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Effects of *Kahoot*!-mediated vocabulary instruction on vocabulary gains and learner attitudes: A mixed-methods study in a Vietnamese public high school

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ABSTRACT

This study examined the hypothesis of whether *Kahoot!*-mediated instruction could enhance the learning of English vocabulary in Grade 11 students and whether students had a positive perception of the platform in a Vietnamese high school setting. The research addressed a practical issue that has been used in numerous EFL classrooms in Lam Dong Province: the students were expected to achieve the curriculum and proficiency requirements, and yet, many remained unable to remember and apply vocabulary correctly in class and test results. The mixed-methods design was used during eight weeks and included 62 students (11th grade) in an experimental group (n = 27) and a control group (n = 35). Vocabulary pre-tests and post-tests, and a Likert-scale attitude questionnaire were used to gather quantitative data, and semi-structured interviews with the chosen students of the experimental group were used to collect qualitative data. Experimental group was vocabulary training using *Kahoot!* and the control group used standard vocabulary training. The results revealed that a definite improvement was observed in the experimental group between pre-test and post-test compared to the control group where a definite change in the weak and average bands could be seen to fairly good and good bands. The attitude outcomes were also good: students evaluated *Kahoot!* to be fun and helpful in practice and as effective in learning new words. The data of interviews also indicated that *Kahoot!* encouraged paying attention, playing, competition, fun, and the practice of vocabulary. The paper claims that *Kahoot!* is not just a motivational tool; when it is incorporated into the systematic lessons of the curriculum, it can be used to facilitate the process of vocabulary learning and to provide the environment of a more interactive learning experience. The article provides context-related data of a Vietnamese secondary-school context and explains how gamified platforms could be organized towards pedagogical objectives, instead of being used as a form of entertainment.

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1. Introduction

Vocabulary knowledge is the key to developing a second language since without sufficient resources of lexicon the learner will be unable to engage in reading, listening, talking or writing. Vocabulary acquisition is particularly significant in EFL setting since classroom exposure usually offers the primary avenue by which students learn and use new words and recycle them (Nation, 2001; Webb & Nation, 2017). English has gained greater importance in Vietnam as a school success measure, higher education, and subsequent employability (Ngoc, 2022). Simultaneously, vocabulary acquisition is one of the most unresolved problems in the general high schools, where students have to cope with the curriculum

requirements, tests, and the necessity to prove communicative competence with still-developing lexical repertoire (Folse, 2004; Schmitt & Schmitt, 2020).

Three problems at the Phan Dinh Phung High School of Lam Dong Province (hereafter, PDPHS), motivated the present study. First, Grade 11 students continue to struggle with retaining new vocabulary and applying it correctly in context, even though the curriculum is oriented toward CEFR outcomes. Second, classroom practice is still dominated by teacher explanation, bilingual word lists, translation, and short written exercises, which provide initial exposure but limited spaced retrieval. Third, in large classes the opportunity for timely, item-level corrective feedback is constrained. These practical problems motivated the present study, while the detailed research procedures are presented in the Method section.

Teacher explanation, word lists, translation and brief written exercises continue to dominate vocabulary work in many classrooms. These techniques can help with the initial exposure, although they do not necessarily sustain attention or facilitate repeat retrieval, which is vital to retention (Roediger & Butler, 2011). The issue, however, is not that the students should have more vocabulary, they should also have learning conditions that will enable them to revisit vocabulary in a meaningful way, stay engaged, and get immediate feedback on the errors.

One such solution to this issue has been proposed as digital game-based learning. Gamification is the conscious application of game-like elements, including points, time-based challenges, leaderboards, and instant feedback in non-games to influence the participation and maintain motivation (Deterding et al., 2011; Landers, 2014). Gamified tools are appealing in language teaching as they involve all three elements practice, feedback, and emotion. According to reviews and meta-analyses, gamification may have a positive impact on participation, motivation, and (under some circumstances) learning achievement, but the effect depends on the quality of designs, the context, and the characteristics of learners (Alyousef & Picard, 2022; Dichev & Dicheva, 2017; Li et al., 2024; Sailer et al., 2017; Triantafyllou et al., 2025; Yürük, 2023).

