

THE EFFECT OF FUN-BASED LEARNING USING KAHOOT ON STUDENTS' VOCABULARY MASTERY AT SMP NEGERI 3 BARANTI

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ABSTRACT

This study examined the effect of Fun-Based Learning using Kahoot on students' vocabulary mastery at SMP Negeri 3 Baranti. The study employed a quantitative approach with a quasi-experimental non-equivalent control group design. The population consisted of 41 ninth-grade students, with 19 students in the experimental class (IX.1) and 22 students in the control class (IX.2). The experimental group received vocabulary instruction through Fun-Based Learning integrated with Kahoot, while the control group received conventional teaching methods. Data were collected through pre-tests and post-tests and analyzed using descriptive statistics, an independent samples t-test, assumption tests, and Analysis of Covariance (ANCOVA). The experimental class improved from a mean of 46.42 to 70.84, while the control class increased from 31.55 to 41.27. ANCOVA revealed a significant effect of class on post-test scores after controlling for pre-test scores, $F(1, 38) = 51.105$, $p < .001$, with a partial eta squared of .574. The estimated marginal means were 62.966 for the experimental class and 48.075 for the control class. The pairwise comparison showed a mean difference of 14.891 points ($p < .001$). Thus, Fun-Based Learning using Kahoot had a statistically significant effect on students' vocabulary mastery.

INTRODUCTION

English plays a crucial role as an international language in the era of globalization, particularly in supporting students' ability to communicate and access information in the 21st century. In the context of education, English learning is not only oriented toward mastering grammatical structures but also toward developing students' communicative competence. This includes the ability to understand and use language effectively in meaningful and real-life contexts. Therefore, English instruction is expected to provide meaningful, contextual, and student-centered learning experiences that encourage students to actively use the language.

In line with this objective, vocabulary mastery is an essential component of English language learning. Vocabulary knowledge involves not only knowing the meanings of words but also understanding their use and applying them appropriately in communication. Adequate vocabulary knowledge enables students to comprehend texts, express ideas, and participate in English interactions more effectively. Conversely, limited vocabulary knowledge can hinder the development of other language skills, including speaking, reading, and writing. Therefore, vocabulary mastery is an important aspect of successful English language learning.

Despite its importance, learning and retaining vocabulary can still be challenging for students, particularly when they have limited opportunities to encounter and practice new words in meaningful contexts. Conventional classroom practices that emphasize teacher explanation, textbook definitions, and mechanical exercises often fail to provide the engagement needed for effective vocabulary acquisition. Many students in Indonesian junior high schools continue to struggle with basic vocabulary recognition and use, which affects their overall performance in English subjects.

In this context, Fun-Based Learning offers a promising instructional approach that integrates enjoyment, interaction, and active participation into the learning process, thereby enhancing students' motivation and engagement. Fun-Based Learning is rooted in the idea that positive emotional experiences during learning facilitate attention, memory, and willingness to participate. When classroom activities are designed to be enjoyable rather than purely transactional, students are more likely to invest cognitive effort in processing new linguistic forms.

Kahoot, a digital game-based learning platform, can be used to support Fun-Based Learning by presenting quiz-based activities with immediate feedback, scoring, and competitive elements. Previous research has reported that the use of Kahoot can support vocabulary learning and produce positive learning outcomes. However, many studies have examined Kahoot as a standalone digital learning medium rather than integrating it within a structured pedagogical approach such as Fun-Based Learning. The present study addresses this gap by investigating the effect of Fun-Based Learning using Kahoot on students' vocabulary mastery at SMP Negeri 3 Baranti.

The research question was: Is there a significant difference in students' vocabulary mastery between those taught using Fun-Based Learning with Kahoot and those taught using conventional instruction after controlling for their pre-test scores? The objective was to determine whether Fun-Based Learning using Kahoot produced a statistically significant effect on students' vocabulary mastery. The study is expected to provide practical information for English teachers seeking interactive strategies to strengthen students' foundational vocabulary and theoretical evidence concerning the integration of game-based digital media within enjoyable instructional approaches.

