

THE EFFECTS OF USING KAHOOT TO IMPROVE GRADE 9 STUDENTS' ENGLISH VOCABULARY KNOWLEDGE

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Abstract

The objectives of this study were (1) to investigate the efficiency of using Kahoot in improving and retaining students' English vocabulary knowledge, (2) to utilize Kahoot as an instructional tool to improve students' vocabulary knowledge, and (3) to explore students' satisfaction with learning English vocabulary through the use of Kahoot. This study employed a pre-experimental one-group pre-test-post-test design with a delayed post-test. The participants were 14 Grade 9 students enrolled in the Fundamental English course during the second semester of the 2025 academic year at Choomchonwatkokklang "Sramakhawittaya" School, Buriram, Thailand. The participants were selected through purposive sampling. The research instruments consisted of six Kahoot-based lesson plans, a 60-item English vocabulary test, and a satisfaction questionnaire. The lesson plans and satisfaction questionnaire were reviewed and validated by three experts, with Item-Objective Congruence (IOC) values ranging from 0.67 to 1.00. Prior to the main study, the vocabulary test was administered in a pilot study to establish its reliability, yielding a KR-20 coefficient of .914. The data were analyzed using means, standard deviations, a dependent-samples t-test, and Cohen's d effect size.

The findings revealed that students' post-test scores ($\bar{X} = 40.93$, S.D. = 10.12) were significantly higher than their pre-test scores ($\bar{X} = 31.21$, S.D. = 8.73), $t(13) = 7.10$, $p < .001$, with a large effect size ($d = 1.03$). Furthermore, no significant difference was found between the post-test scores ($\bar{X} = 40.93$, S.D. = 10.12) and the delayed post-test scores ($\bar{X} = 40.43$, S.D. = 10.96), $t(13) = 0.46$, $p = .656$, with a negligible effect size ($d = 0.05$), indicating retention of vocabulary knowledge. Students also reported a high level of satisfaction with learning through Kahoot ($\bar{X} = 4.22$, S.D. = 0.64). The findings suggest that Kahoot was effective in improving and retaining students' English vocabulary knowledge while promoting positive learning experiences in an EFL classroom.

Keywords: Kahoot, Grade 9 Students, English Vocabulary Knowledge, Vocabulary Acquisition, Vocabulary Retention

Introduction

English proficiency is widely recognized as an essential skill for global communication, in alignment with Thailand's Basic Education Core Curriculum B.E. 2551 (Ministry of Education, 2008). Among the components of language proficiency, vocabulary knowledge plays a crucial role in language acquisition. Without an adequate vocabulary, learners cannot effectively convey or comprehend meaning (Nation, 2001).

Despite its critical importance, English vocabulary mastery remains a major challenge for many Thai learners, particularly Grade 9 students in small-sized rural schools such as Choomchonwatkokklang "Sramakhawittaya" School in Buriram Province. In these contexts, English instruction often relies heavily on traditional rote memorization, where students are required to memorize vocabulary lists without sufficient opportunities for meaningful practice and use. This passive learning approach may lead to low student engagement, increased language anxiety, and limited long-term retention of vocabulary. As a result, students often rely on short-term memorization to complete vocabulary tests but experience difficulty recalling and using previously learned words in subsequent learning activities. Based on classroom observations conducted by the researcher, many students experienced difficulty recalling previously learned vocabulary and showed limited participation in vocabulary learning activities. These challenges were reflected in their low vocabulary test performance and lack of confidence when using English in classroom interactions. To overcome the limitations of traditional vocabulary instruction, Game-Based Learning (GBL) has gained increasing attention as a learner-centered instructional approach. Among various gamified learning platforms, Kahoot has received considerable attention in English as a Foreign Language (EFL) classroom due to its interactive features, immediate feedback, and competitive learning environment. Previous studies have suggested that Kahoot can enhance learner engagement, classroom participation, and learning performance while also supporting vocabulary learning and retention (Wang & Tahir, 2020; Ahmed et al., 2022). Furthermore, its game-like features may help reduce language anxiety and encourage more active participation in learning activities (Yildirim & Sadik, 2021).