Of these tools, *Kahoot!* has been given a lot of attention since it is easy to apply in the typical classrooms, only needs the devices of the students and quizzes prepared by the teachers, and transforms the review activities into games with time limits. Research in language and content classes has attributed Kahoot! to increased attention, enjoyment, and short-term performance (Bicen & Kocakoyun, 2018; Wang, 2015). Researchers have also found positive learner perceptions and vocabulary or grammar learning when *Kahoot!* was oriented to instructional goals instead of isolated entertainment in EFL settings (Nguyen & Yukawa, 2019; Panmei & Waluyo, 2023; Wichadee & Pattanapichet, 2018).

But there are three gaps that are still pertinent. To start with, much of the current literature is founded on tertiary settings, brief interventions or general measurements of engagement instead of vocabulary-centered evidence-based school-based interventions (Chowdhury et al., 2024; Simonnet et al., 2025). Second, there is still underrepresentation of the Vietnamese setting in mixed-method research that integrates outcome measures with student perceptions and interview evidence of public high schools (Ngoc, 2022). Third, a number of *Kahoot!* studies report positive reactions but do not discuss sufficiently how game features translate into vocabulary learning processes such as retrieval, repetition, corrective feedback, and contextualized use (Okumuş Dağdeler, 2023; Zhou et al., 2024). This paper fills these gaps by reviewing the vocabulary and attitudinal outcomes as well as the attitudes of the learners in a real-life classroom in a secondary-school setting in a period of eight weeks intervention.

The originality of the research is that it is a Vietnamese secondary high school not located in a large metropolis as the center of research, combines both quantitative and qualitative data and considers vocabulary acquisition as a pedagogically specific objective, not as a sign of enjoyment in the classroom. The research is thus research based, contextual and pragmatic. It adds to the body of evidence regarding the way that *Kahoot!*-mediated instruction in vocabulary learning can be used in a curriculum-based EFL environment where vocabulary learning motivation and retention are both a significant issue.

The research questions of the study were as follows: (1) What is the impact of using Kahoot! on Grade 11 students acquiring vocabulary? (2) What are the student attitudes towards Kahoot! use in vocabulary classes and (3) What are the experiences of learning when Kahoot! is implemented in English vocabulary classes?

Gamification has turned into a significant thread of technology-based learning as it provides a vocabulary of design in order to transform the normal practice into a more goal-driven and emotionally

charged experience. Instead of regarding fun as the antithesis of serious learning, the gamification literature suggests that challenge, progress visibility, and immediate feedback can help to maintain an effort and facilitate repetition. However, scholars have cautioned that gamification does not necessarily enhance the learning process by merely introducing points or leaderboards. It has to be designed in a way that facilitates the target learning process, and it should not rely solely on extrinsic incentives (Dichev & Dicheva, 2017; Sailer et al., 2017; van Roy & Zaman, 2019). Recent meta-analyses confirm that gamification produces moderate positive effects on motivation and engagement, with more variable effects on achievement depending on implementation quality (Triantafyllou et al., 2025; Zhou et al., 2024)

This is a warning to vocabulary instruction. Vocabulary knowledge is enhanced by means of repeated experiences, rehearsal, meaning-based use and feedback on its misuse. Digital tools can be used to support them in case they enhance the frequency and quality of interaction with target items. Recent surveys on technology-aided vocabulary learning reveal that multimodality, spaced exposure, interactivity, and learner autonomy can be facilitated using digital environments, but the benefits are contingent on pedagogical design and not on technology (Boers, 2022; Okumuş Dağdeler, 2023; Simonnet et al., 2025; Zhou et al., 2024). Likewise, language learning through digital games has been linked to more powerful engagement and, in most studies, superior vocabulary gains compared to more passive kinds of practice (Chowdhury et al., 2024; Mayer, 2019).

Kahoot! applies to vocabulary since it operationalizes a number of mechanisms that have been known to enhance vocabulary learning. First, it involves quick recall in the memory (Roediger & Butler, 2011). *Second*, it provides feedback right after every item, which may assist students in identifying and correcting the misconceptions (Hattie & Timperley, 2007). *Third*, it generates repetitive exposure/rehearsal cycles where the quizzes are used again or talked about after the games. *Fourth*, it introduces a social aspect of competition or teams, which may boost the attentional investment. Wang and Lieberoth (2015) demonstrated that the engagement can be heightened by means of points and audio design, whereas the literature review conducted by Wang and Tahir (2020) has found that *Kahoot!* tends to produce positive outcomes on learning performance, classroom dynamics, and motivation, but the evidence base is methodologically heterogeneous.

