and instructor, improving attitudes toward the subject, field, and school, increasing student investment in the material, improving self-efficacy, and practice using metacognitive strategies, even if they are weakly related to content learning (Toth & Sousa, 2019). Interestingly, student engagement, motivation, and enjoyment benefits are higher for Kahoot! as compared to paper quizzes and Clickers (Wang et al., 2016), Quizziz and Google forms (Chaiyo & Nokham, 2017), and Socrative (Turan & Meral, 2018), even where learning advantage for Kahoot! groups over others were not observed. Use of Kahoot! may also lower student anxiety as compared to Socrative (Turan & Meral, 2018) and no questioning (Lee et al., 2019). This suggests superiority of Kahoot! over other active questioning methods for student engagement, motivation, and enjoyment.

I used Kahoot! three times across two classes: Introduction to Psychology (PSYC 1100, 100 students)) and Statistical Methods (PSYC 2241, 35 afternoon students, 30 evening students). In PSYC 1100, students answered 33 multiple choice questions about their chapter on drugs for points on a quiz. There was no significant difference in quiz score between the Spring 23 Kahoot! semester and the Fall 22 non-Kahoot! semester (p = .20). This may be due to the fact that students in the course did previous retrieval practice on this same material, so

perhaps there was no additive effect. In PSYC 2241 (2 sections), students answered a combination of 13 open-ended calculations and multiple-choice questions on the topic of hypothesis testing. The afternoon class was more excitable (sometimes aggressive) than the evening class, even though this was not a competition and there were no performance-based points (all students received credit for participating).

General thoughts:

Music. Intro Psyc and afternoon Statistical Methods wanted the music because it was nostalgic. I turned it off about halfway through the afternoon class because it was annoying to me. The evening class did not want any music, they felt it was annoying. It is possible that I inadvertently demonstrated my preference when I asked them.

Number of questions. Thirteen was a good number, but 33 was too many for Kahoot! I think that the initial student excitement was unsustainable across the two-hour class period for so many students. It became more of a drag after about 20 questions.

Engagement. This was a lot of fun to do, and nearly all students remained with the game for the duration. The afternoon Statistics class was highly excitable: stomping, pounding on desks, cheering, aggressive shout outs (e.g., "in your face!"), and lots of hootin' and hollerin' all around-- remember, no performance-based points were awarded—so, if that type of thing frightens you, Kahoot! is not for you if you have an excitable class. The evening class students were more subdued, but louder and more engaged than is typical for them.

Ease of use. Incredibly easy to set up, import questions and answers, and run. Results files are easily downloadable.

Dislikes:

The player is the student name that they assign themselves. I disliked that because students must use their real names to get points and some students may not want to share their full names with a large class. I got around this by telling students to use whatever name they want, but to privately let me know which screen name is theirs. Only three students made up a name, one never told me their real name. As such, the true identity of Stinky Feet remains a mystery to this day. It would be better if there is was a feature where students can have their real name for the results file, and a screen name for sharing.

I also disliked that I could not easily figure out how to create groups.

The open-ended questions require exact match. I wish it was more Google-like where it could figure out the equivalence of 0.34, .34, and .340. If the instructor's answer is .34, then students who type 0.34 are marked incorrect. This was frustrating for the Statistics students. As such, for my purposes, multiple -choice or other closed-ended/forced choice options work better.

Final Thought: Kahoot! is a great tool. The U should buy a license so that many faculty could use. This was a good purchase and I would purchase this, again.