The effectiveness of Kahoot may be explained by both gamification and retrieval practice perspectives. From a gamification perspective, Kahoot incorporates game design elements such as points, competition, and immediate feedback that can enhance learner engagement and motivation (Deterding et al., 2011). These features may encourage active participation and contribute to positive learning experiences. Furthermore, retrieval practice theory suggests that actively recalling information through testing can strengthen long-term retention (Roediger & Karpicke, 2006). Since Kahoot requires learners to repeatedly recall vocabulary through quiz-based activities, it may support the development of vocabulary knowledge and enhance vocabulary retention. Although previous studies have consistently reported positive effects of Kahoot on vocabulary learning, most investigations have

emphasized immediate post-instruction achievement and learner engagement. Evidence regarding vocabulary retention remains limited and inconclusive, particularly among lower secondary EFL learners in small-school contexts where technological resources, learner motivation, and learning opportunities differ substantially from those in urban schools. Furthermore, few studies have examined vocabulary achievement, vocabulary retention, and learner satisfaction within a single instructional intervention. Therefore, further research is needed to provide a more comprehensive understanding of Kahoot's effectiveness in supporting both immediate learning and long-term vocabulary retention, particularly among lower secondary students in small-school EFL contexts.

Therefore, this study aimed to examine the effects of Kahoot on students' English vocabulary knowledge, vocabulary retention, and learning satisfaction. Specifically, the study investigated three main areas: the extent to which Kahoot improves and retains students' English vocabulary knowledge, how its implementation as an instructional tool supports the vocabulary learning process, and the students' satisfaction levels with learning English vocabulary through Kahoot.

Research Objectives

1. To investigate the efficiency of using Kahoot in improving and retaining students' English vocabulary knowledge.
2. To utilize Kahoot as an instructional tool to improve students' vocabulary knowledge.
3. To explore students' satisfaction with learning English vocabulary through the use of Kahoot.

Methodology

Research Design

This study employed a pre-experimental research design, specifically a one-group pretest–posttest design with a delayed post-test, to investigate the effectiveness of Kahoot in improving and retaining students' English vocabulary knowledge, to examine its use as an instructional tool for vocabulary learning, and to explore students' satisfaction with learning English vocabulary through Kahoot. This design was selected due to the context of the study, in which the school had only one Grade 9 classroom, making it impractical to establish a control group. The design allowed the researcher to examine changes in students' vocabulary knowledge before and after the intervention, as well as the retention of vocabulary over time.

Population and Sample

The participants represented the entire Grade 9 cohort of the school and were selected through purposive sampling based on classroom observations and previous learning

performance, which indicated difficulties in learning, recalling, and retaining English vocabulary. This group was considered appropriate for investigating the effectiveness of Kahoot in improving vocabulary knowledge and retention, as vocabulary development is a key component of English proficiency required at this educational level according to Thailand's Basic Education Core Curriculum B.E. 2551 (Ministry of Education, 2008).

Research Instruments

Three research instruments were employed in this study:

1. Kahoot-Based Lesson Plans

This study employed six integrated Kahoot-based vocabulary lesson plans. Developed around six thematic units, the lesson plans comprised a total of 18 instructional hours (3 hours per unit). Although each unit functioned as a holistic 3-hour lesson to maintain thematic continuity, it was implemented across three consecutive 60-minute sessions targeting three essential dimensions of vocabulary knowledge: form, meaning, and use. To ensure experimental consistency, all units followed a consistent lesson structure and a fixed set of target vocabulary items, with each unit containing eight selected words.