Kahoot! has been associated with a number of desirable results in EFL and ESL research. Bicen and Kocakoyun (2018) concluded that students considered *Kahoot*! as entertaining and encouraging. Wichadee and Pattanapichet (2018) discovered that English language classes that used digital games facilitated performance and motivation. Nguyen and Yukawa (2019) claimed that Kahoot! could be an effective mobile-supported assessment and review tool in Vietnam, though the training of teachers and students are also significant. More recently, Panmei and Waluyo (2023) have discovered that university students had positive perceptions of vocabulary learning using Kahoot!, and Reynolds et al. (2021) have found increases in vocabulary learning and motivation. Yürük (2023) also documented significant vocabulary gains in EFL learners following Kahoot!-assisted instruction, while Alyousef and Picard (2022) found that competitive quiz platforms fostered higher engagement when integrated with explicit vocabulary instruction. These results indicate that Kahoot! can be used as a significant pedagogical tool in situations when course content is closely related to the quizzes in the program.

The wider literature concerning gamification can also be used to understand why the platform can work. The theory of self-determination focuses on the importance of autonomy, competence, and relatedness to facilitate motivated behaviour; classroom games designed properly can boost perceived competence with instant signals of performance and promote relatedness with joint involvement (Ryan et al., 2022; Ryan & Deci, 2017). The expectancy-value theory is a reminder that learners will put in effort when they believe they will achieve success, and when they feel that the tasks involved are valuable; the quiz cycles (which are short and well scaffolded) can make both expectancy and value of the tasks higher (Wigfield & Eccles, 2000). Social cognitive theory also brings out the importance of self efficacy and feedback to maintain learning effort (Bandura, 1997). These views do not suggest that competition is always good, but they make sense of why an interactive system of responses can enhance attention and persistence where students believe that the task can be done and it is worth doing.

Simultaneously, not all students will be equally helpful with competitive game features. It has been observed that learners react in varied ways based on their preferences, anxiety, and prior experience with technology as well as the climate in the classroom (Smiderle et al., 2020; Yang et al., 2023). Leaderboards will invigorate students in certain situations, and cause pressure or embarrassment in others. The learning

experience can therefore be influenced by options of anonymity, collaborative mode and the mode of feedback that the teacher provides. This is especially applicable in the school-going environment when pupils might fear committing errors in front of people. Attitude data of learners should be carefully analyzed with achievement data.

In Vietnam, English teaching has undergone reforms that have increased the use of communicative practices and educational technology, but there is an unequal distribution of digital innovation in regions and school types. According to recent research on Vietnamese educational reform and technology-mediated language learning, the situation of infrastructure, teacher willingness, curriculum pressure, and local classroom norms are contextual factors that have a strong influence on innovation success (Pham & Duong, 2022). Thus, results of universities or urban pilot contexts cannot be easily applied to all public high schools. Practical research based on day-to-day practice in schools is still useful.

Another reason why Kahoot! should be looked at in particular in vocabulary learning is that vocabulary learning needs to be cumulative with micro-practice, but not macro-performance. After one explanation students seldom learn a new word. They must be provided with repetition of form, meaning, collocation, and use. Quiz-based tools can help to fulfill this requirement, by making repetition less tedious, and by allowing teachers to reintroduce target words within lessons. Recent studies of technology-mediated vocabulary acquisition focus on how digital technology can be the most helpful by providing more chances to engage in deliberate retrieval and notice, as well as keeping learners cognitively engaged (Simonnet et al., 2025; Zarrati et al., 2024). *Kahoot!* is particularly applicable since it can be used within shorter cycles without interfering with the overall lesson progression.

Recent research has also emphasized the important role of interactive digital platforms and gamification in supporting EFL vocabulary learning in Southeast Asia (Hidayati & Wulandari, 2022; Muflihah et al., 2022; Saputra & Sumardi, 2021). These studies highlight how context-appropriate gamified approaches can enhance learning, and they stress the need to consider both learners' cognitive gains and their attitudes when evaluating digital tools.

Overall, the literature indicates that *Kahoot!* can be a useful tool in vocabulary learning since it features repeated retrieval, feedback, multimodal stimuli, and social participation. However, the power of its pedagogical worth lies in its ability to get these game components embedded into the teaching practices that can be used with definite lexical goals. This literature is the foundation of the current study as it analyzes a school-based intervention where *Kahoot!* was implemented not as a new phenomenon but as a routine part of vocabulary teaching. By correlating the patterns of scores, the ratings of attitudes, and the description of interviews, the study aims to give a more persuasive image of the how and why Kahoot! can facilitate vocabulary learning in this situation.

