IJIET, e-ISSN 2548-8430, p-ISSN 2548-8422, Vol. 9, No. 1, January 2025, pp. 113-126

International Journal of Indonesian Education and Teaching
http://e-journal.usd.ac.id/index.php/IJIET
Sanata Dharma University, Yogyakarta, Indonesia

GAMIFIED ENGLISH INSTRUCTION MEDIATED BY KAHOOT! AT SENIOR HIGH SCHOOL: EVIDENCE FOR VOCABULARY GAINS

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https://doi.org/10.24071/ijiet.v9i1.10435
received 16 November 2024; accepted 31 January 2025

Abstract
Learning vocabulary in a second or foreign language is necessary for effective communication. Because the process of memorizing vocabulary is boring and stressful for some high school students, they have poor vocabulary knowledge. This study is focused on investigating whether or not there is an effect of using Kahoot! on senior high school students' vocabulary achievement. This research was conducted in two classes, one of which was used as an experimental class, and the other was a control class. The duration of the treatment is two weeks, and the third week is to do a post-test. This research was carried out in one of the high schools in Jember City. To measure participants' achievement in vocabulary learning after the experiment, a vocabulary achievement test was developed by the researchers. To check the validity of the hypothesis, an independent sample t-test was run to determine the significant difference between the mean post-test score and the SPSS. The results of the study indicate that Kahoot is effective in improving the vocabulary learning of the experimental group.

Keywords: Kahoot!, experimental research, students' vocabulary achievement

Introduction

English is an international language that must be mastered and used as a medium of communication all over the world. To support students' abilities in language learning, they must learn four language skills, comprising reading, speaking, listening, and writing, which will facilitate more effective communication across diverse contexts. Besides, students must also acquire language components that include vocabulary, pronunciation, and grammar. Vocabulary is the most crucial aspect of learning a language because it is categorized as one of the English components that connect the four language skills (Ong et al., 2019).

Yeh and Wang (2013) prove that vocabulary learning has proven to be extremely difficult for students learning English as a foreign language. In learning vocabulary, teachers realized that students felt less enthusiastic because the learning was only done through memorization and doing the exercises in the book. This learning approach contributes very little to vocabulary learning or

acquisition as students have limited opportunities to use and internalize new words. Equally critical is that students mostly have no interest in learning when they need to memorize a lot of new vocabulary. Teachers also realized that the memorization of each student would fade over time. In accordance with Silsupur (2017), learning new words by memorizing them is tedious, draining, and causes students to forget them easily because they are simply taught the words that are never used. In response, using technology-mediated strategies for learning English in the classroom has become a popular solution in the modern era (Roy, 2019), one of which is through gamification.

Irawan et al. (2020) state that the use of games as a learning medium by teachers can construct an atmosphere that can increase students' motivation to learn English. This is because students encounter challenging learning experiences where they can put their linguistic repertoires at play, collaborating and competing against their peers in a stimulating environment. One of the most thriving gamification tools in English language teaching is Kahoot! Kapuler (2015) contends that Kahoot! is one of the top 100 new apps for classroom use and ranks 36th on the list of educational trending apps. Pratolo and Lofti (2021) stated that Kahoot! is a good tool that teachers can use in the classroom to foster student motivation. Moreover, the involvement of students in Kahoot! The application could make the classroom atmosphere more interactive, so it would have an impact on the higher level of student motivation in English classes. The students are encouraged to retain vocabulary through competitive games on the Kahoot application. It means that the use of the Kahoot! Application has a positive impact on students' vocabulary when they do a quiz with a running time. As a result, Kahoot! could be used to improve learning by increasing motivation and participation in a game. Decade-long research reveals the implementation of Kahoot! in different educational settings across the globe. The following section provides a review of some relevant studies associated with the classroom use of Kahoot! around the world.

