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Using Kahoot! to Teach English Vocabulary: Benefits, Drawbacks, and Actual Impacts from Students' Perspective

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Abstract

Kahoot! is a popular Information and Communication Technology (ICT) tool, which has attracted the usership of approximately eight million teachers worldwide (Kahoot!, 2024). In English language teaching, Kahoot! has been widely used in vocabulary lessons because of its potential in improving students' motivation, collaboration, engagement, classroom atmosphere and learning outcomes. Empirical evidence from students' perspectives, however, is scant and contextualized mostly in developed countries. Collecting data from 49 Vietnamese university students via questionnaires and follow-up interviews, this sequential explanatory mixed-methods study aims to fill these gaps by examining (i) what students generally think are the benefits and drawbacks and (ii) what they perceive as the actual impacts of Kahoot! use in English vocabulary teaching. The results show that Kahoot! was both expected and found to facilitate students' learning despite its heavy dependence on technology and limited capacity in encouraging higher-order thinking. The findings also highlight the importance of interactions and the balance between ease of use and room for technology proficiency development in ICT-enhanced classrooms. Future researchers are encouraged to duplicate this study in other contexts or employ a longitudinal or experimental research design to confirm the impacts of Kahoot! on learning reported in this study.

Keywords: educational ICT; gamification; Kahoot!; English as a Foreign Language (EFL); vocabulary teaching.

Introduction

Along with the continuous development of Information and Communication Technology (ICT), game-based student response systems (GSRS) have been adopted increasingly often in education to facilitate teaching and learning (Turan & Meral, 2017; Squire, 2023). Among the available GSRSes, Kahoot! has emerged as one of the most popular, attracting the usership of impressively over eight million teachers in hundreds of millions of learning sessions worldwide (Kahoot!, 2024). Easy to use, and versatile in creating interactive classroom activities, Kahoot! has been expected to boost students' motivation for and engagement in learning, contributing ultimately to enhanced learning outcomes, especially in contexts where traditional lecturing styles

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still dominate (Gebbels, 2018; Ebadi et al., 2023). The actual effectiveness of Kahoot!, however, does not rest entirely on its intended benefits, but also on the perceptions of its direct beneficiaries, i.e., the students (Haman et al., 2012). Valuable insights into whether Kahoot! works as commonly expected by experts and teachers can therefore be obtained by investigating its use from students' perspectives (Ebadi et al., 2023). Empirical research studies are available, but most are contextualized in developed countries and report contrasting findings, especially among those targeting learners of English as a foreign language (EFL).

On this ground, this study examines the perception of a group of EFL learners regarding their teachers' use of Kahoot! in English vocabulary lessons at a Vietnamese university. As observed by the EFL teacher for this group (who subsequently became the co-author of this article), these students were visibly showing a lack of motivation and engagement in English classes and had scored poorly in previous progress tests, probably due to their pursuing of a non-English major. To tackle this situation, the teacher decided to integrate Kahoot! into the vocabulary teaching component of the subject because of the mentioned benefits the tool may bring to students' learning. This strategy works on the assumption that vocabulary underpins all four language skills, and lexical improvement would facilitate the advancement of a learner's overall language proficiency (Leong et al., 2019). Despite seeing an immediate improvement in students' participation in classroom activities and progress test results, the teacher was interested in how the students received the application of Kahoot! as an ICT tool in vocabulary teaching, including what they generally think are the benefits and drawbacks of such use, and what they perceived as the actual impact Kahoot! had on their learning. This study, in other words, was conducted to answer two research questions (RQ):

RQ1: What do students think are the benefits and drawbacks of teachers' use of Kahoot! in vocabulary teaching?

RQ2: What do students perceive to be the actual impacts of teachers' use of Kahoot! in vocabulary lessons?

The study is exploratory in nature, so no hypotheses were developed and tested. Answers to the above questions would help to confirm, challenge, or enrich the literature on the benefits and downsides of Kahoot!-assisted teaching and ICT-integrated education more broadly. The study would also yield practical advice for teachers on how to apply Kahoot! in class so its benefits could be maximized and the downsides could be mitigated.

Literature Review

Information and Communication Technology Integration in Education

Definition of ICT

Information and Communication Technology (ICT) is unanimously defined across disciplines as all the technical means that assist people in communicating and manipulating information (Chen et al., 2024; UNESCO, 2024). It includes communication devices (e.g., computers, mobile phones), the Internet, the associated hardware (e.g., storage devices) and software (e.g., video conferencing). In the education field, researchers also consistently delineate

ICT as all the technologies that are specific to the school environment and used to facilitate teaching and learning (Fu, 2013; Roy, 2015; Yang, 2024).

ICT in education: Merits and Challenges

The benefits of ICT-integrated education on learning have been well documented. First, it prepares students for the 21st-century workplace. The world is now dominated by technologies in all forms, requiring the workforce to be digitally competent to function and succeed (Saad & Sankaran, 2020). An ICT-enhanced education exposes and familiarizes students with technologies, equipping them with the necessary digital competencies to meet this requirement (Rabah, 2015; Saad & Sankaran, 2020; Schindler et al., 2017). Second, ICT can make learning more attractive. An ICT-equipped class, for instance, may excite students with opportunities to use digital devices outside their daily lives (Haleem et al., 2022). Computer-aided lesson planning can incorporate multimedia such as sounds and graphics into the content delivery, enabling instructors to cater to diverse learning styles (Jayanthi & Kumar, 2016; Haleem et al., 2022). Empirically, teaching enhanced by ICT has been found more appealing and engaging to learners than its traditional pen-and-paper counterpart (Haleem et al., 2022; Mo, 2011). Finally, ICT would make learning more effective. ICT-supported education provides students with ample opportunities to interact with peers and instructors, access to a vast number of learning resources, and various tools to manage their own learning (Haleem et al., 2022l Rabah, 2015; Schindler et al., 2017). This expands learning venues far beyond the classroom walls and textbooks to virtually anywhere and anytime when ICT is properly available. Such an unlimited learning horizon further encourages students' high-order thinking such as critical evaluation or problem-solving, all of which would ultimately contribute to better academic performance (Haleem, et al., 2022; Schindler et al., 2017).