Specifically, Unit 1 Communication and Technology included camera, download, laptop, online, password, photograph, text, and website; Unit 2 Education focused on classmate, classroom, instructions, language, practise, study, teach, and university; Unit 3 Food and Drink covered barbecue, delicious, dessert, fried, lemonade, roast, thirsty, and wash up; Unit 4 Services encompassed cinema, museum, petrol station, post office, restaurant, sports centre, swimming pool, and tourist information; Unit 5 Sport featured climb, competition, cycling, prize, race, snowboarding, stadium, and swimsuit; and Unit 6 Work and Jobs included businessman, earn, manager, meeting, photographer, receptionist, shop assistant, and tour guide (Cambridge Assessment English, 2025).

Regarding the instructional procedure and time allocation, each 3-hour lesson was structured sequentially across three 60-minute sessions. The first session (Form Phase) began with a 10–15-minute warm-up to activate prior knowledge, followed by a 15–20-minute presentation of vocabulary focusing on word form, including spelling and pronunciation. This was reinforced through a 20–25-minute Kahoot activity consisting of 10 multiple-choice items requiring students to match images with correct words.

The second session (Meaning Phase) focused on vocabulary meaning. It began with a 20–25-minute presentation of word definitions, followed by a 20–25-minute Kahoot activity in which students matched target vocabulary with their correct definitions through multiple-choice questions. The third session (Use Phase) emphasized syntactic and contextual application. It began with a 15–20-minute presentation of sentence structures, followed by a 15–20-minute 10-item Kahoot activity involving gap-filling exercises. The session concluded with a 20–25-minute wrap-up and an individual worksheet-based assessment for unit review.

Throughout the instructional process, the teacher performed three key roles: (1) teacher as instructor, providing explicit instruction on vocabulary form, meaning, and use across all phases; (2) system administrator and facilitator, responsible for managing the Kahoot platform and supporting student login procedures; and (3) immediate feedback provider, delivering real-time formative feedback after each Kahoot item to clarify misconceptions and reinforce frequently misinterpreted vocabulary items.

2. English Vocabulary Test

The English vocabulary test consisted of 60 multiple-choice items designed to measure three dimensions of vocabulary knowledge: form, meaning, and use (Schmitt, 2000). The test was developed based on the target vocabulary taught across six instructional units, covering a total of 48 words. The test was divided into three sections, with 20 items for each dimension (form, meaning, and use), resulting in a total of 60 items. One point was awarded for each correct answer, with a maximum possible score of 60 points. The same set of test items was used for the pre-test, post-test, and delayed post-test to ensure direct comparability of scores in measuring vocabulary development and retention over time. However, the order of the test items was randomized in each administration to reduce the effect of item-order familiarity and to more accurately assess students' actual vocabulary knowledge.

3. Satisfaction Questionnaire

A satisfaction questionnaire using a five-point Likert scale was developed to investigate students' satisfaction with learning English vocabulary through Kahoot. The questionnaire consisted of 10 items measuring students' perceptions of engagement, enjoyment, learning support, and overall satisfaction with the learning activities.

Instrument Construction and Validation

The research instruments were developed based on the research objectives, relevant literature, and CEFR A2 vocabulary standards. The instruments included six Kahoot-based lesson plans, a vocabulary test, and a satisfaction questionnaire. Content validity of all instruments was evaluated by three experts using the Index of Item-Objective Congruence (IOC). The IOC values ranged from .67 to 1.00, indicating acceptable content validity. Prior to the main study, the vocabulary test was piloted with students who had characteristics similar to those of the target sample. The reliability of the test was analyzed using the Kuder–Richardson Formula 20 (KR-20), yielding a reliability coefficient of .914, which indicated high internal consistency. The satisfaction questionnaire was also reviewed by the same panel of experts for content validity, with IOC values ranging from .67 to 1.00.