LITERATURE REVIEW

Vocabulary and Vocabulary Mastery

Vocabulary refers to the set of lexical items that learners can recognize, understand, and use. Vocabulary knowledge is multidimensional, involving both the number of words known (breadth) and the quality of knowledge associated with those words (depth). For junior high school learners, the operational focus is appropriately narrower: recognition of word meanings, identification of synonyms and antonyms, and the ability to use target words in simple sentence contexts. Vocabulary mastery is important because lexical knowledge supports comprehension and production across language skills. Students who possess insufficient vocabulary may struggle to understand reading passages, respond to classroom questions, and formulate spoken or written messages.

In the EFL context, vocabulary acquisition is particularly critical because learners have limited exposure to authentic English input outside the classroom. Without sufficient vocabulary, students cannot fully benefit from reading, listening, speaking, or writing activities. Nation (2001) emphasizes that vocabulary knowledge is a key predictor of reading comprehension and overall language proficiency. Therefore, instructional approaches that promote repeated exposure, meaningful practice, and active retrieval of vocabulary items are essential for supporting long-term retention and productive use.

Traditional vocabulary instruction in many Indonesian classrooms often relies on memorization of word lists and translation exercises. While these methods can introduce new words, they frequently fail to engage students in deep processing or contextualized practice. As a result, newly learned words may not transfer to productive

use and may be quickly forgotten. Alternative approaches that combine explanation, practice, and interactive retrieval activities have the potential to address these limitations.

Fun-Based Learning

Fun-Based Learning is an instructional approach that emphasizes enjoyment, engagement, and active participation in the learning process. It is closely related to constructivist learning theory, which posits that learners actively construct knowledge when they encounter materials in meaningful and engaging contexts. By creating a positive and supportive classroom environment, Fun-Based Learning encourages students to take risks and actively use the target language. It supports student-centered learning by providing opportunities for interaction, collaboration, and immediate practice. When students feel that learning is enjoyable rather than threatening, their motivation and willingness to participate increase, which in turn supports vocabulary retention and use.

The principles of Fun-Based Learning align with the notion that positive affect facilitates cognitive processing. When anxiety is reduced and interest is heightened, students are more likely to attend to linguistic input, practice new forms, and persist through challenging tasks. In vocabulary instruction, this approach can transform mechanical drills into interactive activities that maintain student attention and promote deeper processing of word meanings and usage. Fun-Based Learning does not eliminate rigorous content; rather, it frames that content within activities that students find stimulating and rewarding.

Previous applications of Fun-Based Learning in language classrooms have reported improvements in motivation, participation, and learning outcomes. The approach is particularly relevant for junior high school learners, who may respond more positively to playful and competitive activities than to purely didactic instruction. Integrating digital tools within this framework can further enhance engagement by providing immediate feedback and visible progress indicators.

Kahoot as a Learning Medium

Kahoot is a digital game-based learning platform that combines educational content with game elements such as points, rankings, time limits, and immediate feedback. Wang and Tahir (2020) state that Kahoot functions not only as an assessment tool but also as a learning medium that promotes active engagement and transforms traditional learning activities into dynamic and interactive experiences. The platform encourages students to think quickly, make decisions, and respond to questions within limited time, which stimulates cognitive engagement and enhances memory retention. Immediate feedback allows students to identify mistakes and correct them instantly.

Mawarni and Susanto (2021) found that Kahoot was effective in improving students' vocabulary mastery, motivation, and classroom participation through interactive quizzes and real-time feedback. Other studies have similarly reported positive effects of Kahoot on engagement and academic performance in various language learning contexts. The competitive and playful features of the platform appear to increase students' willingness to participate and to revisit target vocabulary repeatedly. Marinda et al. (2025) also investigated the influence of Kahoot on students' vocabulary acquisition in an EFL context and reported favorable outcomes.

An important consideration in using Kahoot is the pedagogical framing. When used merely as a quiz at the end of a lesson, Kahoot may function primarily as a formative assessment tool. When embedded within a broader Fun-Based Learning design, however, Kahoot becomes a vehicle for repeated retrieval practice, peer interaction, and sustained attention to target vocabulary. The present study adopts the latter perspective.

Relationship between Fun-Based Learning Using Kahoot and Vocabulary Mastery

The relationship between Fun-Based Learning using Kahoot and vocabulary mastery is conceptualized as a cause-and-effect instructional relationship. Fun-Based Learning provides the pedagogical framework that emphasizes enjoyment and active participation, while Kahoot supplies the interactive digital platform through which vocabulary practice, competition, and feedback are delivered. Students encounter target vocabulary through explanation and practice activities, then reinforce their knowledge through Kahoot quizzes that require rapid recognition and retrieval of word meanings, synonyms, antonyms, and contextual usage. This combination is expected to improve performance on tasks that measure foundational vocabulary knowledge.