Besides the above merits, ICT integration in education also holds some potential drawbacks. First, this practice is costly. An ICT initiative does not only require one-off purchases of equipment such as computers or learning applications. It also involves consistent investments in maintaining the ICT system, training teachers, hiring technical support staff, or simply renovating classrooms to house the ICT devices (Foutsitzi & Caridakis, 2019; Haleem et al., 2022; Nicol & Coen, 2003). The total cost of integrating ICT into education is thus usually huge and poses a considerable financial burden to even schools in developed countries (Livingstone, 2012). Second, the process of integrating ICT into education is complex and difficult. To accommodate ICT-supported teaching, radical changes are needed at all levels of the educational system, from as macro as ministerial policies, school visions, and curriculum planning, to as micro as teachers' beliefs, students' attitudes, or as simple as classroom setup (Foutsitzi & Caridakis, 2019; Livingstone, 2012; Rabah, 2015; Saad & Sakaran, 2020; Timotheou et al., 2023). These configurations usually happen gradually and interdependently, and some, such as attitudinal changes, may be extremely difficult to occur (Livingstone, 2012; Rabah, 2015). Finally, the implementation pathway to guarantee the expected benefits of ICT use in education remains unclear. Debate is still ongoing about whether ICT should be used as a support teaching tool or a radically different pedagogy by itself (Livingstone, 2012). Either way, nevertheless, empirical evidence of improved academic performances as a result of ICT-enhanced instruction remains elusive despite the huge cost already invested in educational ICT initiatives worldwide (Livingstone, 2012; Timotheou et al., 2023).

In short, although ICT-supported education promises many unique benefits to learners, its actual impacts on learning may potentially be constrained by various factors inherent in the educational system, the teachers, or the learners themselves. Understanding such complexity, especially the mismatches between the expected and actual impacts of an ICT tool would help to

generate practical guidelines for educators on how to use it to optimize learning. Such insights are believed to be most useful if gauged from students' perspectives because of the key role students play in deciding the effectiveness of a teaching method (Entwistle et al., 2002; Haman, 2012). The next section will selectively review empirical studies on students' views of Kahoot!, an ICT tool commonly used in ELT to teach vocabulary, and also the scope of this study.

Kahoot! Use in Education

What is Kahoot!?

Kahoot! is a GSRS developed in 2012 with the major aim of transforming the classroom into a game show where the teacher acts as the host and the students are contenders using their own mobile devices (Kahoot!, 2024). Kahoot! allows users to create, edit, and share quiz-format games, and to enhance the presentation of the games with graphics and videos. Kahoot! games can be played individually (players vs. players) or collaboratively (teams vs. teams). To start a Kahoot! game, a host would launch the game on a web browser connected to a large screen, and players access the game using a pre-set game pin and self-created nicknames via a web browser or Kahoot! app on their mobile devices. Once the game starts, players should aim to give correct answers as quickly as possible to gain points. A playful interface and cheerful background sounds were used throughout the game to create a fun and competitive atmosphere. After each question, players get individual feedback on their choices, their points, their ranking against others, and the answer key. At the end of a Kahoot! session, top scorers' nicknames and points will be displayed on the large screen; players may be invited to give optional feedback on their experience; and the host can export the results onto an Excel spreadsheet for record.

Kahoot! has become an increasingly popular ICT tool in education because of its outstanding advantages in helping students review and consolidate learned content, and encouraging even introverts to actively participate in learning activities (Plump & LaRosa, 2017). In English language teaching (ELT), Kahoot! is commonly used to review language knowledge (Yürük, 2019); drill particular language skills (Yürük, 2020; Zakaria & Hashim, 2020); and improve vocabulary range (Medina & Hurtado, 2017).

Review of Empirical Studies on Students' Perception of Kahoot! Use in Teaching

Previous studies (reviewed below) generally show students' positive reviews of their experience with Kahoot!-assisted teaching. They acknowledged both benefits and drawbacks of Kahoot!, but reported an overall strong support for the continued application of the tool in class.

*Perceived Benefits***.** The benefits of Kahoot!, from students' perspective, center around their felt improvements in five key aspects of learning.

Kahoot! is first reported to make learning extrinsically and intrinsically motivating. Kahoot! games extrinsically drive students to learn through a sense of competitiveness and a wish to achieve higher grades at school (Licorish et al., 2018; Nguyen & Yukawa, 2019; Tao & Zou, 2023). The intrinsic motivation, on the other hand, comes from the enjoyable learning environment Kahoot! games create, the challenge in the game questions, and the feeling of empowerment players experience during a game (Bawa, 2018; Tan et al., 2018; Tao & Zou, 2023). In experimental research, learners instructed with Kahoot! showed a higher level of motivation to learn than those taught by traditional non-ICT methods (Noori & Azimi, 2023).

Kahoot! was also found to enhance learners' engagement in the learning process. Students in previous studies consistently reported greater effort invested in reviewing learning materials before class, and closer attention paid to the taught contents during Kahoot!-integrated sessions as compared to traditional classes (Licorish et al.; 2018; Wang, 2015; Wang & Lieberoth, 2016). The reasons included students' strong determination to win a game; and the exciting atmosphere Kahoot! creates; the anonymity of players (which cultivates students' sense of social safety); increased opportunities for interactions; and a higher chance of receiving teachers' immediate feedback (Licorish et al.; 2018; Wang, 2015).

Third, Kahoot! may increase students' collaboration. Kahoot! games reward scores to not only the correct answers but also how quickly players give them. This feature encourages students to communicate and collaborate to gain a point advantage for their team, explaining the collaborative learning atmosphere usually observed in Kahoot!-integrated classes (Bicen & Kocahoyun, 2018; Muhridza et al., 2018).