The first cluster of research documents the impact of Kahoot! on raising student engagement and positive perception. Iwamoto et al. (2017) studied the testing effect with Kahoot! along with its efficiency in student achievement. Their findings showed that Kahoot! had a notable effect on enhancing academic achievement along with a positive classroom environment. Students liked to use Kahoot! since this tool had helped them remember the required elements of the course material, thereby leading to an increase in peer cooperation. Chaiyo and Nokham (2017) researched the impact of Kahoot!, Quizizz, and Google Forms on student perceptions regarding the use of a classroom response system. They discovered that Kahoot! and Quizizz helped increase the concentration of students, making them more engaged and motivated during lectures. Licorish et al. (2018) researched student perceptions about Kahoot!'s impact on teaching and learning. They reported that Kahoot! It increased students' motivation and engagement by providing immediate feedback and creating enjoyable learning experiences. Tan et al. (2019) researched Malaysian ESL students to find out their attitude towards Kahoot! They established that Kahoot! was the most preferred platform to learn English, whereby students characterized it as being fun, interactive, and useful. Inviting environment powered by Kahoot! Leads to a more positive attitude and learning experience.

Dianati et al. (2020) examined the attitudes of students toward technological tools for flipped teaching, including Kahoot!, Padlet, and Cirrus. They found out that these tools highly influenced students' perceptions about the use of technology in learning, because of the nature of these tools, which is quite engaging and interactive. Alawadhi and Abu-Ayyash (2021) conducted a mixed-method study concerning students' impressions of Kahoot! in EFL undergraduate courses in the UAE. Their findings were that Kahoot! was very effective in keeping the attention of the students, increasing participation, and making learning enjoyable. In Wang and Tahir's (2020) study, the use of Kahoot! was investigated in class for learning within several diverse disciplines. This range of advantages of creating an engaging learning environment and attitude has also been confirmed by other works, noting the positive gains in language learning.

Ismail et al. (2019) researched using Kahoot! as a formative assessment tool within medical education. Their study showed this to be an effective tool in helping students learn and focus on key concepts; as such, it is suitable for formative assessment through which teachers and students can address areas where students lag. Chiang (2020) explored the use of Kahoot! within an EFL reading class. The participants in the research preferred Kahoot! to traditional written tests for assessment in class as, according to them, it was suitable for the learning objectives and created a conducive environment for learning particularly due to the gaming experiences. Owen and Licorish (2020) explored the effectiveness of using Kahoot! for teaching junior and senior information science students. Their findings showed that it helped students to learn and remember information more at the senior level since seniors utilized it both in learning new content and revisiting previously learned material. Given the challenges to learning subject-related content, which oftentimes becomes exceedingly complex, the integration of games into the lesson not only will address the imminent negative emotion, such as frustration, by sparking enjoyment but also maintain students' engagement and focus, thus resulting in better comprehension and performance.

In sum, these studies put forth the potential of Kahoot! as an educational tool in enhancing students' learning engagements and motivation, which could have direct effects on better learning outcomes. While the majority of studies have documented gainful use of Kahoot! for vocabulary learning, similar inquiry at the senior high school level is underexplored. It is based on this research gap that an experimental study has been conducted to determine the effectiveness of using Kahoot! on the vocabulary achievement of Indonesian students at the senior high school level. This has been confirmed in a preliminary interview with an English teacher at a senior high school in Jember, East Jawa, Indonesia. The learning of vocabulary still heavily depends on the memorization method, without any unique medium designed for learning vocabulary. As widely reported in previous works, extensive use of memorizing methods and book-based quizzes potentially leads to boredom and therefore student disengagement. Therefore, the researchers formulated a research question: Is there any significant effect of the use of Kahoot! on senior high school students' vocabulary achievement?

Method

To achieve the goals of this study, the researchers used an experimental design. Experimental research was used to find out the cause and effect between independent and dependent variables (Creswell, 2012). In this study, the design used was a quasi-experiment with a post-test-only design.

The population in this study was the twelfth-grade students at one of the senior high schools in Jember in the 2023–2024 academic year. The researchers took two classes from three of twelve as a sample. The experimental class and the control class were selected, and the researchers conducted a homogeneity and normality test of student scores against the population.