Data Collection

First, the researcher informed the students about the objectives of the study, learning procedures, students' roles, the teacher's role, and assessment procedures. Second, a 60-item multiple-choice vocabulary test was administered as a pre-test to establish students'

baseline vocabulary knowledge. Third, six Kahoot-based lesson plans were implemented over six weeks, totaling 18 instructional hours, with each lesson focusing on one thematic vocabulary unit. Fourth, upon completion of the intervention, a post-test using the same 60-item vocabulary test was administered to measure students' vocabulary improvement. Fifth, students completed a satisfaction questionnaire to evaluate their learning experiences with Kahoot-based instruction. Finally, a delayed post-test was administered two weeks after the intervention to assess vocabulary retention over time.

Data Analysis

Data were analyzed using descriptive and inferential statistics. Mean $\bar{X}$ and standard deviation (S.D.) were calculated to summarize students' vocabulary test scores and satisfaction levels. The normality of the data was examined using the Shapiro–Wilk test, which is appropriate for small sample sizes, with the level of significance set at .05.

A paired-samples t-test was conducted to compare the pre-test and post-test scores in order to determine the effectiveness of Kahoot in improving students' English vocabulary knowledge. Another paired-samples t-test was used to compare the post-test and delayed post-test scores to examine vocabulary retention. Within the scope of this study, the term “efficiency” is operationally defined as the effectiveness of using Kahoot as a tool to improve and retain students' English vocabulary knowledge, measured by these differences in pre-test, post-test, and delayed post-test scores.

In addition, Cohen's d was calculated to determine the magnitude of the intervention effect, and 95% confidence intervals (CI) were computed for the mean differences.

Results

Prior to conducting the primary analyses, the assumption of normality was assessed using the Shapiro–Wilk test. The results indicated that the pre-test ($W = 0.950$, $p = .554$), post-test ($W = 0.950$, $p = .563$), and delayed post-test ($W = 0.955$, $p = .633$) scores were normally distributed. As all p-values were greater than .05, the assumption of normality was satisfied, indicating that parametric statistics, specifically the paired-samples t-test, were appropriate for further analysis.

The findings of this research, which address the efficiency of Kahoot in improving and retaining vocabulary knowledge, its utilization as an instructional tool, and student satisfaction, are presented as follows:

Table 1 A Comparison of Pre-test and Post-test Mean Scores

Test	$\bar{X}$	S.D.	t	df	Sig.(p)	Effect Size
Pre-test	31.21	8.73	7.10	13	< .001	1.031
Post-test	40.93	10.12				

As shown in Table 1, the mean score increased from 31.21 (SD = 8.73) in the pre-test to 40.93 (SD = 10.12) in the post-test. A paired-samples t-test revealed a statistically significant difference between the pre-test and post-test scores, $t(13) = 7.10$, $p < .001$. Furthermore, the effect size for this intervention was Cohen's $d = 1.031$, indicating a large effect. This finding indicates that students achieved significantly higher vocabulary scores after learning through Kahoot. Therefore, the results suggest that Kahoot was effective in improving students' English vocabulary knowledge.

Table 2 A Comparison of Post-test and Delayed Post-test Mean Scores

Test	$\bar{X}$	S.D.	t	df	Sig.(p)	Effect size
Post-Test	40.93	10.12	0.46	13	.656	0.047
Delayed Post-test	40.43	10.96				

As shown in Table 2, the mean score of the post-test was 40.93 (S.D. = 10.12), whereas the mean score of the delayed post-test was 40.43 (S.D. = 10.96). The paired-samples t-test indicated no statistically significant difference between the post-test and delayed post-test scores, $t(13) = 0.46$, $p = .656$. Additionally, the effect size for this comparison was Cohen's $d = 0.047$, indicating an extremely small effect. The absence of a significant difference suggests that students were able to maintain their vocabulary knowledge during the two-week retention period. Therefore, the findings indicate that the vocabulary gains achieved through Kahoot were retained over time.