Fourth, Kahoot! was said to cheer up the classroom climate. Thanks to the fun background music, public display of points and rankings of players, the fast-paced and time-racing nature of the game, and constant interactions among teachers and students, Kahoot! sessions were commonly described as exciting, stress-free, and cheerful by students across contexts, majors, and age groups (Bawa, 2018; Chiang, 2020; Ebadi et al., 2023; Nguyen & Yukawa, 2019; Wang, 2015; Wang & Lieberoth, 2016; Yürük, 2020).

Finally, Kahoot! was attributed to enhanced learning outcomes. When taught with Kahoot!, students said they understood and remembered new content easily thanks to the immediate feedback they received from teachers (Ismail & Mohammad, 2017; Wang, 2015). Easy to use, and particularly suitable for drilling practice, Kahoot! was furthermore considered an effective tool for students to review and consolidate learned knowledge (Halim et al., 2020; Kaur & Nadarajan, 2020). In experimental research, students experiencing Kahoot!-assisted instruction reported a higher proficiency in essential skills such as creativity and problem-solving (Aibar-Almazán et al., 2024) and better academic performance (Bawa, 2018) than those instructed with traditional methods.

Perceived Drawbacks. Besides these positive impacts, students also reported several downsides of Kahoot! use in teaching.

The first drawback is its heavy dependence on technology. Previous studies reported that even a minor technical issue could disrupt the initial excitement and motivation students have, or even fail the whole game session (Bicen & Kocahyun, 2018; Nguyen & Yukawa, 2019; Tan et al., 2018). Poor internet connection, for instance, would prolong the time of setting up the game at the beginning and slow down the speed at which players submit their answers during the game, affecting their scores and demotivating them (Ebadi et al., 2023; Tan et al., 2018; Tao & Zou, 2023).

Another drawback lies in the time-racing and competitive nature of Kahoot! games. While time pressure and competitiveness may excite some students and encourage their collaboration (Yürük, 2019), it sometimes causes unnecessary stress and even anxiety for others (Ebadi et al., 2023; Muhridza et al., 2018), or makes some give answers just for fun and impedes their serious engagement in learning (Le, 2010; Licorish et al., 2018). The announcement of top scorers at the end of each game, finally, may be detrimental to the self-confidence of students who do not have a high chance of winning (Ebadi et al., 2023).

Some other features of Kahoot are commented on as distracting. Students in some studies (Bicen & Kocahoyun; 2018; Ebadi et al., 2023) said Kahoot! background audio disrupted their concentration, and the funny nicknames of the players sometimes diverted their attention from learning (Licorish et al., 2018).

All these drawbacks, nevertheless, are considered minor to the benefits and do not affect students' overall support for the continued use of Kahoot! in their classroom as reported in most studies (except in Ebadi et al., 2023)

Summary of findings and gaps.

In summary, the current literature offers some useful insights into the benefits and drawbacks of Kahoot! as an educational ICT tool from students' perspective. Consistent with the findings of the wider literature on ICT use in education presented earlier, Kahoot! was perceived to improve learning experience and effectiveness, while technological infrastructure was found a major challenge to its application.

The literature, nevertheless, demonstrates several substantial gaps. First, despite the extensive use of Kahoot! in ELT (Ebadi et al., 2023), relevant empirical research in the field is meagre and sometimes yields contrasting results. Among the reviewed studies above, only eight focus on EFL learners and furthermore reported mixed reviews from participants towards several similar features of the tool (see for example Ebadi et al., 2023 and Yürük, 2020). This subjected the key findings in at least ELT contexts to further research. Available studies, furthermore, tend to collect data on students' actual experiences with Kahoot!, consequently rendering their findings limited to what students saw in reality and potentially unable to cover all the possible benefits and drawbacks that students might expect from Kahoot! use in teaching in general. All studies conducted in the past ten years were finally contextualized in developed countries where students might have been well familiarized with ICT-equipped classes. This leaves their findings potentially inapplicable to learners in contexts where ICT-integrated education is still in its infancy. The multi-media add-on (sound effects, graphics) in Kahoot! games, for example, while found distracting by students who have long been surrounded by technologies (Licorish et al., 2018) may all the same excite those who have been accustomed to "chalk and talk" teaching and would accordingly be a contributor to the overall effectiveness of Kahoot! application.

These gaps necessitate the present research, which is contextualized in Vietnam where ICT-assisted teaching is still in its developing stage, and which collected and analysed two separate datasets: one on learners' general attitude towards Kahoot! use, and one on their perception of its actual impacts in their own classrooms.

Context

As briefly introduced, the study was conducted in an English language course at a Vietnamese university (or the University henceforth). The major challenge in this course is the visible lack of interest and poor academic performance in the English subject among the students. Pursuing a public security major with a limited chance of using English in their future profession, most of them joined the course merely to meet the program requirement. This was reflected in their low engagement in classroom activities, struggles in using English, and poor results in past progress tests.

In such a situation, ICT integration in English classes was among the imperative solutions, and the teacher had chosen to use Kahoot! in teaching vocabulary, because of the potential benefits Kahoot! would bring to student learning. This strategy is intended to boost students' engagement in learning English vocabulary and subsequently English language in general, thus helping them achieve better outcomes in this required subject.

Method

Research Design

To answer the two research questions (RQ1: What do students think are the benefits and drawbacks of teachers' use of Kahoot! in vocabulary teaching?; RQ2: What do students perceive to be the actual impacts of teachers' use of Kahoot! in vocabulary lessons?), the current study employs a mixed-method sequential explanatory design, collecting data using a quantitative questionnaire in the first phase and a follow-up qualitative interview in the subsequent phase.

This research design suits the present study for two main reasons. First, mixed-methods research is often used to examine multi-faceted and complex constructs, such as motivation or perception (Dörnyei, 2007). It thus fits the aim of the present study, which is to understand students' views of Kahoot! use in vocabulary teaching. Second, the sequential explanatory design enables researchers to obtain a general understanding of the research problems in the first phase and subsequently an in-depth explanation of the initial findings in the second phase (Creswell, 2015). The findings, as a result, would demonstrate both the global truth power of quantitative data and the detailed local understanding feature of qualitative data, which match the kind of answers the present study sought to its research questions.