2. Method

2.1. Research Design

This study used a mixed-methods approach, by combining quantitative and qualitative data collection methods to investigate the effect of *Kahoot!* on vocabulary acquisition and students' attitudes (Creswell & Plano Clark, 2018).

2.2. Participants

The study was conducted at Phan Dinh Phung High School, a public upper-secondary school in Lam Dong Province, Vietnam. PDPHS randomly allocated 62 Grade 11 students to an experimental group (n = 27) and a control group (n = 35). The sample size was considered adequate for the planned statistical analyses and is comparable with sample sizes reported in similar classroom-based intervention studies (Cohen et al., 2017).

2.3. Instruments

The research tools of this study included:

a) *Vocabulary Achievement Test:* Pre- and post-tests have been created to assess vocabulary acquisition. Subject matter experts were used to validate the tests and to pilot them to enable reliability (Brown, 2004).

b) *Questionnaire:* To determine the attitudes of students towards using *Kahoot!* to study vocabulary, a questionnaire was designed on the Likert scale, using the questionnaires of prior researches (Dörnyei, 2007)

c) *Semi-structured Interviews:* A small group of participants were interviewed one-on-one to provide detailed information about their experience with *Kahoot*! (Kvale & Brinkmann, 2015).

2.4. Procedure

The experiment was carried out in a period of 8-weeks: In week 1: A Pre-test was carried out to the two groups. Weeks 2-7: The intervention of Kahoot! as the main teaching instrument in the vocabulary teaching of the experimental organization. This involved creating *Kahoot!* quizzes on the vocabulary in the curriculum. Experimental group students played these quizzes twice a week. Meanwhile, the control group received the traditional vocabulary teaching without the Kahoot!. During Week 8, the researchers provided the post-test to both groups, gave questionnaires to obtain quantitative data regarding students attitudes and interviewed them to obtain qualitative information about the experiences of the participants

2.5. Data Analysis

The quantitative data, which included the results of both the pre-test and post-test and questionnaires were analyzed by means of SPSS software. Before the T-tests were conducted, the assumptions of normality and homogeneity of variances were examined. Shapiro–Wilk tests indicated that pre-test and post-test scores were approximately normally distributed in both the experimental group (pre: $W = 0.962$, $p = .34$; post: $W = 0.971$, $p = .52$) and the control group (pre: $W = 0.968$, $p = .41$; post: $W = 0.958$, $p = .29$). Levene's test confirmed homogeneity of variances between the two groups on both the pre-test ($F(1, 60) = 0.38$, $p = .54$) and the post-test ($F(1, 60) = 1.12$, $p = .29$). Given that both assumptions were met, paired-samples T-tests were used for within-group comparisons and independent-samples T-tests were used for between-group comparisons. Had the homogeneity assumption been violated, Welch's t with adjusted degrees of freedom would have been reported instead. T-tests were done to compare the difference within and between the groups (paired and independent). Effect sizes were also estimated to identify the intensity of the effect of the intervention. Thematic analysis was used to transcribe and analyze qualitative data of the interviews (Braun & Clarke, 2006). This was done through coding the data, discovering themes, and discussing the results with regard to the research questions.

3. Findings and Discussion

Table 1 outlines the pretest results for the two groups (experimental and control groups). The groups were tested before the intervention involving Kahoot! in vocabulary classes.

Table 1. Pretest Results

Group	Weak		Average		Fairly good		Good	
	Number	%	Number	%	Number	%	Number	%
Experimental	5	18.5	14	51.8	6	22.2	2	7.5
Control	6	17.1	20	57.1	7	20.0	2	5.8

The majority of the students in both groups had average scores. The percentage of students with weak scores was also similar in both groups, albeit with a slightly lower percentage in the control group. The number of students with fairly good and good scores was greater in the experimental group than in the control group, although the differences were not substantial. This table provides a baseline comparison of the students' performance before the Kahoot! games were introduced in the experimental group's vocabulary classes. As shown in the Table 1, the pretest scores of the two groups were almost equal. Therefore, the null hypothesis that "there is no significant difference between the mean scores of the experimental and control groups on the pretest" was accepted, and both groups could be treated as equal.

Table 2 outlines the post-test results for the two groups of students (experimental and control groups).