Table 3 Students' Satisfaction toward Learning English Vocabulary through Kahoot

No.	Item	$\bar{X}$	S.D.	Interpretation	Rank
1	I enjoy learning new English vocabulary through Kahoot.	4.50	0.65	High satisfaction	1
2	Using Kahoot makes me feel more excited to participate in the English lesson.	4.21	0.43	High satisfaction	5
3	The Kahoot activities help me recognize and remember the correct spelling of words.	4.07	0.83	High satisfaction	9
4	The definitions provided in the Kahoot games help me understand what the words mean.	4.29	0.47	High satisfaction	3
5	Using Kahoot helps me practice how to use vocabulary correctly in sentences.	4.21	0.80	High satisfaction	5
6	The images and icons in Kahoot help me remember the vocabulary long after the lesson is over.	4.14	0.77	High satisfaction	8

No.	Item	$\bar{X}$	S.D.	Interpretation	Rank
7	I find it easier to recall words when I remember the Kahoot game we played.	4.36	0.50	High satisfaction	2
8	Receiving immediate results in Kahoot helps me identify which words I need to study more.	4.29	0.83	High satisfaction	3
9	The layout and interface of Kahoot make it easy for me to focus on the vocabulary.	4.21	0.80	High satisfaction	5
10	I feel more confident in my English vocabulary knowledge after using Kahoot.	3.93	0.73	High satisfaction	10
Overall		4.22	0.64	High satisfaction	

As shown in Table 3, the overall mean score of students' satisfaction was 4.22 (S.D. = 0.64), which was interpreted as a high level of satisfaction. The highest-rated item was "I enjoy learning new English vocabulary through Kahoot" ($\bar{X}$ = 4.50, S.D. = 0.65), indicating that students particularly appreciated the enjoyable learning experience provided by the platform. The second highest-rated item was "I find it easier to recall words when I remember the Kahoot game we played" ($\bar{X}$ = 4.36, S.D. = 0.50), suggesting that students perceived Kahoot as helpful for vocabulary recall.

The lowest-rated item was "I feel more confident in my English vocabulary knowledge after using Kahoot" ($\bar{X}$ = 3.93, S.D. = 0.73). Although this item received the lowest mean score, it was still interpreted as a high level of satisfaction. Overall, all questionnaire items received high satisfaction ratings, indicating that students had positive perceptions toward learning English vocabulary through Kahoot.

Discussion

The findings revealed that students' English vocabulary knowledge significantly improved after learning through Kahoot, and the gains were maintained during the two-week retention period. The post-test scores were significantly higher than the pre-test scores, while no significant difference was found between the post-test and delayed post-test scores. These findings suggest that Kahoot may be effective in improving and retaining students' vocabulary knowledge. The retention of vocabulary may be explained by frequent active recall through game-based activities. Unlike traditional rote memorization, Kahoot encourages students to retrieve word meanings repeatedly under time constraints, which may strengthen long-term memory. This finding is consistent with Nation (2001) who emphasized that active retrieval and deeper mental processing contribute to long-term vocabulary retention. It also supports the findings of Ahmed et al. (2022), who reported that Kahoot significantly enhanced both vocabulary recall and retention among EFL learners, and Nguyen & Hoang (2025) who found that Kahoot-based activities contributed to improved vocabulary retention

and long-term word recall. These findings suggest that repeated retrieval opportunities provided through Kahoot may facilitate the long-term retention of vocabulary knowledge.