Data Collection Tools

Questionnaire

In the first phase of the study, a survey questionnaire was designed to measure the general benefits and drawbacks of Kahoot! use in vocabulary teaching (RQ1) and the actual impact of this use from students' perspective (RQ2), generating a broad understanding of the answers to the two research questions. Since there is no suitable pre-existing questionnaire, all survey items were created for the study based on the key findings from the literature on students' views of Kahoot! use in teaching reviewed above.

The questionnaire comprised 37 items comprehensively covering the benefits and drawbacks of Kahoot! as reported in the reviewed literature. The first 32 items reflect the benefits of Kahoot use regarding five aspects of learning, namely (i) motivation (items 1-6), (ii) engagement with vocabulary learning (items 7-16), (iii) collaboration (items 17-20), (iv) classroom climate (21-26), and (v) perceived learning outcomes (27-32). The last five items (33-37) reflect the possible drawbacks of Kahoot! use. An open-ended item is included at the end of the questionnaire to invite additional ideas from participants. The dominance of questionnaire items on the benefits of Kahoot! correspond to the predominantly positive reviews of the tool in the literature. The full list of 37 questionnaire items is provided in the Appendix.

To measure the expected benefits and drawbacks of Kahoot! (RQ1), the survey asked participants how much they agreed each questionnaire item describes what they generally think about Kahoot! use in vocabulary teaching. To measure the actual impacts of Kahoot! (RQ2), the survey asked participants to rate how much they agreed each statement describes what they saw happen in their vocabulary lessons. Responses were provided on five-point Likert scales where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree.

The psychometric properties of each sub-scale in the questionnaire were examined by calculating Cronbach's alpha coefficient. The results ranged from .80 and .92 for all sub-scales,

exceeding the suggested threshold of .7 for internal reliability (Pallant, 2011). Item-total correlations were also conducted to check the unitary validity of each sub-scale. The results were found to vary from .54 to .86, higher than the recommended threshold of .3 (Pallant, 2011). The questionnaire, therefore, can be considered psychometrically sound and able to collect acceptably reliable and valid data.

Follow-up interview

The follow-up interview phase aimed to add depth and details to the quantitative findings obtained from the questionnaire data.

To achieve this aim, the interview includes questions developed based on each participant's questionnaire response, asking them to elaborate on the part of their response that is worth further discussion, including for instance items with the highest or lowest mean ratings. The interview is semi-structured, meaning a certain flexibility is present in sequencing, wording, adding, or removing planned interview questions to suit each interviewee, and to allow for probing and elicitation of unexpected ideas (Richard, 2009).

The rigor and trustworthiness of the interview data were assured by piloting the interview questions before official data collection and member checking of the interview transcript (Creswell, 2015).

Participants

Participants in the questionnaire phase comprised 49 students selected from 150 students studying an English language course at a Vietnamese university. A purposeful sampling technique was employed to ensure all participants had previous experience with Kahoot!-mediated English vocabulary lessons and was thus able to provide valid data.

Regarding demographics, the sample consists of 43 males and 6 females, aged between 18 and 25. The gender imbalance in the sample is comparable to the male-dominant profile of the student population at the University and thus does not necessarily reflect the lack of representativeness of the sample to the wider population.

Participants in the follow-up interviews included 11 survey participants who indicated in the questionnaire their willingness to be interviewed and left their contact details.

All participants joined the study voluntarily by reading and signing a written consent form beforehand.

Data Collection Process

The data was collected over two sequential phases in June 2020 at the end of the English course when students had gained sufficient experience with Kahoot! application in English vocabulary lessons and were therefore able to provide valid data.

In the first phase, paper-based survey questionnaires were administered in person to 49 students who had read and signed the information and consent form. All 49 students completed the questionnaires and returned them to the researcher one week later. Questionnaire data were then processed and analysed to provide quantitative answers to the two research questions and to prepare for the follow-up interview.

In the second phase, interview questions were first prepared based on the results of the questionnaire data analysis. In-person, one-on-one interviews were then conducted with each of the 11 participants. All interviews were in Vietnamese to allow participants to communicate their opinions with ease. The interviews were recorded, transcribed verbatim, and finally translated into English for analysis.

Data Analysis

Questionnaire data was statistically analysed using SPSS 25. Cronbach's alpha and item-total correlations were first calculated to check the psychometric properties of each sub-scale (see previous section for results). Descriptive statistics (e.g., means, standard deviations) were then used to explore trends in the data to answer the research questions. One sample t-tests were finally used to examine the differences between what students generally expect from Kahoot! (ratings of how much participants agree with each questionnaire item), describes what they generally think about Kahoot!) and what they actually see happen in the classroom (ratings of how much participants agree each questionnaire item describes what actually happened in their vocabulary lessons).

Qualitative interview data in the form of textual transcriptions were thematically analysed to add depth to the quantitative findings. The process involves three iterative steps, namely coding segments of data that are relevant to the research questions, categorizing codes according to meanings, and defining a theme that emerges from each code group (Murray, 2009). To protect students' privacy, pseudonyms are used to report and discuss the results in the rest of the article.

Results

General Benefits and Drawbacks

Results from the Questionnaire

The questionnaire results show that students hold an overall positive attitude towards teachers' use of Kahoot! in English vocabulary teaching.

Table 1 reported the descriptive statistics of the rating participants gave to the extent to which they agree with the statements given in 37 questionnaire items, covering 5 groups of benefits and one group of drawbacks of Kahoot use in vocabulary teaching.

Table 1

Mean Ratings of the Expected Benefits and Drawbacks of Kahoot!

Group	Sub-groups	Mean (*M*)*	Standard Deviation (*SD*)
Benefits	Motivation (items 1-6)	3.87**	.82
	Engagement (items 7-16)	3.98	.62
	Collaboration (items 17-20)	3.95	.68
	Classroom climate (items 21-26)	4.10	.63

	Perceived learning outcome (items 27-32)	4.01	.67
Drawbacks	(items 33-37)	3.14***	.81

Note. * Measured on a five-point scale where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree. ** Counted with the reversed score of item 1 which is negatively worded; *** Counted with the reversed scores of items 33-37 so that a higher score indicates a more positive viewpoint.

