

IMPROVE STUDENT ENGAGEMENT AND COLLABORATION WITH KAHOOT

Abstract

Together with technology-infused education, gamification is gaining momentum as an innovation to motivate and to engage students in their learning process. There is strong evidence that shows the relationship between game playing and increased motivation and engagement. More and more learning games emerge and bring a promise to help to learn a language. The present study incorporates Kahoot- a descendant of “Personal Response Systems” (PRSs) - in a case study with sophomore students in Foreign Trade University, Hochiminh Campus. The main goal of this empirical study is to find out perceived effect of students on how Kahoot would possibly enhance their learning experience as well as their engagement and collaboration in class. The research reveals that students are generally positive about its use, and prefer courses that use the technology over those that do not.

1. Introduction

Game-based activities have always been an integrated part of language teaching and learning. Traditional games that involve paper and pens, and later on, Power Point Slides have been utilized for years in the classroom. In Vietnam, Wi-Fi and Internet connection have been widespread across universities and schools nationwide since 2006. The use of computers in college classroom has become so commonplace in megacities such as Ha Noi or Ho Chi Minh city, that on most campuses, a classroom has at least an instructor computer workstation connected to a projector. Despite the widespread availability of instructional technology, traditional “Socratic” lectures are still the mainstay of college teaching, and even when the computer is used, more often than not a PowerPoint presentation has replaced the chalkboard and overhead transparencies in method of preparation and delivery but not in essence of form or content.

In 2015, Kahoot was designed by Jamie Brooker and Johan Brand. Kahoot is a free Personal Response System for administering quizzes, facilitating discussions, or collecting survey data. It is a game-based classroom response system played by the whole class in real time. As an assessment based tool, Kahoot supports assessments, productive formative assessments and student reflection. 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.

Kahoot has been well recommended for large-size class, in which student-student and student-teacher interactivity are difficult to stimulate. Having been utilized in a variety of subjects, from science to social studies, Kahoot has also exerted positive impact in language teaching and learning. Several literature reviews claimed its benefits and positive effects on student learning, such as providing immediate feedback, increasing participation in class, and improving retention of the focal material (Hunsu, Adesope, & Bayly, 2016).

In the context of relatively large-size language classes with free Wi-Fi and well-equipped classrooms, the researcher has applied this technology during a course of ten weeks in two classes. Several Kahoot sessions have been carried out during the course and at the end, a survey was delivered to assess the attitudes of students towards the game regarding their learning experience, their level of engagement and collaboration. Based on the underlying assumption that enhancing classroom interaction can benefit students' language learning and increase their level of engagement and collaboration, the present study incorporated Kahoot as a means to engage students in the classroom and promote active learning. The investigation was undertaken to examine the sample's attitude towards Kahoot, addressing the following questions:

- (1) How do students perceive Kahoot as a tool for enhancing learning experience?*
- (2) How do students perceive Kahoot as a tool for improving engagement in class?*
- (3) How do students perceive Kahoot as a tool for improving class collaboration?*

2. Literature Review

Gamification is not a very new concept. It is defined as the use of game elements and game design techniques in a non-game context. It is used in various contexts for various purposes and at almost all levels of education (Becker, 2007). In higher education, games have been found to be beneficial for academic achievement, motivation and classroom dynamics (Sharples, 2000). There is strong evidence that shows the relationship between game playing and increased motivation. More and more learning games emerge and bring a promise to help to learn a language. There are certain game elements that could be used in non-game contexts to trigger effective player engagement as well as persistence and motivation to win/learn. Furthermore, schools, workplaces and families can use games and game technologies to enhance learning. The idea is that when learning through games, students are so engaged and motivated that they are learning even they are not aware of it (Burguillo, 2010). Therefore, games can be made an integrated part of a traditional classroom lecture to improve learning, motivation and engagement (Wang, 2007; Owston, 2009)

Kahoot enhances learning experience

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. A study in two different business courses carried out by Plump & LaRosa (2017) addressing students' experience using Kahoot yielded a result of an 88.7% positive response rate. 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.