There were three classes of social classes (i.e., XII Social 1, XII Social 2, XII Social 3); two classes were taken for research an experimental class and a control class. For the remaining class, it was used as a place to carry out trial tests on questions that were used as post-tests in research classes. The selection of these two classes was based on the results of a homogeneity test performed by using ANOVA. This test involved 40 test items of multiple-choice questions within 50 minutes. The result of the homogeneity test indicated *p* 0.781, which was higher than 0,05. This affirmed that the population of social twelfth-grade students was homogeneous. The sample was class XII SOCIAL 2 as a control class with 35 students and class XII SOCIAL 3 as an experimental class with 35 students. Furthermore, the researchers conducted two treatments in both classes. The experimental class was treated with the use of Kahoot! in learning, but for the control class, the treatment was carried out with learning like the usual teacher, namely working on a student's worksheet.

In this research, the data were collected by using the vocabulary test. The test used has been reviewed by English teachers at school first before the researchers tests it on students in class. So that the questions in the tested test already have standard validity. The tests used in this research were the try-out test, which was later used for the post-test. A try-out test was given to the class that did not belong to the experimental and control classes.

The researchers applied a split half-odd-even technique in estimating the value of the reliability coefficient. To gain the coefficient value of the test reliability, the correlation of two halves was done by using the Product Moment formula. It was found that the correlation of the two halves was 0,69. The result was then continued to be processed by using the Spearman-Brown Formula. The reliability coefficient was 0,82, indicating a high-reliability coefficient (Sudijono, 1996: 229).

The researchers must choose the sample test items to utilize for the vocabulary post-test of the two groups (the experimental and control classes). Heaton (1990) asserts that the difficulty index of test items is used to identify whether an item is too easy, difficult, or fair. In this research, the try-out test had 50 items. To evaluate whether the test items were easy or difficult for the students, the difficulty index of the test was analyzed against the criteria proposed by Djiwandono (1996). The difficulty index was calculated by dividing the total number of students who answered each item correctly by the total number of students participating in the tryout test. Good test questions should not be either challenging or too simple. Out of 50 test questions, the researchers selected 40. Ten questions that were thought to be simple were removed by researchers. The

questions are quite simple; thus, the 10 numbers are 8, 11, 12, 21, 38, 43, 44, 48, 49, and 50. Eventually, there were 40 questions in the post-test, with 16 simple questions (40%), 20 fair questions (50%), and 4 difficult questions (10%).

The test was done on August 29th, 2023. In conducting the vocabulary try-out test, the researchers used the objective test in the form of a multiple-choice test that consists of 40 test items of multiple-choice questions and 10 questions with the type of completing blank words in a text. The post-test in this research was conducted to determine whether or not the use of Kahoot! has a significant effect on the twelfth-grade students' vocabulary achievement after the treatment given by the researchers to the experimental group.

The researchers gave the post-test to the experimental class after they were taught vocabulary using Kahoot! There were 35 multiple-choice questions and 5 questions about completing blank words in a text. The test format was chosen to improve the students' vocabulary mastery, so the test materials contained the vocabulary indicators to be measured. The time allocation for the post-test was 60 minutes. Regarding the assessment of post-test results, each correct question was given a score of 2.5 points, and the wrong answer was given a score of zero (0). So, the total score was 100 points if all the answers were correct. Then, the scores obtained were included in the score list of each student, and the results of the post-test scores were analyzed using the SPSS computing system with a significance level of 5% to find out if there was a significant difference between the experimental class and the control class in the study.

Findings and Discussion

The descriptions of the treatments

The experimental class received the treatments that teach vocabulary to the experimental by using Kahoot! In contrast, the control class was taught vocabulary by giving tasks without the media. The experimental class was taught vocabulary by using Kahoot! twice, and the control class was also taught vocabulary twice. Each meeting took 2 x 45 minutes.

1. August 10th, 2023 was the first meeting for the control class.
2. August 24th, 2023 was the second meeting for the control class.
3. August 11th, 2023 was the first meeting for the experimental class.
4. August 25th, 2023 was the second meeting for the experimental class.

The teaching vocabulary to the experimental class

In the experimental class, the researchers carried out the treatment twice before conducting a vocabulary test at the third meeting. The learning material used in the class was vocabulary. The topic used in the first meeting was Holiday. In this material, researchers use topics, example sentences, and vocabulary related to holidays. After the researchers briefly presented the material, the researchers taught vocabulary in example sentences based on the material, and there were also several exercises in completing vocabulary in sentences related to the material. After students discussed and understood, researchers gave them tasks that focused on vocabulary, such as completing blank sentences with vocabulary choices next to them. For the experimental class, researchers used the Kahoot! application to perform this task.