As can be seen from Table 1, all groups of benefits and drawbacks of Kahoot! were rated above the mid-point of the scale. Among them, the drawback group was rated the lowest, at 3.14, while the classroom climate benefit group was rated the highest, at 4.10. These indicate an overall favorable attitude participants hold towards teachers' use of Kahoot! in vocabulary teaching.

Regarding the benefits only, the group with the highest mean rating is classroom climate (M=4.10), while the lowest-rated one is motivation to learn vocabulary (M=3.87). Looking at individual items within each group, the top-rated benefits are a fun classroom climate (M=4.53); a relaxing learning environment (M=4.43); opportunities for teachers' feedback (M=4.31); a useful tool for learning vocabulary (M=4.18); opportunities for discussion with peers (M=4.16). At the lower end (although still above the mid-point point of the scale) are opportunities to talk in front of the class (M=3.35); the feeling of being welcome (M=3.69); a wish to spend more time on vocabulary learning (M=3.71); opportunities to learn from teammates (M=3.86); an enhancement of students' ability to apply learned vocabulary in other learning activities (M=3.84).

Among the five drawback items, heavy dependence on technology was agreed the most strongly (reversed M=2.08) to be a downside of Kahoot! while players' funny nicknames were agreed to be so the least strongly (reversed M=3.63). This suggests students are most concerned about the technical requirements of Kahoot and are not much affected by the supposedly distracting nicknames of the players.

Results from the Interviews

The follow-up interviews asked students to elaborate on their questionnaire responses. The results show similarly positive attitudes towards Kahoot!, and revealed four groups of underlying reasons, namely opportunities for interactions, the nature of gaming, the role of technology, and Kahoot!'s ease of use.

First, interaction encompasses the rationale for almost all benefits of Kahoot! Interactions such as "talk to friends" or "teachers' feedback", according to most interviewees, help them "learn easier" and "feel better about learning", and constitute "an effective way of learning". An activity where "everyone can join" also gives students a feeling of being welcome and makes the classroom climate more accommodating to learning. They thus highly value Kahoot!'s potential to boost students' learning motivation, engagement, and classroom climate because of the increased interaction opportunities the game offers. This can be seen in the following interview extracts:

> HA: […] *We could **talk with our friends** during the game and **listen to teachers' explanations and feedback** after each question. This **effective** way of learning would help me **learn vocabulary more easily** and make me **feel better about learning**.*

SON: *I thought that **everyone could join** Kahoot! games, so […] the game would make me **feel welcome** in my class.*

Second, the nature of gaming could make Kahoot! both beneficial and impeditive to learning. Specifically, the competitiveness and the rewards of being a winner serve as a strong extrinsic motivation for students to collaborate with their peers and engage with the learning content. Games are also inherently fun, so Kahoot! integration would "naturally" relax the classroom atmosphere and ease the learning process. The high pace of Kahoot! games, nevertheless, may not offer much room for higher-level learning such as applying acquired vocabulary items in other contexts. The following interview extracts illustrate these points:

SON**:** […] *the learning games with **rewards and gifts** always make people **feel better**. So when I heard my teacher talking about […] **gifts** for the winners in Kahoot! games, […] I would **feel better about learning if I received gifts.***
SON: *It is important to reach an agreement in the team to find the answers. The stronger the agreement is, the better answers the team could find. So we should **discuss in team** to find the **best answers to win**.*
GIANG: *I felt that it was **useful** to learn vocabulary via Kahoot!. It **naturally** made the **classroom climate relaxing** and made **me** feel **interested in learning vocabulary**.*
THANG: *I thought that **time for Kahoot! games** is **short** in the class. It is necessary to have **more time to remember and frequently practise** what I have learned from Kahoot! games to be able to use it in other English learning skills. So I **disagreed** that I **could use vocabulary items** from Kahoot! **in other learning activities.***

The role of technology also decides students' rating of the benefits and drawbacks of Kahoot! in vocabulary teaching. A technology by itself, Kahoot! could be a great source of intrinsic motivation for students who are techno-enthusiasts. Incorporating multimedia (e.g., pictures, sounds) into content delivery, Kahoot! would also liven up the classroom atmosphere and attract students' attention, ultimately contributing to improved learning outcomes. When compared with traditional teaching methods, Kahoot!-integrated lessons are found less "boring" and more "useful" for learning. On the negative side, the heavy dependence of Kahoot! on technology infrastructure raised concerns about its practical viability. Three students noted:

QUYET: *I love **information and technology**, I wanted to try **digital games** in learning, so I thought that it [Kahoot!] would make me **feel better about learning**.*
HOA: ***Traditional ways** of learning vocabulary like writing new words again and again are **very boring**, and students may forget new words quickly. So I thought that **Kahoot! games with technology, pictures, music […]** would be **useful**.*

SON: *Kahoot! is an **online** game, […] we **couldn't play** it **without** an **internet connection**. […]the use of Kahoot! **[…]** depends on the **availability of technical equipment** in each classroom.*

Finally, ease of use was considered by one interviewee as the reason why she found Kahoot! a useful learning tool:

LAN: *I thought Kahoot! would be **useful** for vocabulary lessons because it is **easy to use**. We **just** need **a smartphone with an internet connection** to play the game in class.*

Perceived Actual Impacts

Results from the Questionnaire

Table 2 presented the descriptive statistics of the ratings participants gave to the extent to which they agree each survey item describes what actually happened in their Kahoot!-applied vocabulary lessons.

Table 2

Mean Ratings of Perceived Actual Impacts of Kahoot! in Vocabulary Teaching

Groups	**Sub-groups**	***M****	***SD***
Benefits	Motivation (items 1-6)	3.92**	.79
	Engagement (items 7-16)	4.11	.59
	Collaboration (items 17-20)	3.91	.76
	Classroom climate (items 21-26)	4.13	.61
	Perceived learning outcome (items 27-32)	4.04	.69
Drawbacks	(items 33-37)	3.15***	.82

Note. * Measured on a five-point scale where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree. ** Counted with the reversed score of item 1 which is negatively worded; *** Counted with the reversed scores of items 33-37 so that a higher score indicates a more positive evaluation.