Kahoot enhances student engagement

Raymer (2013) reinforces that engagement and learning go hand and that one cannot go without the other. Perhaps most significantly, the “gamification” of learning increases student engagement by appealing to all students, combining both a cooperative fast-paced learning environment and friendly competition (Kapp, 2012). Bergin and Reilly (2005) stated 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). Caldwell later in 2007 asserted that engaged students have a high level of involvement that lead them to prepare themselves better for the class, pay more attention, take good notes, think and be able to recall material from previous lectures.

4 levels of engagement

Reeve Engagement Mode is seen as ideal engagement indicator for this study. Engagement is a multidimensional construct. Engagement has four noticeably distinct but highly reciprocal aspects namely Behavioral engagement, Emotional engagement, Cognitive engagement and Agentic engagement (O’Donnell, Reeve, & Smith, 2011). Students’ involvement in class ranges from attempt, consistency, and pro-social classroom conduct (Behavioral engagement) to utmost interest and eagerness with low nervousness and fatigue (Emotional engagement) to convergence, critical thinking, refined learning strategies and self-regulation (Cognitive engagement) to deliberate steps of agency to develop one’s understanding with the learning activity or subject matter (Agentic engagement). In Behavioral Engagement level, students show on-task attention and concentration, high effort and high task persistence. As for Emotional Engagement, teachers can witness the presence of task-facilitating emotions such as interest, curiosity and enthusiasm, as well as the absence of task-withdrawing emotions such as distress, anxiety, frustration, anger and fear. Cognitive engagement includes adopting personal learning strategies and/ or seeking conceptual understandings rather than surface knowledge. Finally, as a relatively recent concept, students are engaged agentially when they make proactive and constructive contribution into the flow of

learning such as adding related information, offering insights to explain the answer (Reeve, 2012).

Kahoot enhances student collaboration

Collaborative learning occurs when students work together in small groups toward a common goal, creating meaning, exploring a topic or improving skills (Prince, 2004). It increases the ability to think critically, enhances student involvement, satisfaction, engagement and higher-order learning, and encourages students to participate in giving the answer, explaining and justifying their opinion (Lantz, 2010). Stowell & Nelson (2007) further addressed that the effect of active collaborative learning on student performance is further enhanced when it is combined with the use of technology. With respect to the technology studied in this paper, Kahoot enables students to cognitively process questions asked by the teacher and to increase participation by introducing important changes in the class format because it fosters the processing of new concepts and the integration with prior knowledge, and encouraging students to discuss ideas and debate points of view critically (Mayer, 2009). Kahoot facilitates the development of active learning and students' contribution to knowledge creation, so that students feel that are participating in their own learning.

By stimulating two-way communication during the process of answering questions and in the discussions about the correct answers, PRSs increase the degree of perceived interactivity in the classroom both among students (interactivity with peers) and between the students and the teacher (interactivity with teacher). Interactivity is conceived as a critical element in the learning process. It stimulates students to participate in the classroom active collaborative learning (Guthrie & Carlin, 2004; Thalheimer, 2003), and to develop a sustained behavioral involvement in learning engagement (Carnaghan & Webb, 2007; Kay & LeSage, 2009). The presence of these two elements is instrumental in enhancing students' learning performance. Only when students actively collaborate in the learning process can the teacher adapt the pace, style and topic of the lecture to better fit the students'

needs, identify any misunderstandings so as to clarify them properly and punctually, and make sure that they have understood all the materials before continuing with the next learning step.

3. Research Methodology

3.1. Participants

Participants belong to four classes with a total of 154 second-year students taking part in English 3 and English 4. The course book is Pre-Intermediate Market Leader, Third Edition. All the participants had homogeneous backgrounds in terms of their L1 and L2; that is, they were Foreign Trade University, Ho Chi Minh Campus students majored in Finance and Banking, they learn English as a foreign language (EFL) in Vietnam, with 10 to 14 years of L2 study. They share the same syllabus, materials and roughly similar language proficiency level. The demographic gender rate is 19.04% male

Although none of the participants had any Kahoot experiences before, 98.6% of students in four classes possessed a smart phone that could connect to the university Wi-Fi and they are familiar with interactive technology.

