Management Teaching Review
2017, Vol. 2(2) 151–158

DOI: 10.1177/2379298116689783
journals.sagepub.com/home/mtr
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Using Kahoot! in the Classroom to Create Engagement and Active Learning: A Game-Based Technology Solution for eLearning Novices

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Abstract

Instructional games are gaining acceptance in the classroom as the eLearning merits of student engagement and immediate feedback are recognized. Within higher education, the use of these tools is often limited due to lack of time, insufficient experience, or doubts regarding the scholarly merits of such activities. Kahoot! is a popular eLearning tool that can easily be used to add vitality, student engagement, and meta-cognitive supports to higher education classrooms with limited instructor or student training required. The free online learning platform has gained wide acceptance globally with more than 30 million users worldwide, and it is based on current user-centered and behavioral design methodologies. Student responses and our experiences using Kahoot! in graduate and undergraduate classrooms indicate that students welcome the use of this game. The real-time feedback provides opportunities for professors in various disciplines to tailor their instruction based on student understanding on quizzes while the surveys allow for anonymous classroom participation, which further engages all students.

Keywords

Kahoot!, classroom technology, eLearning, game-based learning, student engagement

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Introduction

In recent years, instructors have been confronting a technological training revolution driven by the use of digital technology to deliver instruction (Clark & Mayer, 2008). "The value of games as a vehicle for teaching concepts while inspiring students is now well accepted at almost all levels of education" (Becker, 2001, p. 23). The challenge is that many professors lack the opportunity, experience, or understanding to utilize digital games within their classrooms. Becker (2007) notes that instructors cannot be expected to embrace games as a tool for learning unless they have a sound understanding of the potential of games and the confidence in their abilities to employ them.

Kahoot! is free, easy for students to use, and simple for instructors to learn. In the classroom, it is fast paced and fun, which supports creative energy and student participation. ELearning experts state "forty years of research says yes, games are effective learning tools. People learn from games . . . and they will learn MORE from a game than from other forms of learning" (Boller, 2012). This article provides instructors with foundational information about Kahoot! and suggests ways to use it to engage students and promote an active learning environment.

Kahoot! Description: Nuts and Bolts

Kahoot! (https://getkahoot.com/) is an online global educational brand that offers a free student response platform resembling the popular trivia game Quizzo. Kahoot! is reminiscent of previous clicker technology with the exception that it is free and easy to learn and use. Educators use Kahoot! to create game-based quizzes, discussions, and surveys. To start, instructors register for a free account by going to https://create.kahoot.it. Once registered, educators can select from millions of free public games and adapt them as necessary, or create their own. The process is easy and straightforward.

Educators launch games for classroom use by going to https://create.kahoot.it, signing in, selecting a particular game, and then clicking "play" to open the game. The game's home page displays a game pin at the top of the screen (see Figure 1).

Students sign in using the web address https://kahoot.it to access the platform. Kahoot! can be used with smartphones, tablets, or laptop computers. Students can chose one device per person or select team mode to use one device per team. All they must do once they access the web address is enter the game pin displayed on the instructor's screen. Students do not need to register for an account or download an application, which can waste time and further complicate the use of technology. All of this makes the se up time and process easy and efficient; both important considerations for classroom instructional use.

Generally, we use Kahoot! as a supplemental teaching tool in classes no larger than 30 students, approximately once a week, and for about 15 minutes. Kahoot! can be played by over 4,000 players at a time; however, the company recommends instructors contact its support team for advice if they plan to use it with more than 1,000 participants (https://kahoot.uservoice.com/knowledgebase/articles/168893-how-many-can-play-a-kahoot-at-once-and-what-bandw).

Figure 1. Sample Kahoot! home page with game pin.