Initially, the researchers introduced the Kahoot! application to the students by providing a brief overview of its features and explaining how to navigate and use the platform, as none of the students had prior experience with it. The explanation covered key functionalities, including how to join quizzes, respond to questions, and track scores in real time. Once the students demonstrated a clear understanding of how Kahoot! operated, the researchers proceeded to launch a quiz using the application. The purpose of this quiz was to review and reinforce the material that had been previously discussed in class, allowing students to actively engage with the content in an interactive and gamified manner. What follows is one sample item presented through Kahoot!

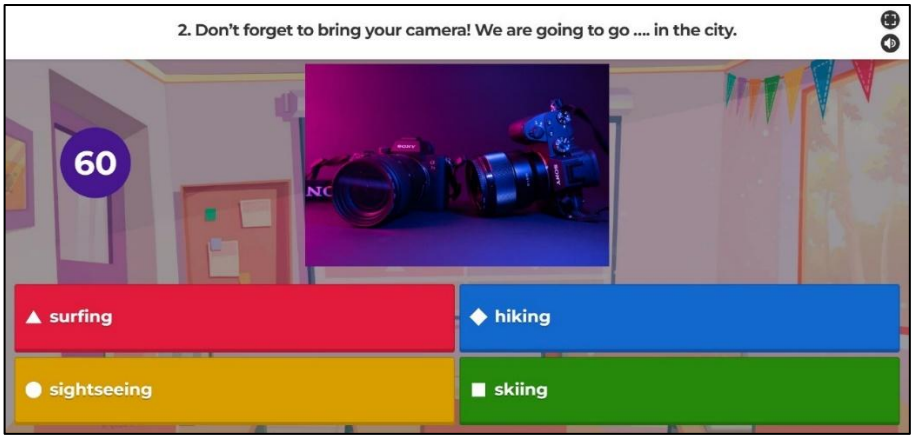

Figure 1. Sample quiz item

Although some of the vocabulary was rather difficult or unfamiliar from the class quiz with Kahoot!, students remained enthusiastic and showed high levels of participation. This quiz in game format maintained students' active participation; therefore, it created a positive and lively learning environment. Upon completion of the quiz, the researchers opened a discussion with the students by reviewing the questions and certain vocabulary items that some of the participants had found challenging or new. Certain students asked about the meaning of specific words which they felt were not clear to them. The researchers took this opportunity to explain in depth the challenging vocabulary so that the students would more clearly understand these items. Also, the researchers invited them to study by themselves the material and come back to these words during the next session; thus, insisting on continuous practice in mastering the vocabulary.

The second meeting, thus, remained a review of the previous week's material, though the topic now changed to "Things and Activities at Home." While the content of the vocabulary remained consistent with the general vocabulary themes from the prior session, this was a new context in which students could apply similar vocabulary. The aim of this lesson, then, was to consolidate the same source material and expand the students' understanding of how it could be used in various situations.

After the review, the researchers reprised the Kahoot! application and used it in a series of quizzes aimed at consolidating the students' familiarity with the vocabulary. Such interactivity of quizzes got the students once more involved in a more lively and amusing review process. Following the Kahoot! for quizzes, the

researchers led a discussion on some vocabulary items that the students found most difficult or that they had never seen before. A fair number of them did ask for the meaning of some words that were unfamiliar or whose usage they could not get right. The researchers went ahead to address these questions by giving elaborate explanations with contextual examples to help the learners understand them better. What's more, the researchers encouraged students to go beyond studying these words while in class, reminding them how practice or repetition cements the words in the vocabulary of the learner.

The teaching of vocabulary to the control class

In the first meeting of the control class, the researchers explained the material about the use of vocabulary. The topic used in the first meeting was Holiday. The researchers taught the material in the control class in a way that related the topic, sentence examples, and vocabulary about holidays. In the control class, after the researchers explained the material briefly, the researchers taught the vocabulary in an example sentence, and several exercises completed the vocabulary in a sentence related to the material. After the students understood the material learning, the researchers gave them a task that focused on vocabulary, such as completing empty sentences with the vocabulary choices on the side. The sentences in the assignment follow the day's material and also the topics used in daily activities. After completing the exercise, the students discussed the correct answers together and questioned any unfamiliar or challenging words.