Table 2. Post-test Results

Group	Weak		Average		Fairly good		Good	
	Number	%	Number	%	Number	%	Number	%
Experimental	3	11.1	8	29.6	10	37.0	6	22.2
Control	7	20.0	21	60.0	5	14.2	2	5.8

Most notably, the percentage of students in the "weak" category decreased, and the percentage of students in the "fairly good" and "good" categories increased in the experimental group, which demonstrated significant improvements at all performance levels. The percentage of students in the "weak" and "average" categories increased, whereas that in the "fairly good" category decreased the control group, in contrast to the experimental group. According to the statistical analysis of the abovementioned pre- and post-test results, more students were able to reach higher performance levels as a result of the use of Kahoot! games, whereas the control group either saw no change in performance or experienced some decreases.

To further analyze the students' achievement, the authors present the one-sample T test between the pretest and posttest scores.

Table 3. Comparison of the Pretest and Post-Test Results

One-sample statistics				
	N	Mean	Std. Deviation	Std. Error mean
Pretest score	27	2.1481	.86397	.16627
Posttest score	27	2.6667	1.00000	.19245

As shown in Table 3, both the mean pretest (M = 2.15, SD = 0.86) and post-test (M = 2.67, SD = 1.00) scores exceeded 2, with the mean post test score being higher than the mean pretest score. This indicates an improvement in scores from the pretest to the post-test. Students generally have positive attitudes toward the use of Kahoot! In English vocabulary lessons

Table 4. Descriptive Statistics of Student Attitudes

	N	Minimum	Maximum	Mean	Std. Deviation
Kahoot! facilitates my vocabulary learning through practice.	27	2	5	4.07	.730
Kahoot! is an enjoyable way to learn vocabulary.	27	2	5	4.11	.698
Kahoot! is an effective tool for learning new vocabulary.	27	3	5	4.19	.736
I prefer Kahoot! over traditional methods of learning vocabulary.	27	2	5	3.81	.879
Valid N (listwise)	27				

These results are based on the answers to questions 7 to 10 in the questionnaire that reflect the students' attitudes. For questions 7 to 10, the mean rating ranged from 3.81 to 4.19, with a moderate standard deviation, indicating agreement that students generally have positive attitudes toward using *Kahoot!* for learning vocabulary. The students found *Kahoot!* enjoyable, and effective for practicing vocabulary, although there was slightly more variation in their preference for Kahoot! over traditional methods.

As shown in Table 5, there was a 0.621 correlation (p = 0.001) between student attitudes and the pretest score. There was a 0.688 correlation (p < 0.000) between the posttest score and student attitudes. The statistical significance of both correlations suggests a moderate to strong positive relationship between the variables. The results show that the attitudes of the students significantly improved, with large differences from the pretest to the post-test scores. The correlation of student attitudes with these measures seems to be consistent, as seen by the high correlations found between attitudes and pretest/post-test scores. The standard deviations and confidence intervals provide more proof of the validity and importance of these results.

Table 5. Paired-Samples Test of he Relationships between Students' Attitudes and the Pretest and Posttest Results

Paired-Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ATTITUDE	4.0463	27	.47046	.09054
	Pretest score	2.1481	27	.86397	.16627
Pair 2	ATTITUDE	4.0463	27	.47046	.09054
	Post-test score	2.6667	27	1.00000	.19245

Table 6. Pearson Correlation between Students' Attitudes and Vocabulary Test Scores (Pre-test and Post-test)

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	ATTITUDE & pretest score	27	.621	.001
Pair 2	ATTITUDE & post-test score	27	.688	.000

3.1. Qualitative Data Analysis

Outcomes (e.g., engagement, motivation and learning) experienced by the majority of PDPHS students in *Kahoot!* vocabulary lessons evaluated via the interview

a) Attention and focus

Every participant seemed to agree that the weekly *Kahoot!* sessions kept them focused. Students felt that *Kahoot!* assisted them in "recalling" and "memorizing information," but some also mentioned that taking *Kahoot!* quizzes helped them maintain concentration and refresh their memories. The positive impacts of increased attention reported in this study are similar to those reported in previous studies (Caldwell, 2007). Student 1 said, '*Kahoot! helped me learn words by heart because I could recall the images.'*

The students also mentioned how the music and sound effects affected their ability to concentrate. *Kahoot!* has various colorful, vivid, and appealing items to encourage learners to pay attention to learning to win the competition. Of these, the music and colors held the greatest appeal and contributed to learners' excitement and energy levels. Many students reported that *Kahoot! 's* sound effects keep them engaged and focused. In this case, Student 2 noted that the exciting atmosphere created by the music encouraged them to focus and make greater effort.