Regarding the second objective, the findings indicate that the implementation of Kahoot as an instructional tool supports vocabulary learning through immediate feedback, interactive activities, and multimedia features. The significant improvement in students' vocabulary performance suggests that the platform may be effectively integrated into vocabulary instruction. One possible explanation is that Kahoot provides immediate feedback, allowing students to identify and correct misunderstandings during the learning process. In addition, its interactive and multimedia features may facilitate vocabulary acquisition by combining visual and auditory stimuli. These features may be particularly beneficial in small-school contexts, as Kahoot provides opportunities for active participation and immediate feedback through its game-based and technology-supported environment. The present findings are consistent with those of Yıldırım & Sadık (2021) who reported that Kahoot enhances classroom engagement and promotes active participation through gamified learning experiences. Similarly, Aramruangsakul (2018) found that Kahoot increased learner engagement and communicative confidence in Thai EFL classrooms while helping reduce language anxiety. These findings suggest that Kahoot can support vocabulary learning by creating an interactive, engaging, and supportive learning environment. Regarding the third objective, students reported a high level of satisfaction with learning English vocabulary through Kahoot. The highest-rated item indicated that students enjoyed learning new English vocabulary through the platform, suggesting that the gamified learning environment enhanced their engagement and interest in vocabulary learning. Students also reported that recalling the Kahoot activities helped them remember vocabulary more easily, which may have contributed to their vocabulary retention. In addition, the immediate feedback feature was highly valued, as it enabled students to identify vocabulary items that required further study. These findings suggest that the combination of enjoyment, competition, and instant feedback created a positive learning environment. Such an environment may reduce learning anxiety and increase motivation, leading students to become more actively engaged in vocabulary learning. This finding is consistent with Pinitpol (2023) who reported that enjoyment significantly influenced students' perceptions of using Kahoot for vocabulary learning, and Rofiah & Waluyo (2024) who found that gamified learning increased students' motivation and enjoyment while reducing learning anxiety. Therefore, Kahoot appears to support not only vocabulary development but also positive attitudes toward English learning, suggesting its potential as an engaging instructional tool for vocabulary instruction in EFL classrooms.

Body of knowledge

Based on the findings of this study, a preliminary conceptual framework, termed the K-R-S Framework (Knowledge Integration, Retrieval Scaffolding, and Student Satisfaction), is proposed to explain how Kahoot may support English vocabulary learning.

The framework was synthesized from three key findings. First, Knowledge Integration emerged from the significant improvement in students' vocabulary knowledge following the intervention. The higher post-test scores suggest that interactive vocabulary activities may facilitate learners' engagement with new vocabulary forms and meanings beyond traditional rote memorization.

Second, Retrieval Scaffolding was derived from the retention findings. The absence of a statistically significant difference between the post-test and delayed post-test scores suggests that repeated retrieval opportunities and immediate feedback may support vocabulary retention over time.

Third, Student Satisfaction emerged from the high level of satisfaction reported by the participants ($\bar{X} = 4.22$, S.D. = 0.64). Students particularly valued the enjoyable learning experience, opportunities for vocabulary recall, and immediate feedback provided through Kahoot.

Taken together, the K-R-S Framework suggests that vocabulary learning through Kahoot may be supported by the interaction of vocabulary acquisition, vocabulary retention, and positive learning experiences. However, the framework should be regarded as a preliminary conceptual proposal derived from the findings of this study rather than a validated model. Future research involving larger samples, different educational contexts, and experimental comparisons is needed to further examine and validate the proposed framework.