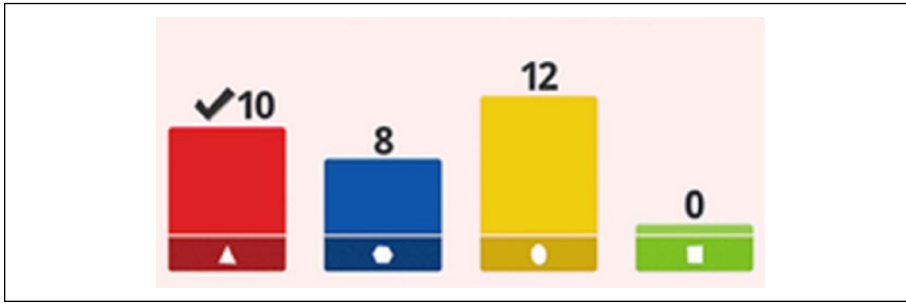

Figure 2. Sample Kahoot! bar graph displaying results for responses.

Once everyone has answered the question, or the time the instructor set for answering the question expires, the correct answer is displayed on the instructor's screen and the aggregate results shown in bar graph form (see Figure 2). The game keeps track of each student's or team's answers, awards points, and ranks players based on speed and accuracy. The top five leaders are displayed after each question (see Figure 3).

Classroom Applications

Instructional experts Gagne and Driscoll (1988) explain that one of the first elements needed for learning is to gain students' attention. The music, colors, and excitement brought by Kahoot! encourage student focus and can excite a classroom. Singer (2016) notes that Kahoot!'s game-like features have helped turn it into a classroom phenomenon with about 20 million users during May 2016. The features of the Kahoot! platform are the culmination of years of studying user-centered and behavioral design by Jamie Brooker and Johan Brand (Inclusive Design, 2015).

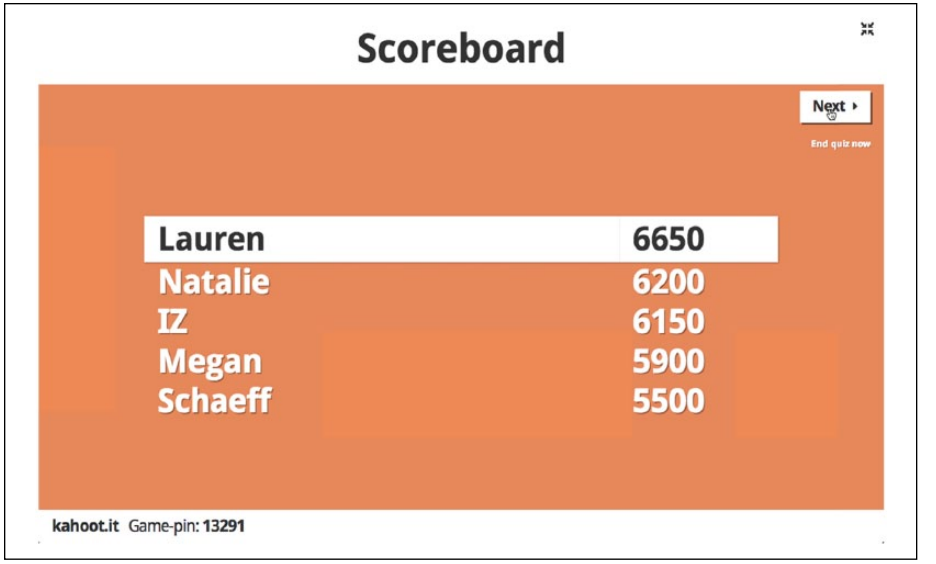

Figure 3. Sample Kahoot! leaderboard display with points.

There are three creation options offered by Kahoot!: multiple choice quizzes, discussion questions, or surveys.

Quizzes

In our classrooms, we have used graded and ungraded quizzes to assess knowledge, comprehension, and retention (1) after completion of reading assignments, (2) following lectures, and (3) to review material from several units. Burguillo (2010) speaks to the importance of competition-based learning to achieve stronger motivation for students to increase their performance. Gagne and Driscoll (1988) conclude that informing students of the objective and then stimulating recall provides opportunities for learners to support their short-term memory recall and meta-cognitive abilities.