3.2. Research instrument: Online surveys

The instrument used was a Likert-scale based survey, in which students' perceptions about the use of Kahoot across the course and how the technology affects their class engagement, collaboration and learning performance. The questionnaire consisted of 20 items that range from *strongly disagree* (1) to *strongly agree* (5). It was designed by the researcher and delivered to the students via emails at the end of the course for their evaluations and comments.

At the end of the survey, there were open-ended questions for students to give their opinions on benefits and drawbacks of Kahoot. They were also welcomed to give other comments anonymously.

3.3. Procedure and materials

The teacher standardized their course material and lectures to ensure that all classes covered the same material in an identical way. The lesson plans, delivery

methods and approach to teaching in the classrooms were also coordinated. During the semester, each class was given five Kahoot sessions, with a variety in questions per session, using personal devices connected to university Wi-Fi to respond.

The method of instruction used during the sessions with Kahoot was class-wide discussion. As such, students were clustered in small groups (3-4 people). At the beginning of the sessions in which Kahoot were used, groups logged into kahoot.it, entered PIN and the teacher started to show questions. After each question, the teacher required the groups to click on the correct answer. Once a question started, a timer appeared on the screen. The system allowed a time limit to be set for responses. According to the nature and difficulty of the questions, groups of students were given 20-60 seconds to discuss among themselves and answer each question using their mobile phones. The software recorded each group's response. The number of groups who had responded at any point in time was visible on the screen. When the time was up, the correct answer was shown, the student responses were displayed as a bar graph with the distribution of answers (shown as a number). Each group was then encouraged to explain its answer, ask questions to other groups and discuss the alternative answers.

The materials used during the test sessions consisted of sets of multiple-choice questions that checked the students' understanding of the material of each unit, vocabulary and grammar review, as well as case studies.

3.4. Data collection and measures

Of the 154 students enrolled in the course, 119 completed the survey, yielding a response rate of 77.27%. The data collected from the questionnaires was processed quantitatively and was presented in tables and charts, while the information from the open-ended questions was quoted and analyzed qualitatively.

4. Data analyses and Results

Data attained from the questionnaires and open-ended questions was categorized into three categories, namely learning experiences, engagement, and

collaboration. Descriptive statistics was computed and the Table 1 below shows the findings in detail.

Kahoot and Learning Experience

Item number LE3: Slow Internet connection reduced my eagerness towards the game. (mean = 4.30) scored highest among all items and this shows that students are easy to lose motivation for external impact as Tonic emphasized: "Wifi really needs to be upgraded!" in the open-ended question. Students overall found the game easy to play and that it was an effective way for learning. More than a half of the sample (69.3%) approved that their English knowledge and ability was improved with the use of the game. 71.2% of the students agreed that Kahoot facilitated learning. However, Item LE1 " Kahoot helps improve English knowledge/ ability" has lower scoring. The reason was that for students found it hard for knowledge to stick after the game. Answers for the open-ended question also supported the argument as Toshiba stated: " Time is too short for reading and answering the questions. And after all I can't remember anything else except having fun with my friends". Time constraint seemed to be a problem in this game. Another student said that "Some questions are too difficult so the time pressure makes it difficult for us think and answer". Kim, on the other hand, emphasized on the merits of bringing games into the classroom: "The game is fun, relaxed and the competition makes it really interesting!". Other students also expressed excitement in their answer later on. Murph commented: "Absolutely". Linda said: "Thank you very much for bringing Kahoot into classroom".

Kahoot and Engagement

Data from Tables 1 shows that the highest mean value is scored by Item 2: "Kahoot provides more relaxed classroom atmosphere" (Mean=4.51), followed by Item 1: " Kahoot is fun" (Mean = 4.45) and the lowest mean value scored by E10, " I spent time explaining the answer to my team and my class" (Mean=3.01). In general, students' level of emotional engagement was high during the game, all four items in emotional engagement (Item E1, E2, E4 and E6) had means higher than 4.00.