In the second meeting of the control class, because the material continued to use last week's material, the researchers just reviewed the previous material, but on a different topic at the second meeting. The topic used in the second meeting was Things and Activities at Home. After that, the researchers had the control class do several quizzes to continue learning vocabulary. The researchers then addressed several vocabulary words with the students that were challenging and unfamiliar to them. Some students were going to ask about unfamiliar words because they were still confused about the definition or usage.

The results of the vocabulary post-test

The primary data were collected by using the vocabulary post-test. This test's objective was to collect data on the student's vocabulary achievement after the experimental class was taught vocab by using Kahoot! The post-test for this research was administered to both the experimental class and the control class on August 31st and September 1st, 2023. 70 students joined the post-test. There were questions 35 of multiple-choice, and 5 questions of filling in the blank. The vocabulary post-test considered the use of verbs, adjectives, nouns, and adverbs. Dealing with the scoring of the test results, each correct item was scored 2.5 points, and the incorrect answer was scored zero (0). Thus, the total score of the correct answers was 100 points.

Table 1. Descriptive statistic of post-test

	Group Statistic				
	Class	N	Mean	Std. Deviation	Std. Error Mean
Result of Post Test	The Control Class	35	88.03	3.785	.640
	The Experimental Class	35	92.54	4.943	.835

According to the data in the table above, it was found that the mean score of the students in the experimental class was 92,54 which was higher than that of the students in the control class, M = 88,03.

The analysis of the vocabulary post-test result

The results of the test were analyzed to look for differences between the effects of using Kahoot! as a learning medium for the experimental class and not using any media for the control class. The results of the post-test scores were analyzed using the SPSS computing system with a 5% significance level to find out whether there was a significant difference between the experimental class and the control class. The results of the group statistics are shown in the table below.

Table 2. The result of the independent sample t-test

Independent Sample Test							
	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	2.021	0.160	-4.290	68	0.000	-4.514	1.052
Equal variances not assumed			-4.290	63.668	0.000	-4.514	1.052

According to the data in the table above, the score of Lavene's test for equality of variances in Table 4.2., F = 2.021 and P = 0.160 > 0.05, assumed equal variances, and in the t-test with equal variances assumed, the results are P = -4.290 and P = 0.000 <0.05. It could be said that there was a significant difference in the means between the two classes. The results of the experimental class showed that the use of the Kahoot! application as a medium in teaching vocabulary could help them learn vocabulary more easily, and it affected the student's vocabulary achievement.

The findings from the experimental class indicated that the implementation of Kahoot! application as a teaching tool for vocabulary instruction significantly facilitated students' learning process. The interactive and engaging nature of Kahoot! allowed learners to acquire new vocabulary more effectively, making the learning experience more enjoyable and memorable. Additionally, the use of this digital platform positively impacted the students' vocabulary achievement, as evidenced by improvements in their test scores and overall performance. The incorporation of gamified elements in the vocabulary lessons not only increased student motivation but also enhanced their retention and recall of newly learned words, contributing to measurable academic progress in their vocabulary acquisition.

Both hypotheses were tested using an independent sample t-test calculated on SPSS in the form of an independent sample t-test results table. It aims to find out which hypothesis was accepted or rejected by comparing the post-test in the experimental class and the post-test in the control class. First, it was found that the

value of Sig. (2-tailed) was 0.000 < 0.05 in the t-test with equal variances assumed. Second, it was found that the value of Sig. was 0.160 > 0.05 in Lavene's test for equality of variances table. Consequently, the null hypothesis was rejected, and the alternative hypothesis was accepted. This indicated that there was a significant effect of using Kahoot! on senior high school student's vocabulary achievement at one of the senior high schools. With the additional support, the results of the post-test scores from the experimental class were better than those of the control class, which teaches vocabulary without using media.

