

# Technology Reviews

## Kahoot! – game-based student response system

Gemma M Boden, Lindsay Hart  
University of Greenwich

### Abstract

Some 76% of adults own a personal smartphone (Ofcom, 2017) and, whilst such hardware was initially viewed as a nuisance in the classroom, many universities are now promoting the use of mobile technology as a teaching and learning aid. Substituting the traditional test paper with interactive mobile quizzing can be seen as a twenty-first century advance in pedagogical methods, both engaging the learner and enhancing the student experience. Within this paper, the authors examine the use of a popular mobile gaming application – Kahoot! – and discuss the merits of implementing its use in higher education.

### Introduction

*Kahoot!* is a game-based student response system (GBSRS), the application of which transforms the classroom into the format of a game show. Via a laptop or pc, the teacher presents questions on the classroom screen and students answer them by means of their mobile devices.

In comparison to paper quizzes and traditional, simple student response systems (SRS), the use of GBSRS, it has been suggested, produces greater student engagement and more enjoyment, concentration and motivation (Wang, Zhu and Satere 2016). Similarly, results from the five-year study by Salaz-Morera, Arauzo-Azofra and Garcia-Hernández (2011) revealed that such interactive quizzes as *Kahoot!* had a positive impact on student learning and that students particularly valued the inclusion of such activities in their programme.

*Kahoot!* uses bright colours and a combination of graphics and music to build anticipation. Wang (2015) says that a primary focus of *Kahoot!* is the emphasis on ‘learning through playing’. This design approach encompasses the ideology of the creators, who wish to make learning more enjoyable. Certainly, results from the study by Wang (2015) revealed that many students became more involved and could better refocus their attention when their lectures included a fun element.

### Features and applications

Comprehensive help and guidance is available on the *Kahoot!* website to aid the novice user. However, the simplicity of *Kahoot!* means that creating quizzes is fairly self-explanatory. Indeed, its ease of use was commended in the recent study by Ismail and Mohammad (2017).

There is no payment option or upgrade, as one version is available to all. Joining is incredibly simple: within teacher mode, a sign-in from a recognised email account is required, whilst the student simply enters a unique pin on her/his personal mobile device.

Each quiz can be designed and created to assess, in a flexible way, the knowledge of students in a group. By deploying the quiz at the beginning of the classroom session, the teacher can introduce a topic and assess prior knowledge, so determining where the focus of the session should be directed (Fotaris *et al.*, 2016). Conversely, using *Kahoot!* at the end of a session gives scope for reviewing key lecture points and also assessing how much the students have learned (Wang, 2015).

At login, there are four choices for the user: teacher, student, workplace and social, each with a discrete set of features appropriate to the respective user. When 'teacher' is selected, the user assumes control of the game and activates the quiz, generating a unique pin which in turn opens the quiz for the participants. For the duration of the quiz, the teacher has control of the pace, facilitating breaks for further discussion, explanation or debate. A teacher or teaching team can create the quiz at any time, since specific topics and a range of pre-prepared options have been made available by the *Kahoot!* community.

With multiple-choice answers displayed on her/his mobile device's screen, all the student has to do is touch a selection to log it. The teacher uses a pre-set timer to stipulate response time. Consequently, from the number of responses displayed on the teacher's view, it's possible to check that all students have answered. The leaderboard, listing the top five competitors after each question, encourages engagement and promotes an atmosphere of healthy competition. An additional attractive feature for the student is the option to compete under a pseudonym, allowing anonymity for the modest or the shy.

### **How can this quiz be used in practice?**

The features and functions of *Kahoot!* can enhance the teaching and learning experience in a positive manner:

- Conclusions drawn by Bester and Brand (2013) from their research into the use of technology in the classroom indicate that such methodology is now essential and teachers should be less reluctant to embrace it. Creating and applying *Kahoot!* quizzes is so easy that teachers who are less experienced with technology or are apprehensive about using it may find encouragement in adopting this straightforward means of engaging students.
- Results from a *Kahoot!* session can be downloaded to a spreadsheet for the teacher to highlight problematic questions and identify students who may be struggling.
- A function called 'Ghost mode' allows students to play against their last attempt and aim to beat their previous score.
- Quizzes can be shared between colleagues across different sites.
- *Kahoot!* has been used successfully in real-time sessions, with students submitting relevant topic-based questions for the entire class to undertake.

## Identified strengths and weaknesses of Kahoot!

The table below exhibits the internal strengths and weaknesses of *Kahoot!*, as well as the external opportunities and threats.

**Table 1:** SWOT Analysis

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Attractive, colourful interface</li> <li>• Encourages active participation</li> <li>• Completely free</li> <li>• Multiple question styles</li> <li>• Easy-to-create quizzes</li> <li>• Allows the shy student to answer questions without embarrassment</li> <li>• Shapes are used to accommodate any student with colour vision impairment</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Aware of an expectation for quick response, students may guess or answer questions without thorough consideration</li> <li>• Noise generated when large groups of students become excited</li> <li>• Students without a device are not monitored</li> <li>• Being ranked on performance does not appeal to all students</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Can be used on most browsers; app available but not essential</li> <li>• Enables social interaction and discussions between class members</li> <li>• Tagging <i>Kahoot!</i> quizzes can further discussion and sharing via social media sites</li> <li>• A bank of quizzes is available for adaptation</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Limits on characters allowed per question: ninety per question; sixty per answer</li> <li>• If connection is lost, user will lose track of progress</li> <li>• Cannot be embedded within slides without use of third party provider</li> </ul>

## Student views

Other quizzing platforms exist, such as *Socrative* and *Quizdom*. However, informal student feedback gathered from undergraduate students on our programme indicated a preference for *Kahoot!*, based on user experience and enjoyment. This is certainly consistent with our personal observation: during the course of a game involving these students, energy and enthusiasm within the room were almost tangible, competitive personalities were revealed and social interaction increased – and even involved the quieter and more reserved students.

## Conclusions

In times of financial constraints, the fact that *Kahoot!* is a free resource makes it an appealing prospect for incorporation into all levels of teaching. The bright interface and lively music engage and motivate students: our personal impression, from observing groups of up to fifty-seven undergraduates engaged in *Kahoot!* activities, is of an instant surge of energy

in the room, avid participation, light-hearted banter and competition. Consequently, one thing to bear in mind when using *Kahoot!* is to be prepared for increased classroom noise!

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