Student 3 explained, "*I become worried when I hear the music, but it also drives me to keep playing."*

Furthermore, Kahoot! encourages greater engagement by utilizing multimedia content including videos, images, and music which appeal to a wide range of learners. This makes the learning process more enjoyable and accessible and keeps students engaged throughout the lesson.

b) Interaction and engagement

The qualitative data showed that *Kahoot!* increased students' opportunities to engage deeply with the material and encouraged peer interaction. All eight participants reported that *Kahoot!* improved their teamwork skills and encouraged active engagement in the classroom. As noted by Student 2, "*Working with other students to find answers to questions was fun."*

Gamification includes elements of competitiveness or teamwork to increase engagement (Deterding et al., 2011; Sailer et al., 2017). Through cooperative missions, team activities, or leader boards, learners might experience a sense of accomplishment. Students felt engaged and wanted to interact more when they participated in *Kahoot!* games with a partner. Student 8 said that she participated more in the classroom because she had to compete to obtain the highest score in the game. The students also mentioned that talking with friends and participating in class "kept them on task." Additionally, a few students mentioned that Kahoot! was very useful in changing the class dynamic because they felt like active participants rather than mere observers.

Another significant finding was the influence of anonymity on student engagement. Although anonymity is sometimes seen as a drawback of game-based activities, allowing students to use nicknames appears to promote greater participation. During the interviews some students declared that they felt more comfortable using nicknames because they were anxious about getting answers wrong.

Additionally, the students found nicknames "cool" and "entertaining." Two students acknowledged that they only used nicknames when they were unprepared for an exam and thus more likely to give incorrect answers. From this it is clear that the use of nicknames allows students to participate more freely without a fear of failure. This anonymity can make the game more enjoyable, as students feel less pressured and are consequently more willing to take a chance on an answer that they might be unsure of. Nicknames can also set a playful tone for the activity, as students can choose creative nicknames, which can create a relaxed atmosphere. The social interactions fostered by Kahoot! can lead to a more cohesive

and supportive classroom dynamic (Smiderle et al., 2020). One student mentioned how much she enjoyed being able to celebrate her achievements by identifying herself when she achieved high scores on the leaderboard. The students also valued the competitive nature of *Kahoot!*. The aspects of *Kahoot!* that seemed most effective in holding students' attention were the ever-changing rankings, the suspenseful music, time limits, leaderboards, points, and status updates. Student 4 explained that she *preferred to be ranked among the top five players, and she felt special because of it. Kahoot!* has also proved to be an effective icebreaker, helping students feel more comfortable with each other. This is particularly useful for situations in which students might otherwise feel shy or reluctant to participate. By breaking through social barriers, *Kahoot!* makes the classroom environment more enjoyable for everyone. The excitement generated by *Kahoot!* creates a lively atmosphere. This makes the learning experience more enjoyable for both students and teachers.

The interactive and competitive nature of *Kahoot!* keeps students engaged with the lesson content, particularly the use of the new words since they want to earn high scores. This not only improves learning outcomes but also makes the vocabulary learning process more enjoyable. Students no longer simply memorize words by heart but are actively involved in using and understanding how these words are used in a fun and dynamic way. Learning tends to be more rewarding due to the gamified features of *Kahoot!*, which offers instant feedback and prizes. The satisfaction expressed by the students highlights the effectiveness of *Kahoot!* as a gamified learning platform. Its ability to combine fun with educational value makes it a useful in learning vocabulary. In conclusion, *Kahoot!* effectively facilitates vocabulary acquisition because it encourages engagement, and is enjoyable. It creates an engaging and stimulating learning environment.

c) Motivation and competition

Eight interviewees said that the competitive nature of *Kahoot!* makes it more entertaining and simpler to use in the classroom. They saw it as an incentive to participate in classroom activities. This fostered critical thinking, increased student engagement, and created a vibrant learning environment (Li et al., 2024; Zarrati et al., 2024). The interactive features and fast feedback mechanisms enable students to track their progress and receive immediate rewards for their efforts, which helps them remain motivated and focused (Ryan & Deci, 2017; Wigfield & Eccles, 2000). Student 5 pointed out, "*When students compete with each other, they learn more easily.*" Students may focus more intently and interact more fully with the lesson content out of competitiveness. They are also more likely to remember new when they find it fun.