As can be seen from Table 2, all groups of items were rated above the mid-point of the scale, with the benefits receiving significantly higher ratings than the drawbacks. This indicates an overall positive impact of Kahoot! on students' learning in actual English vocabulary lessons.

Regarding the actual benefits, the highest-rated group is classroom climate (M=4.13), while the lowest-rated one is collaboration (M=3.91) and motivation to learn vocabulary (M=3.92). Looking at individual items in each group, the specific benefits that are agreed the most strongly to have actually happened in class include a fun classroom climate (M=4.49); opportunities for teachers' feedback (M=4.45); a useful tool for learning vocabulary (M=4.31); opportunities for discussion with peers (M=4.18). At the lower end (although still above the mid-point of the scale)

are opportunities to talk in front of the class (M=3.67); the feeling of being welcome (M=3.67); opportunities to learn from teammates (M=3.69); a wish to spend more time learning vocabulary (M=3.76); and enhanced ability to apply learned vocabulary in other learning activities (M=3.84).

Among the five drawback items, heavy dependence on technology was agreed the most strongly to be an actual issue in class (reversed M=2.06) while the funny nicknames of the players were agreed the least strongly to be so (reversed M=3.76). This means the application of Kahoot! did actually depend heavily on technology, while students were not as much distracted by the players' nicknames during a Kahoot! game in class.

One-sample t-tests were conducted to examine the differences between participants' perceptions of the general benefits and drawbacks of Kahoot! and their perceptions of the actual impacts of the tool. The results show now statistically significant difference between these two sets of scores, suggesting what students saw happened in the classroom matched with what they had generally expected from Kahoot! use in vocabulary teaching.

Results from the Interviews

The follow-up interviews revealed four themes in students' explanations for their ratings of Kahoot!'s actual impacts: the opportunities for interactions, the nature of gaming, the role of technology, and the relevance to learning content.

The first theme, opportunities for interactions, is prevalent in the interviewees' explanations for their ratings of all the actual benefits of Kahoot! As specified by the interviewees, interactions with peers and teachers are "important" because these help students "understand" and "remember" new words "better" and "easier", "consolidate [previously learned] knowledge", and make the classroom climate "joyful" and "fun". Vocabulary sessions that use Kahoot! was therefore motivating, engaging, collaborative, cheerful, and contributive to students' learning outcomes because the game encouraged students to "discuss" with their classmates and increased their chance of receiving teachers' feedback. In contrast, some students are concerned about the quality of collaboration during a Kahoot! session because of a Kahoot! game is "short" and thus does not accommodate in-depth peer discussion. Below are illustrative interview excerpts:

> NGA: *Although I gave correct answers to Kahoot! questions, I still listened to the **teachers' explanations and feedback** again **to consolidate my knowledge** and **my understanding** of those vocabulary items.*
> HOANG: *After each Kahoot! sessions, the teacher usually gave **feedback** for the questions to which most people had incorrect answers. Owing to this, I could **remember vocabulary items better**. It was **easier for me to learn vocabulary**. I think **teacher feedback** is **important** to vocabulary learning.*
> MAI: *When I **discussed** the questions **with my team** during Kahoot!, I had chances to explain what I thought was the correct answer. This helped me **remember new words better** and **improve my vocabulary**.*
> TRUNG: *I saw that the **classroom climat**e was **dynamic** [….] during the Kahoot! games. **Everybody talked** to each other about the questions and the game as well. I saw the climate becoming **joyful**.*
> THANG: *It seems that **time for team discussion** in Kahoot! game is **quite short**, so sometimes I […] did not have enough time to discuss the questions **in-depth** with others.*

The second theme, the fun and competitive nature of gaming underlies the high ratings the interviewees gave to Kahoot!'s actual contribution to their learning motivation, classroom collaboration, and classroom climate. The rewards for winners, or simply the feeling of winning a game is a powerful extrinsic motivator for students to learn vocabulary and to collaborate in class, and the fun nature of gaming makes Kahoot!-integrated lessons "relaxing". To some students, Kahoot! offers them an extra chance to showcase their knowledge and gain recognition from their peers, and these positive feelings contribute as well to the overall positive classroom atmosphere. For these reasons, lessons with Kahoot! were found "more fun" and "less stressful" than the traditional lecturing in the interviewee's opinions. The following excerpts illustrate this finding:

> QUYET: *At first I didn't get a high ranking in Kahoot! games because my vocabulary was poor. Therefore, I **wanted to spend more time learning** vocabulary **to get higher ranking** when playing Kahoot! in class.*
> GIANG: *I felt that I **had to discuss** with teammates to find the correct answers and receive the highest scores.*
> NGA: *Kahoot! **is a game**, so we **naturally felt less stressed** when learning and playing it at the same time. The classroom climate became **more fun compared** to learning through **listening to the teacher and taking notes.***
> SON: *For me, Kahoot! is a **relaxing** game that makes **traditional classrooms more fun and dynamic**.*
> QUYET: *I got high ranks in many Kahoot! games, so some friends came to ask me to help with vocabulary exercises. They **showed their respect** for me. And I felt that I was welcomed.*

The third theme, technology surfaced from students' explanations for their high ratings of Kahoot!'s impacts on learning motivation, and of the game's actual heavy dependence on the digital infrastructure. To Quyet, one student who loves technology, a lesson with Kahoot! is naturally attractive to him. To several other students, lessons with Kahoot! can sometimes be "inconvenient" because even a minor technical issue could fail a whole game:

> QUYET: *I **love information and technology**, so I **felt very interested** when playing Kahoot! on smartphones and it also makes me **feel better about learning vocabulary**.*
> NGA: *We **weren't able to play** Kahoot! when the i**nternet connections are slow** or not very good smartphones. It was so **inconvenient**.*

Finally, Kahoot! was found beneficial to students' learning simply because the game questions are relevant to the lesson contents. Kahoot! quiz designed around the targeted vocabulary items provided students with an additional opportunity to review and retain them, which then contributed positively to students' performance in exams and their ability to apply learned vocabulary in other contexts. Three interviewees shared:

> TUYEN: *When playing Kahoot!, I had **chances to meet these words again** in the vocabulary questions, […]. The process helped me to **remember new words longer.***

HOA: *My teacher always **designed Kahoot! questions with new words I had learned in the previous lessons.** It was useful because I could learn them **one more time** and my vocabulary was **consolidated** after Kahoot! sessions.*
SON: *First, I could use vocabulary items from Kahoot! games to **do my English tests**. In fact, after playing Kahoot!, I was able **to remember** new vocabulary items, I **had their images in my mind**, and I could **recall them faster** during the tests. Secondly, I could use my vocabulary in **speaking sessions** because I remembered many new expressions and words.*

It is noticeable that the above themes are almost identical to those emerging from interview responses regarding students' general expectations of Kahoot! use reported in the previous section. The only difference is the fourth theme, which was "ease of use" for what students generally think about Kahoot! and "relevance to learning content" for what they actually see happen in the classroom. This point will be revisited and discussed in more detail in the following section.

Discussion

This study aims to investigate what students think are the benefits and drawbacks of Kahoot! as a vocabulary teaching tool and their perception of the actual impacts of this use. The results show that students generally find Kahoot! facilitating their learning both in theory and in practice despite the tool's heavy dependence on technology and its limited capacity to encourage high-order thinking. While these findings largely resonate with existing discussions and research on Kahoot! use in teaching and ICT application in education more broadly (see Literature Review section), several interesting points from the results may challenge or enrich the current literature and are thus discussed below.

First, while the current literature does not differentiate the importance of the benefits of Kahoot!-assisted teaching or ICT-integrated education, the results above seem to highlight the crucial role of interactions in making Kahoot! a beneficial teaching tool. As shown in the interview excerpts, interactions with peers and teachers underlie students' higher or lower ratings of almost all aspects of Kahoot! use. The increased opportunities to talk to classmates and receive teachers' feedback, for instance, explained why students found Kahoot! sessions motivating, engaging, collaborative, joyful, and facilitating their learning outcome. The lack of in-depth peer discussions due to the high pace of Kahoot! games, all the same, was the reason why students gave lower ratings to Kahoot!'s impact on their ability to apply learned vocabulary in other contexts. This finding could be linked to the role of "connectivism" in human learning discussed in D'Angelo (2018). According to this author, learning is conditioned by diversity of opinions, and maintaining connections is needed to create such diversity. This principle has been well understood in traditional classrooms (Wang, Chen & Anderson, 2014), and the importance of interactions in Kahoot!-mediated lessons as highlighted by the participants in this study suggests that the principle is applicable as well to ICT-assisted education. That is, for an ICT tool such as Kahoot! to facilitate learning, it must maintain human connections at the outset.

Second, students' evaluation of Kahoot! is likely decided by the perceived advantages Kahoot! can demonstrate over the traditional teaching method. In the follow-up interviews, many students compared the effectiveness of Kahoot!-assisted sessions with traditional ones when explaining why they highly valued Kahoot!'s actual contribution to their learning outcome. This

situation can be associated with what Lankshear and Knobel (2007) termed "paradigm" cases, which refer to a remarkable shift from traditional teaching and learning as a result of ICT integration. According to these scholars, the new ICT-assisted version of education would merely be a digital duplicate of the old one if the shift did not involve substantive changes in how learners acquire skills and knowledge. Learners, in this case, would have no strong cause to mobilize their existing values and priorities. In light of this conceptualization, Kahoot!-assisted teaching in this study can be considered an innovative upgrade from the traditional method due to its stronger impacts on students' learning as compared to the old one, at least from students' perspectives. This finding, when combined with the paradigm case concept, may furthermore challenge a common guideline in the literature, which suggests that students should be fully aware of the benefits of an ICT tool to welcome it (Rabah, 2015; Sun et al., 2016). It is highly possible that students would also need demonstrations of how the new ICT-assisted teaching method surpasses the usual one in the way it helps them learn.

Third, whereas ICT application in education is generally expected to encourage students' higher-order thinking (D'Angelo; 2018; Rabah, 2015), Kahoot! use in vocabulary teaching is not perceived as such by the participants in this study. In the survey results, Kahoot!'s expected and actual contribution to students' ability to apply learned vocabulary items in other contexts were rated the lowest (M=3.84 in both cases) among the listed benefits. In the interview, the keywords emerging from students' evaluation of Kahoot!'s impacts on learning centre around understanding, recalling, and retention, which all belong to the lower tiers in the cognitive hierarchy (Anderson & Krathwohl, 2001). Two explanations are possible for this finding. The first one, evident in the interview results presented above, lies in the short and time-racing nature of Kahoot! games, which leaves limited room for in-depth discussion and high-order thinking among the players. The second reason might be the teachers' intention to design Kahoot! activities for knowledge understanding and retention in the first place. These purposes, in fact, match with the commonly reported uses of Kahoot! games in ELT, which is to review and consolidate new knowledge (Yürük, 2019; Zakaria & Hashim, 2020). Interpreted either way, the absence of higher-order learning in Kahoot! sessions point towards one possible shortcoming of Kahoot! that the existing literature has not mentioned: its limited capacity to encourage complex cognitive processes or deep thinking. If educators are to follow the important principle of applying ICT in teaching, which is to suit the features of an ICT to the intended learning outcomes (D'Angelo, 2018), this is an important potential downside of Kahoot! for them to consider before introducing it to students. From a pedagogical standpoint, all these findings suggest Kahoot! Games might best be used after the knowledge presentation stage and complemented with subsequent activities that encourage thinking at the higher end of the cognitive hierarchy such as analysis or evaluation (Anderson & Krathwol, 2001).