Kapp (2012) states that for an educational game to be successful, it needs the right context, the right cognitive activities, meaningful challenges, and feedback. Kapp concludes that the "gamification" of education supports learning and knowledge acquisition. To make business law more engaging and help students apply theoretical legal concepts to real-life scenarios, we embedded short clips from Disney's *Charlie and the Chocolate Factory* into a Kahoot! quiz. Students watched 1-minute clips and then identified the relevant business law issue raised. After each question, there was active discussion about the correct answer, which provided segues into course topics and how relevant concepts fit together.

Students can also create their own Kahoot! quizzes as an assignment or to study for a test. Kumar (1999) reinforces this methodology when he notes that computer games as educational tools have an intrinsic motivation factor that encourages curiosity and creates the impression that students are in control of their own learning. Indeed, students remarked that they enjoyed this assignment because they were creatively using technology within a learning environment (Kumar, 1999).

Discussions and Surveys

Kahoot! can also be used to elicit responses from students related to opinions or beliefs with no right or wrong answers. Student responses can then form the basis for further discussion. For example, in a recent class, we asked students to select who they were voting for in the upcoming 2016 national presidential election. Regardless of public opinion or peer pressure, students anonymously selected their candidate of choice. This in-class survey led to further questions related to the biggest problems facing our nation. Thus, by using Kahoot! to survey the class, students' voices were heard and included in the larger classroom discussion. In this manner, the eLearning tool appeared to add energy to the classroom by provoking thoughtful classroom dialogue.

Student Feedback

During the 2015-2016 academic year we used Kahoot! with both undergraduate and graduate students in two different business courses. At the end of the courses, we collected student feedback to gauge student interest. As discussed below, there was nearly universal student support for Kahoot!

Student feedback on Kahoot! was collected using a questionnaire with a 7-point Likert-type scale.[1] The questionnaire consisted of five questions. Questions 1 through 4 asked students to answer questions about their Kahoot! experience using the Likert-type scale. Question 5 was an open-ended question that allowed for individual responses. The student sample consisted of six classes at a northeastern university: five undergraduate business law classes (111 students) and one graduate global management class (28 students)—a combined total of 139 students. The overall results from Questions 1 through 4 of the questionnaire are listed in Figure 4.

Question 5 of the questionnaire asked students, "How would you describe your experience using Kahoot! in this course?" Overall, there was an 88.7% positive response rate. Sample positive comments included the following: "I looked forward to coming to class when I knew we had a [Kahoot!] quiz," "My [Kahoot!] team bonded during the semester, talked about the course, read the material, and planned our strategy for the quizzes because no one wanted to let the team down," "I participated more than I have in any other class because Kahoot! made me want to," and "It focused class discussions in a way that made the course more tailored to our interests rather than a generic one size fits all course."

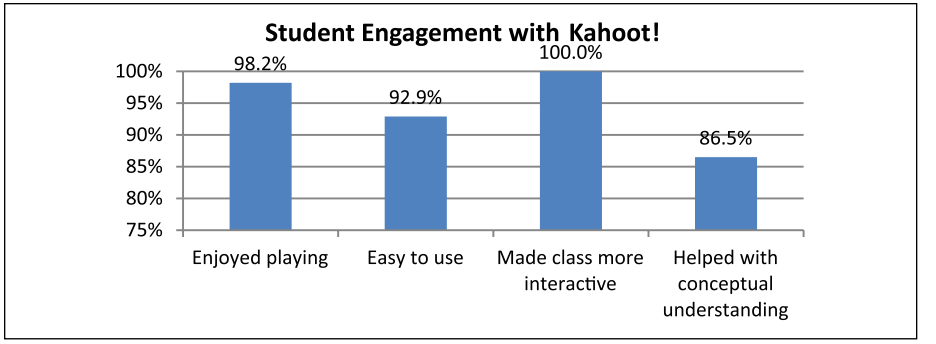

Figure 4. Results from student survey of 139 undergraduate and graduate students.