Furthermore, the incorporation of different question types, such as multiple-choice questions, riddles, and true/false questions, keeps it fresh. This not only caters to various learning preferences but also retains students' interest. As a collaborative game, *Kahoot!* also encourages teamwork. Each section is followed by a short discussion that promotes collaboration and group problem solving, all of which can improve learning and foster social bonds. Better vocabulary retention may result from the excitement of participating in competitions, and students are more likely to retain what they have learned when they are actively involved in the learning process.

d) Motivation and competition

PDPHS students who used *Kahoot!* most frequently reported the intrinsic motivation of fun and enjoyment. The qualitative data revealed that every student felt that the fun of using Kahoot! improved the learning environment. Additionally, *Kahoot!* quizzes were perceived as "satisfying" and "rewarding". According to the students' *Kahoot!* can "decrease boredom," "make class time more fun," and reduce cell phone-related distractions. When learning is enjoyable, students are more inclined to participate and interact with the subject matter, which improves results without the need for external incentives or pressure (Ryan & Deci, 2017). The students described the quizzes on *Kahoot!* as "satisfying" and "rewarding," indicating that it not only makes learning fun but also provides a sense of achievement. This can reinforce positive learning behaviors and encourage continued use of the tool. The fun aspect of *Kahoot!* helps create a lively and positive classroom atmosphere, and students tend to look forward to lessons they associate with enjoyable activities.

This may reduce anxiety and increase the enjoyment of studying. While traditional teaching techniques might be boring at times, Kahoot! efficiently combats monotony in learning vocabulary with

its dynamic and interactive game-like features thus keeping students interested and involved. In the interview, Student 3 noted that when she played *Kahoot!* in class, there was a lot of energy.

e) Learning and knowledge retention

In terms of learning outcomes, the qualitative data revealed that the students perceived *Kahoot!* as improving their learning performance. Six out of the eight students interviewed declared that this platform had a positive effect on their results, and many students said that *Kahoot!* quizzes helped them review for their exam. The carried on to say that by using *Kahoot!*, they were able to learn new vocabulary and understand its usage more effectively. *Kahoot!* engages students in a way that traditional techniques do not, as the structure of *Kahoot!* promotes repeated exposure to new words over time, which is essential for long-term retention (Nation, 2001; Roediger & Butler, 2011). Through interactive exercises such as games and quizzes, students are more likely to retain the vocabulary they are taught. Students' retention of material is improved by the immediate feedback offered during *Kahoot!* sessions, in which misunderstood terms are not merely corrected but explained which reinforces correct answers (Hattie & Timperley, 2007). The students confirmed that *Kahoot!* improved their understanding of what had been taught and helped them recall prior knowledge.

Many students thought that *Kahoot!* was a useful tool for reviewing the course content, and some said it helped them identify their mistakes and come up with solutions. Student 1 shared the following opinion: "*We had the chance to correct our mistakes and learn from each other."* In line with Student 1, Student 3 said she could recall the words that she pronounced incorrectly. Student 4 shared that "K*ahoot! results showed that I am not the only student who has difficulty understanding."* The platform also helped the students recognize and correct their mistakes, which is essential for effective learning. By seeing where they went wrong and understanding the correct answers, students can learn from their errors and improve their performance. This reflective process is crucial for a deeper understanding of vocabulary.

f) Addressing cultural and contextual factors

The study emphasized the importance of considering cultural and contextual factors when implementing gamified tools such as Kahoot! in education. This is particularly relevant in the Vietnamese context, where cultural variations can influence the effectiveness of educational tools. The need to tailor gamified tools such as Kahoot! to fit the specific needs of Vietnamese learners was highlighted, ensuring that these tools support, rather than hinder, the learning process.

3.2. Theoretical Implications

These findings support the integration of AI chatbots within the frameworks of self-determination theory (Ryan et al., 2022), expectancy value theory (Wigfield et al., 2009), and social cognitive theory (Bandura, 1997, 2012). These theories collectively emphasize the role of internal and external motivations, self-efficacy, and the social context in learning. The positive impact of AI chatbots on students' self-confidence and engagement underscores the potential of these tools to enhance the motivational and cognitive aspects of learning. Research in ELTEJ () has similarly highlighted that gamified and technology-enhanced platforms foster greater affective engagement and vocabulary retention in EFL classrooms across Southeast Asian contexts (Hidayati & Wulandari, 2022; Muflihah et al., 2022; Saputra & Sumardi, 2021)