Students were also engaged highly behaviorally (Mean = 4.16). The answers in the open-ended questions supported the data:

Ann: "It breaks up serious atmosphere in class. I really like it so much!"

Tony: "I like Kahoot because it makes me not too sleepy in the early morning. Moreover, I can get the news and talk more with my friends. However, there are a lot of question that I didn't understand and many of my right answers depending on luck".

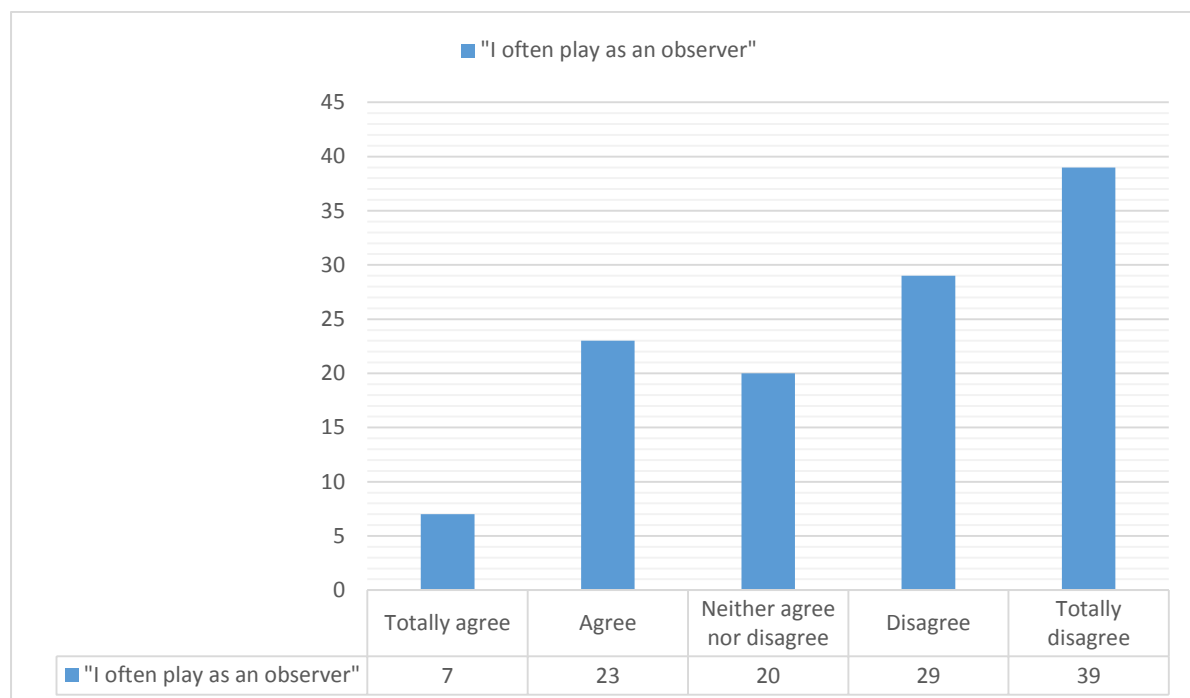
Kim: "It is a very exciting warm-up activity before studying. It makes our study less boring".

Tonic: "Kahoot makes our class more fantastic. I don't have enough time to search the answers on internet so it really helps my brain work effectively.

It is important to note that, among 118 received answer in Item C5: "I usually played as an observer, rather than a player", there were 30 out of 118 students, comprising 25.4%, said that they mostly observed the game.

Chart 1

Item C6: "I often played as an observer, rather than a player."



However, it should be noticed that cognitive engagement was much lower (Item E5, E9 and E9). Students showed reluctance towards explaining the answers to

their peers (Mean=3.01) and had mixed attitudes towards direct, immediate feedbacks (Mean = 3.81).

Regarding agentic engagement, a more positive trend could be witnessed. 92 out of 119 students said that they might replicate the game in another context.

Kahootand Collaboration

The mean value for Item C1-C5 ranged from 3.42 to 3.89. Students show roughly similar level of agreement on the the impact of the game for communication, information exchange and team work. The data from qualitative result also supported this outcome.