As for the remaining responses, 2.2% of the students did not provide any answer to Question 5, and 9.1% reported negative comments. Negative responses included the following concerns: "It was difficult to stay motivated once I got a couple questions wrong because I could not win the game," "The same students won each time, which wasn't fun for the rest of us," "It was stressful because I had to read the question and answer it so quickly I didn't have time to think," and "It seemed a little gimmicky." Professor Neil Selwyn from Monash University recognized a similar potential limitation of Kahoot! when he noted that being ranked does not appeal to every student similarly (Singer, 2016).

Overall, utilizing Kahoot! was a positive experience that imbued our classes with activity and focus and provided a way for all students, not just the extroverted students, to participate and contribute to the learning environment. Bergin and Reilly (2005) reinforced our experience when stating that "the use of games to promote students' learning has been done to capture students' interest as all of us learn better when we are motivated" (p. 294). The immediate feedback demonstrating how many students got the right answer was invaluable. The results often contrasted with our impressions and assumptions about what the students knew and understood. It allowed us to provide additional clarification and explanation and to see learning trends in ways that traditional assessments do not. In addition, students often debated the correct answer and related their own interpretations. This allowed for more student input regarding the learning environment and more opportunities for us to discuss the nuances of certain issues. Finally, we even noticed that students asked more questions. The students seemed more comfortable asking questions when they could see other students got the wrong answer too.

Clark and Mayer (2008) note that the benefits gained from the use of new technologies will depend on the extent to which they are used in ways compatible with the learning process. Utilizing Kahoot! helps support student metacognition by providing immediate feedback. Kahoot! also offers the opportunity to not only assess students' conceptual understandings but also support the construction of new knowledge and understanding through further explanation during or after the game. Raymer (2013)

Table 1. Advantages of Using Kahoot! in the Classroom.

- Free
- Easy for instructors to learn
- Simple process for students (no account registration or downloading of application)
- Compatible with smartphones, tablets, or computers
- Real-time results help instructors provide clarification when needed
- Music and colors add to student excitement and energy
- Increases student engagement
- Instructors can download, review, and save student results
- Students can take quizzes multiple times
- Instructors can creates quizzes, discussion questions, or surveys
- Instructors can adjust the response time

reinforces that engagement and learning go hand and that you cannot have one without the other.

Advantages and Disadvantages

In addition to some of the advantages discussed throughout this article (see Table 1), the Kahoot! platform also contains other advantages: the ability to download, review, and save students' results; a "ghost mode" feature allows students to take quizzes multiple times and compete against themselves for better scores; and a setting to allow instructors to adjust the response time from 5 seconds to 120 seconds.

There are also some disadvantages about which educators and students should be aware: there is a limit on the number of characters you can use in questions and responses; and educators cannot ask open-ended questions or receive open-ended responses (although this feature is reportedly coming soon).

Conclusion

Games like Kahoot! are an excellent choice for teaching university students given the access to mobile devices, availability of Wi-Fi, and students' affinity for computer games. Such eLearning tools add positive energy, support concept exploration, and add fun to the classroom, which seems to translate into increased comprehension and motivation. Perhaps most significantly, the "gamification" of learning increases student engagement by appealing to all students, even the most introverted, combining both a cooperative fast-paced learning environment and friendly competition (Kapp, 2012). Bergin and Reilly (2005) conclude that to some academics, the entire games industry is considered to contain little scholarly merit. Games, especially eLearning games, are sometimes not believed to be the result of serious work or worthy of attention. Our experience with Kahoot! reinforces that with some effort and a desire to engage students, this eLearning platform can provide an engaging environment that supports learning and adds active participation in the classroom.

Acknowledgments

We thank Dr. Joseph Seltzer for his encouragement regarding submission of this article following a session we conducted at the Annual Mid-Atlantic Organizational Behavior Teaching Conference at La Salle University School of Business on March 19, 2016. We also thank him and the editors for their time and guidance during the review process.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Note

1. The numbered scale contained the following designations: 1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Slightly disagree*, 4 = *Neither disagree nor agree*, 5 = *Slightly agree*, 6 = *Agree*, 7 = *Strongly agree*.

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