Discussion

The results of the present study reveal significant differences in students' vocabulary achievement between the experimental class and the control class. Put differently, the students in the experimental class who received the Kahoot! application as a supplementary media to learn the target items outperformed their peers in the control group in the vocabulary test. This gain could be argued as probably because Kahoot is interactive and dynamic. The platform was a digital aid for conducting quizzes and reinforcing vocabulary knowledge. On the other hand, the control class utilized traditional means alone: quizzes were used with student worksheets with no integration of any sort of digital media, which may have hindered their engagement and motivation.

The integration of Kahoot! in the flipped experimental class had not only created a more interactive learning environment but also raised a sense of competition and excitement due to the experience that helped retain the vocabulary better. According to Pratolo and Lofti (2021), Kahoot! was found effective in motivating students in classrooms. It might well be that its game-like approach and instantaneous feedback features increased the active participation and interest in the subject matter of the students, leading to deeper understanding and mastery of vocabulary. Such a difference between the two classes puts into focus the necessity of using innovative teaching instruments to increase the effectiveness of learning.

Besides, the Kahoot! Application used in classroom activities contributed to making the learning process more interactive and dynamic, thus having a positive influence on students' motivation in English classes. The interactivity of Kahoot!, such as real-time feedback, point-based competition, and colorfully presented visual appeal, made the classroom atmosphere vibrant and interactive. This level of interaction motivated students toward active participation, hence making learning more enthusiasm-worthy. The findings cohere with the previous study which acknowledges the essential of raising students' positive emotions as the drive to their learning engagement and outcome (Imamyartha et al., 2021; Wahyuni et al., 2024).

In this regard, the usage of gamification within the context of language learning through the inclusion of game-like features in learning activities was further corroborated through research focused on the Quizzizz language testing application, among others. Gamification of language learning and assessment, according to Husnah et al. (2023), if appropriately implemented, can be effective in driving student engagement. In that respect, the addition of game-like features-challenges, rewards, and instantaneous feedback a far better quality of learning. When students become more engaged with such exercises, which in turn build

their confidence in language learning, they create a competitive yet supportive atmosphere in which every student feels free to take risks and speak up. Because Kahoot! is a tool applying game mechanics to learning processes, it provides this very same effect. It helps improve student motivation and confidence and thus is a valued component in the language classroom.

Implementing game-based media could provide a sense of pleasure to increase students' motivation and engagement in learning, as well as the opportunity to engage in word games to support the development of each student's vocabulary (Kingsley & Grabner-Hagen, 2017). Therefore, a teacher needs to take advantage of gamification in learning vocabulary. According to Almanar (2019), the results of using Kahoot! in the classroom show that it has a significant influence on how well students memorize the vocabulary that has been discussed in the previous lesson. While working on the quiz, they enjoy a variety of images and videos as well as creative questions, which provide students with a fresh perspective. In this study, the control was taught vocabulary without using Kahoot! The students were taught vocabulary using book-based vocabulary and did the exercises in the student worksheet. As a result of this condition, students experience boredom and do not have the opportunity to cooperate with other students to solve the difficulties. However, when the experimental class was taught vocabulary using Kahoot!, students felt excited and happy when learning the vocabulary. When working on quizzes using Kahoot!, students are always excited and focused. This is in line with the findings of Wang (2015), who states that the use of games in education can significantly increase student motivation and participation.

The result of this research is corroborated by other researchers, who also proved the effectiveness of Kahoot! application to improve achievement in vocabulary for students. First, Mansur and Fadhilawati (2019) conducted their research at an Islamic Senior High School Madrasah in Blitar City by providing Kahoot! to enhance the mastery of students' English vocabulary in learning about self-introduction. It also included that there was a great hike in the performance of students, and their scores improved from 59.23 to 84.58 during the intervention period. This clears the potential Kahoot! has in boosting vocabulary retention and comprehension. In addition, the study is in coherence with another study on Kahoot! For junior high school students. Afi et al. (2024) report positive outcomes on the engagement of students in gamified vocabulary learning powered by Kahoot!