Fourth, one important benefit of ICT-enhanced education is absent from the results of this study; that is, students would be familiarized with technologies and given additional chances to enhance their ICT literacies (Rabah, 2015; Saad & Sankaran, 2020; Schindler et al., 2017). While the questionnaire items do not cover this beyond-learning benefit, no students mention it either in the open-ended survey item or in the follow-up interviews. One obvious reason may be the absolute focus of the questionnaire content on the learning-related benefits, which then may have guided students' interview responses in a similar direction. Another possibility might be because Kahoot! is so simple to operate that students do not need any extra ICT training, and thus experience no opportunity to enhance their technology proficiency. This inference can be seen in several students' comments on Kahoot! as an "easy to use" learning tool in the interview. On one side, this scenario suggests that Kahoot! has met the user-friendliness requirement of ICT integration in education that has been widely suggested in the literature (D'Angelo, 2018; Edmunds, Thorpe, & Conole,

2012; Truong & Murray, 2020) and that Kahoot!' ease of use comprises one key dimension of students' positive reception of its application in class. The ease of use, when coupled with a lack of technology proficiency enhancement opportunities, nevertheless, poses an interesting tension in ICT-mediated education. That is, the applied technology must be user-friendly to be welcomed and adopted by learners (Edmunds, Thorpe, & Conole, 2012; Truong & Murray, 2020), but it should also be complex enough to accomplish the mission of preparing learners for a technology-dependent world (Saad & Sankaran, 2020).

The final point worthy of discussion is the strong match between students' expectations of Kahoot! in general, and their perception of its actual impacts in reality. As the questionnaire results show, there is no statistically significant difference between students' ratings of the expected benefits and drawbacks of Kahoot! and their ratings of the actual benefits and drawbacks of Kahoot! use in vocabulary lessons. The themes emerging from students' interview responses related to what they generally think about Kahoot! are also nearly identical to those related to their evaluation of Kahoot!'s actual use in class. Theoretically, this result is consistent with the principle of attitude consistency in social psychology, which posits that a person's attitude towards an object tends to guide their behaviors towards it (Glasman & Albarracín, 2006). It is thus highly likely that the way students in this study think about Kahoot! as a teaching tool may have shaped how they saw the tool's actual performance. At the practical level, this finding reinforces the crucial role of students' attitudes in deciding the success of an ICT initiative as widely discussed in the literature (e.g., Rabah, 2015). It also suggests an imperative need for teachers to carefully communicate all the intended benefits of a new ICT to students before introducing it to them.

Conclusion

In conclusion, the study has strengthened the argument in the literature that Kahoot! is a powerful teaching tool, and students' perception plays an important role in deciding the success of its application in class. It furthermore enriches the literature by highlighting for the first time the crucial role of interactions in deciding students' reception of a new technology and identifying a possible tension between ease of use and the digital literacy enhancement mission of an ICT application. The study contributes to practice by proposing two important conditions for the success of an ICT-assisted teaching initiative: it needs to outperform the traditional teaching method, and its intended benefits need to be fully communicated to students before its commencement.

The current study is limited in the content of the data collection tools, which exclude the enhancement of ICT literacies, leaving this possible benefit of Kahoot! application open to exploration in further research. The study is also limited to the context of ELT for adult students of non-English majors; its findings may accordingly not apply to other learner groups. The research method is finally cross-sectional and non-experimental, so the reported impacts of Kahoot! on learning are not firmly established. Researchers are recommended to duplicate this study in a different context and use a more extended version of the survey questionnaire. They are also encouraged to employ longitudinal and experimental research designs to confirm the impacts of Kahoot! on learning reported in this study.

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Appendix

Questionnaire Items

(Responses were provided on five-point Likert scales where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree)

Benefits

Motivation

(1) Kahoot! games force me to study vocabulary.
(2) Kahoot! games make me feel more interested in learning vocabulary.
(3) Kahoot! games make me feel better about learning vocabulary.
(4) Kahoot! games make me love learning vocabulary.
(5) Kahoot! games make me want to study vocabulary.
(6) Kahoot! games make me want to spend more time studying.

Engagement

(7) I respond to each question in Kahoot! games.
(8) I pay attention to learning vocabulary items during Kahoot! games.
(9) I explain my answer to the questions in Kahoot! games in front of the class voluntarily.
(10) I listen to the teacher's feedback for each Kahoot! game.
(11) I enjoy learning vocabulary items with Kahoot! games.
(12) I feel happy all the time I learn vocabulary with Kahoot! games.
(13) I feel more active when learning vocabulary with Kahoot! games.
(14) I review the lecture material and my notes before Kahoot! games.
(15) I try my best to recall vocabulary items when I play Kahoot! games.
(16) I try my best to learn new vocabulary items when I play Kahoot! games.

Collaboration

(17) I share with my teammates my vocabulary knowledge when I play Kahoot! games.
(18) I actively learn vocabulary knowledge from my teammates when I play Kahoot! games.
(19) I discuss with my teammates to choose the best answers in Kahoot! games.
(20) I feel belonged to my team when I play Kahoot! games.

Classroom Climate

(21) Playing Kahoot! gives me a chance to talk with my friends in the classroom.
(22) Playing Kahoot! gives me a chance to talk with my teacher in the classroom.
(23) Kahoot! makes me feel welcome in the classroom.
(24) Kahoot! makes students become friendly toward each other.
(25) Kahoot! makes the classroom climate during vocabulary lessons fun.
(26) Kahoot! provides a relaxing classroom climate.

Perceived learning

(27) Kahoot! helps me to understand vocabulary items better.
(28) Playing Kahoot! gives me chance to get what I missed during the lesson.
(29) Playing Kahoot! gives me chance to recall what I have learned.
(30) Kahoot! helps me to remember vocabulary items after vocabulary lessons.
(31) I can use new vocabulary items I learned from Kahoot! games in other English learning activities.
(32) Kahoot! is a useful tool to learn vocabulary.

Drawbacks

(33) Kahoot! depends too much on technology (e.g., internet connection…).
(34) Racing against the time in Kahoot! games is stressful.
(35) Racing against the time makes me just guess the answers for fun without understanding.
(36) The background music in Kahoot! games is distracting.
(37) The whacky and funny names of Kahoot! players are distracting.

Open-ended Question

(38) Is there anything else you want to add? _____