Toshiba said:" It's so excited and wonderful, I like it. Especially, I can communicate with my friends. Thus, it makes our study more effectively and provides much information about many aspects of our life".

Mai added: "The game is fun and requires good teamwork skills. It is suitable for all students".

Table 1

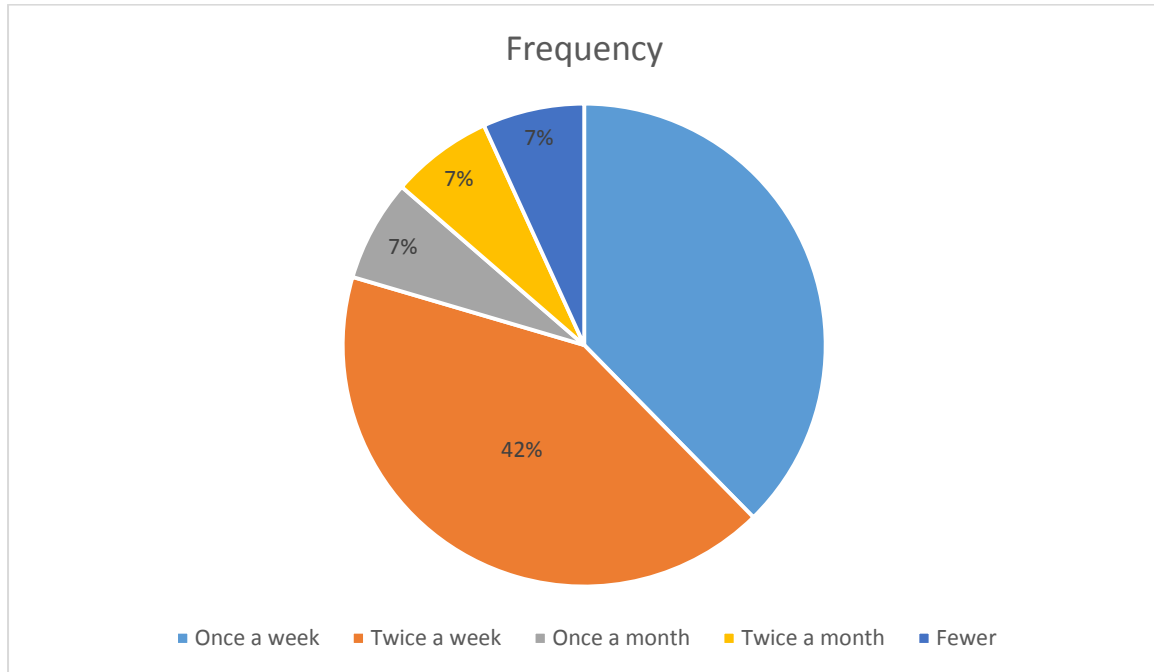
Constructs, items and confirmatory factor analysis results.

| Group | Number | Item | Mean | SD |
|---------------------|---------------|---|-------------|-----------|
| Learning experience | LE1 | Kahoot helps improve English knowledge/ ability | 3.70 | 1.00 |
| | LE2 | It was easy to use a mobile device to play the game | 4.23 | 0.90 |
| | LE3 | Slow Internet connection reduced my eagerness towards the game. | 4.30 | 0.94 |
| | LE4 | I remember the information/ knowledge better compared to traditional lessons. | 3.82 | 0.94 |
| | LE5 | The fact that the game is anonymous (not use real names) makes me willing to join more. | 4.04 | 1.01 |