Syahputri and Solo's (2022) study on seventh graders indicates that the engagement of Kahoot! Influences vocabulary achievement. The findings indicated that the interactive and engaging Kahoot! platform contributed to the improvement in the students' vocabulary learning. Agreement of these results with the present study underlines regularities in the efficiency of Kahoot! within various educational contexts and for different students. In sum, the studies support the role of digital gamification tools, such as Kahoot!, which could be integrated into its forcing language learning for better engagement, motivation, and finally, academic achievement in vocabulary acquisition.

Likewise, the results of the present study showed a significant improvement in vocabulary achievement after incorporating Kahoot! This improvement could be attributed to the repetitive and immediate feedback mechanism that existed at

the time of the quiz on Kahoot! According to Shute (2008), timely feedback is essential for effective learning, as it helps students correct mistakes and reinforce correct use immediately. This attribute affords a substantial impact on students' learning, particularly in EFL contexts where the exposure to the target language is limited. Competitive activities in Kahoot! also encourage students to pay more attention and strive to achieve better results, thereby increasing their vocabulary. Again, this is in alignment with another study investigating gamification tool, Quizlet, which acknowledged the power of such a supportive tool to enhance vocabulary mastery (Zakaria et al., 2022).

In the end, this research signifies overwhelming evidence that Kahoot! is indeed an effective tool that can be utilized to enhance vocabulary achievement in language learning. The current study and earlier research on Kahoot! produce consistent findings regarding the effectiveness of Kahoot! in engaging students motivating them and retaining their vocabulary knowledge. Even though the benefits of such a game-based tool are beyond a doubt part of a larger discussion, further research into its limitations is required and needs to detail those contexts in which Kahoot! can be found less effective. Moreover, the approach may be influenced by factors like the age of the students, learning style variables, and variables related to the classroom environment. Another aspect that could be pursued is a more examination-like performance of Kahoot! against other learning digital platforms.

Future research will, therefore, present a full picture of Kahoot! in language education regarding these issues. This will, in turn, help educators learn not only the strengths of the platform but also how to work around its limitations to use Kahoot! to full effect across diverse educational settings. Eventually, this will provide educators with a clear understanding of how they could develop their teaching strategies to meet diversified needs while simultaneously assuring maximum utilization of Kahoot! and other similar tools in improving language learning outcomes.

Conclusion

The main purpose of the research is to determine whether or not students' vocabulary achievement is significantly affected by their use of Kahoot. The findings confirm that the t-test with equal variances assumed results in $p = 0.000 < 0.05$ and that the score of Lavene's test for equality of variances is $p = 0.160 > 0.05$. In summary, the alternative hypothesis was accepted and the null hypothesis was rejected. This indicates that using Kahoot! had a significant positive effect on students' high school vocabulary achievement in this study.

The findings certainly give very strong support to the effectiveness of Kahoot! in terms of vocabulary learning, as manifested by the rejection of the null hypothesis and acceptance of the alternative hypothesis. Furthermore, the explanation concerning the experimental and control classes proved that the students who learn vocabulary through Kahoot! Their post-test average score was 92.54, while that of the students in the control class, who applied traditional memorization techniques, stood at 88.03. The results obtained indicated that Kahoot! is an interactive and dynamic vocabulary acquisition tool. From the findings, Kahoot! is recommended for embedding in vocabulary teaching to increase student engagement and promote better learning outcomes. Several key

attributes are worthy of further attention for maintaining and sustaining students' engagement and learning performance. First, teachers need to maintain the difficulty of the level of quiz items integrated into Kahoot! Using fairly challenging questions is favorable to maintain the challenge of the lesson while enabling the students to envision potential achievement. In addition, a structured and focused discussion on timely feedback mediated by Kahoot! deserves continuous attention and support on the part of teachers. Finally, the potential of converging students of different proficiency levels in a group-based competition will afford a thriving environment for every student to proceed and excel in English lessons, regardless of the learning focus.

Suggestions for future researchers were advised to use the results of this study as an introduction or initiation reference to conduct future research with the same or different designs. The researchers are expected to be able to overcome the limitations of this study, where the researchers uses Kahoot!, which is free. In the future, it is hoped that you can use Kahoot!, which is premium. Researchers can use different types of quizzes that will be presented on Kahoot! Future researchers are also expected to provide a private internet connection, which could make it easier for students who don't have a good internet connection when they're going to play Kahoot!

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