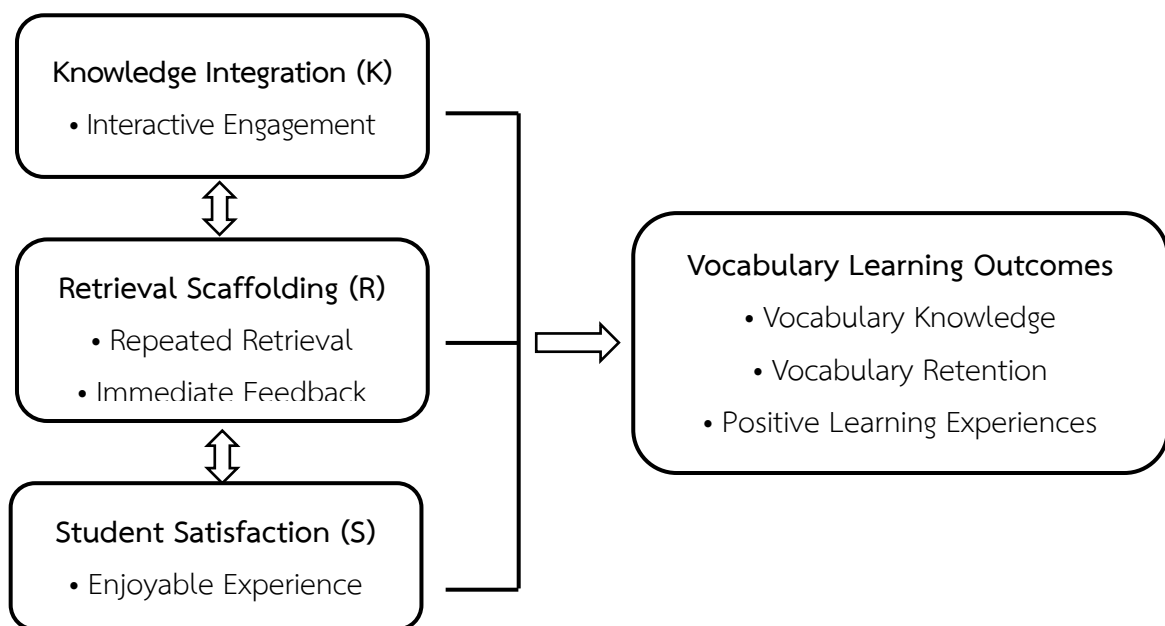


Figure 1: The proposed K-R-S Framework

Conclusion and Recommendations

This study suggests that the integration of Kahoot into EFL instruction can enhance students' English vocabulary knowledge, vocabulary retention, and learning satisfaction among Grade 9 students in a small-school context. The findings indicate that students achieved significantly higher vocabulary scores after learning through Kahoot, and that these gains were maintained over time, as no significant difference was found between post-test and delayed post-test scores. In addition, students reported a high level of satisfaction with learning vocabulary through Kahoot, particularly in terms of enjoyment, engagement, and perceived support for vocabulary recall. Overall, the findings suggest that Kahoot is an effective supplementary instructional tool that can support vocabulary learning and retention while promoting positive learner attitudes in EFL classrooms.

Policy Recommendations

Based on the study findings, the integration of educational games into instruction requires institutional support from educational authorities. To address disparities in small-school contexts, educational authorities should prioritize improving digital infrastructure, particularly in Opportunity Expansion Schools. Furthermore, policymakers should move beyond simply providing computer equipment and focus on implementing structured professional development programs on Game-Based Learning (GBL) for teachers. These measures can help ensure equitable access to effective digital learning resources for students in rural and resource-limited schools.

Practical Recommendations

To effectively implement educational games in classroom practice, teachers are encouraged to adopt a balanced and well-structured instructional approach. Gamified tools such as Kahoot should be integrated alongside traditional vocabulary instruction rather than used as the sole instructional method. This tool can be applied across different stages of instruction, including the introduction stage to activate prior knowledge, the practice stage to reinforce target vocabulary, the review stage to consolidate learning, and formative assessment activities to monitor student progress. In addition, the immediate feedback provided by Kahoot enables teachers to quickly identify learners' misconceptions and provide timely support, thereby fostering a learning environment that supports vocabulary development and retention.

Recommendations for Future Research

Although this study provides preliminary evidence, further research is required to validate and extend its findings. Future studies should include larger and more diverse samples from multiple school contexts to enhance generalizability. In addition, studies employing control group designs are strongly recommended to provide more robust evidence of the effectiveness of Kahoot. Longitudinal research is also needed to examine vocabulary retention over extended periods, such as a full academic semester. Finally,

comparative studies between Kahoot and other instructional approaches or digital learning tools are suggested to provide deeper insight into its relative effectiveness.

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