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|---------------|-----|---|------|------|
| Engagement | E1 | Kahoot is fun | 4.45 | 0.68 |
| | E2 | Kahoot provides more relaxed classroom atmosphere | 4.51 | 0.65 |
| | E3 | I could focus more during the game than normal lectures | 4.16 | 0.86 |
| | E4 | I was more positive towards the topic after playing the game. | 4.10 | 0.88 |
| | E5 | I liked getting feedback after every question | 3.87 | 1.00 |
| | E6 | Even though I may not be familiar with the topics, I was comfortable to participate. | 4.05 | 0.92 |
| | E7 | I wish Kahoot was used in other lecturers. | 4.15 | 0.94 |
| | E8 | I will adopt the application for other lessons and/ or, other purposes (e.g. my after-school clubs) in the future | 4.14 | 0.87 |
| | E9 | I often compared my answer to my class classmates' answer | 3.70 | 1.04 |
| | E10 | I spent time explaining the answer to my team and my class | 3.01 | 1.22 |
| Collaboration | C1 | Kahoot fosters exchange of knowledge, information and experiences | 3.94 | 0.89 |
| | C2 | Kahoot focuses on team work rather than individual work | 3.69 | 0.98 |
| | C3 | Kahoot enhances communication with classmates | 3.87 | 0.90 |
| | C4 | Kahoot fosters team spirit | 4.02 | 0.81 |
| | C5 | I often played as an observer, rather than | 2.38 | 1.26 |

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|--|--|-----------|--|--|
| | | a player. | | |
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The last question on the preferable frequency of the mobile application shows a result of 80% of all respondents said that they wanted the game once or twice per week (Chart 2). **Chart 2:** How often do you want to have a Kahootsession?



5. Discussion

The study shows the highest rate of class engagement. In this study, students are considered highly engaged in the learning process as the results from descriptive statistics show that the means of the engagement constructs are above 3.01 using the 5-point Likert Scale. This finding is consistent with another research by The University of Nicosia, in which 71% percent of the students indicated that they participated more in the lessons (Zarzycka-Piskorz, 2016). Another research from University of East London, the result showed that most students communicated with peers while playing and a high percentage of 88.4% students discussed about the correct and incorrect answers after every question (Fotaris, Mastoras, Leinfellner, & Yosullany, 2015).

Notable results from the study are the consequences of interactivity for improving and enhancing student learning performance. Interactivity with peers and with the teacher is an important determinant of a student's active collaborative learning and engagement. As students interact with their peers and with the teacher during the use of the Kahoot!. Active collaborative learning has proven critical in enhancing the student learning experience. This is because it allows students to think critically about the material and to understand the alternative answers, thus achieving a deeper processing of knowledge.

It is important to highlight that the improvement in learning performance may not be exclusively derived from the use of this technology, but also from the development of peer group practices. The interplay of this interactive technology and peer group practices, based on class-wide discussion, enhances positive outcomes (Caldwell, 2007). Kahoot allows the individual and the group to share the response to questions and allow everybody to participate in the discussion of the correct answer.

6. Conclusion, Recommendations and Limits of the study

Aforementioned findings suggest that Kahoot enhances students' learning performance by increasing interactivity with peers and the teacher. This interactivity, subsequently, promotes individual active participation and collaborative learning, which increases student engagement in the learning process. Coupled with effective pedagogy, Kahoot can offer more effective and less intrusive measurement of learning than traditional assessment. Overall, these results provide strong support for the use of Kahoot in the class as a tool to enhance the learning experience.

The study presents some limitations that need to be addressed in further research. First, the sample consists only of students who have used Kahoot and, thus, the researcher cannot compare the results obtained from a control group of non-users. Moreover, given that the language course in this empirical application is the pioneer in the introduction of this technology in the university under study, I acknowledge that the results may reflect, in some way, novelty effects. For all the

students, in the empirical study, this was the first time they have used Kahoot. Future research should examine the effect of Kahoot longitudinally in order to determine whether the effects obtained diminish with an increase in clicker experience.

Even though 80% students stated that they wanted to have a Kahoot session every week, it is advisable that teachers are aware of the wear-out effect. In a study from Norwegian University of Science and Technology, researchers found that students from the single event in contrast to the students that had used Kahoot for five months, interacted more through discussion and comments in the classroom as well they appreciated more the uniqueness of playing many together in the same room (Wang A. I., 2014). Currently, Kahoot provides four variations of gamified student interactions which are very similar: a quiz, a discussion (no points, and no right or wrong answers), a puzzle, and a survey. A wider variety of games and game modes would be preventive against a wear off effect and allow for more frequent usage without losing engagement and motivation.

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