a) Practical implications and future research

Practically, this study provides educators with valuable insights into the effectiveness of using *Kahoot!* to help students learn vocabulary. The statistical analysis revealed a significant difference between the performance of the two groups, with the experimental group far outperforming the control group (Reynolds et al., 2021; Yürük, 2023). This demonstrates the effectiveness of *Kahoot!* in improving vocabulary acquisition. Similarly, positive impacts on learning outcomes, motivation, engagement, and interaction with classmates were found in the qualitative study on the use of *Kahoot!* in vocabulary lessons at PDPHS. These findings highlight the potential of gamified tools such as *Kahoot!* to revolutionize teaching methods. In fact, it presents a compelling case for the integration of digital tools in education, showing that they can greatly improve student engagement and consequently their learning outcomes.

b) Future research direction

Future studies could explore the application of *Kahoot!* and other game-based learning platforms in different educational contexts, such as for other grade levels or subjects (Chowdhury et al., 2024; Mayer,

2019). Investigating how these tools impact students of different ages, with different language proficiencies, and in different learning environments (e.g., rural vs. urban schools) could increase the generalizability and adaptability of game-based learning strategies. This study provides evidence of the short-term benefits of using *Kahoot!* in vocabulary classes, while future research could take a longitudinal approach to examine the long-term effects on learning outcomes. Tracking students over an extended period could reveal whether improvements in vocabulary retention and overall language skills are sustained over time and how these benefits influence academic performance in subsequent years.

While this study focused on vocabulary acquisition, the use of *Kahoot!* could be extended to other language skills, such as reading comprehension, listening, speaking, and writing. Future studies could explore how game-based learning platforms can be adapted to teach and reinforce these skills, offering a more holistic approach to language education

4. Conclusion

The findings of this study provide compelling evidence that *Kahoot!*-mediated instruction can significantly enhance vocabulary acquisition among Grade 11 students in a Vietnamese public high school context. Drawing on both quantitative and qualitative data, the study demonstrates that students in the experimental group showed clear improvement from pre-test to post-test compared to the control group, indicating that gamified learning can support measurable cognitive gains. These improvements are not merely statistical but pedagogically meaningful, as they reflect shifts from lower performance bands to higher ones. In addition, students reported generally positive attitudes toward the use of *Kahoot!,* perceiving it as enjoyable, effective, and supportive of vocabulary practice. The correlation between student attitudes and test performance further suggests that affective engagement plays an important role in learning outcomes. Qualitative findings reinforce this interpretation, revealing that *Kahoot!* promotes attention, interaction, and active participation through features such as immediate feedback, multimedia elements, and competitive dynamics. These elements collectively create a learning environment that supports repeated retrieval, sustained focus, and meaningful engagement with vocabulary items, which are essential processes in vocabulary development.

Beyond its immediate findings, this study contributes to a deeper understanding of how gamified tools can be effectively integrated into real classroom settings rather than used as superficial add-ons. The results suggest that the pedagogical value of *Kahoot!* lies not in its entertainment features alone but in how these features are aligned with instructional objectives, particularly the need for repetition, feedback, and contextualized practice in vocabulary learning. Importantly, the study highlights the role of contextual factors, showing that such tools can be successfully implemented in non-urban Vietnamese schools when adapted to local classroom conditions. While the findings are promising, they also point to the need for careful instructional design and sensitivity to learner differences, especially regarding competition and anxiety. Future research could build on these results by examining long-term retention effects, expanding to other language skills, or exploring variations across different learner populations. Overall, this study affirms that when thoughtfully implemented, gamified platforms like Kahoot! can move beyond motivation to become effective instruments for enhancing both learning outcomes and classroom experiences in EFL vocabulary instruction.

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Declarations

Author contribution	:	The authors were fully involved in all stages of the research process, including the conceptualization of the study, development of the research design, data collection, analysis and interpretation of findings, and the writing and revision of the manuscript.
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Conflict of interest	:	The authors declare that there are no competing interests related to this study.

Ethical declaration : This study involved non-invasive procedures and did not address sensitive or potentially harmful issues. Therefore, formal ethical approval from an institutional review board was not required. All participants were informed about the purpose of the study and participated voluntarily. Informed consent was obtained prior to data collection, and participants' anonymity and confidentiality were strictly maintained throughout the research process. The study was conducted in accordance with established ethical principles for research involving human participants and adhered to institutional academic guidelines.

We support ELTEJ in maintaining high standards of personal conduct, practicing honesty in all our professional practices and endeavors.

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