The present study examines this relationship by comparing vocabulary outcomes between students taught with Fun-Based Learning using Kahoot and students taught with conventional instruction in two intact ninth-grade classes at SMP Negeri 3 Baranti. By integrating Kahoot within a structured Fun-Based Learning approach and employing ANCOVA to control for initial differences, the study seeks to provide stronger evidence of the treatment effect than studies that treat Kahoot as an isolated tool. The use of ANCOVA is particularly important in quasi-experimental designs where random assignment is not feasible and baseline differences may confound interpretation of post-test results.

METHOD

Research Design and Setting

This research employed a quantitative approach using a quasi-experimental non-equivalent control group design. The design was selected because the researcher worked with existing school classes rather than randomly assigning individual students. One intact class served as the experimental group and received Fun-Based Learning using Kahoot, while another intact class served as the control group and received conventional teaching methods. Both groups completed a pre-test before instruction and a post-test after the treatment period. The research was conducted at SMP Negeri 3 Baranti, located in Baranti District, Sidenreng Rappang Regency, South Sulawesi Province, Indonesia, in the 2025/2026 academic year.

The quasi-experimental design is appropriate for educational settings in which ethical and logistical constraints prevent the random assignment of individual students. By administering a pre-test and incorporating pre-test scores as a covariate, the design allows for statistical control of initial differences between groups. This strengthens the internal validity of comparisons between the experimental and control conditions.

Participants and Sampling

The population consisted of all ninth-grade students of SMP Negeri 3 Baranti in the 2025/2026 academic year, totaling 41 students distributed across two classes: IX.1 (19 students) and IX.2 (22 students). Because the population size was relatively small, the researcher used total sampling, taking all members of the population as the sample. Class IX.1 was assigned as the experimental group and Class IX.2 as the control group. Although the two classes shared similar learning characteristics, their initial vocabulary mastery was not assumed to be equivalent. Therefore, pre-test scores were administered to both groups before the treatment and were subsequently included as a covariate in the ANCOVA analysis to statistically control for differences in students' initial vocabulary ability.

Table 1 presents the distribution of the population and sample according to gender and class role.

Table 1. Population and Sample of the Research

Class	Female	Male	Total / Role
IX.1	8	11	19 (Experimental)
IX.2	11	11	22 (Control)
Total	19	22	41

Research Instrument

The instrument was a written English vocabulary mastery test administered as a pre-test and post-test. The test consisted of 25 items divided into three parts: 15 multiple-choice items (word meaning, synonyms, and antonyms), 5 matching items, and 5 short-answer items requiring students to complete sentences with appropriate vocabulary. The pre-test and post-test used the same structure, although different vocabulary items were used. The test measured students' ability to identify word meanings, recognize synonyms and antonyms, match words with meanings, and use vocabulary in simple sentence contexts. The same general vocabulary content and learning objectives were maintained across the experimental and control groups, while the instructional strategy differed.

The instrument was designed to assess foundational vocabulary knowledge relevant to the ninth-grade curriculum. Multiple-choice items allowed efficient measurement of recognition of meanings, synonyms, and antonyms. Matching items assessed the ability to link words with definitions. Short-answer items required productive use of target vocabulary in sentence contexts, thereby providing a more demanding measure of mastery. Content validity was supported by alignment with the learning objectives of the treatment units.

Data Collection Procedure

The procedure consisted of three stages. First, both groups completed the pre-test to establish their initial vocabulary mastery. Second, the experimental group received Fun-Based Learning integrated with Kahoot during four treatment meetings covering Daily Expressions and Basic Vocabulary, Synonyms, Antonyms, and Vocabulary Usage in Context. Each meeting lasted 80 minutes (10 minutes introduction, 60 minutes core activities, 10 minutes closing). In the experimental class, the teacher introduced target vocabulary, provided practice activities, and integrated interactive Kahoot quizzes related to the material of each meeting, followed by discussion and immediate feedback. The control group received conventional vocabulary instruction involving teacher explanation, textbook-based exercises, and related activities without Kahoot. Third, both groups completed the post-test using the written vocabulary mastery instrument.

During the experimental treatment, Kahoot quizzes were designed to reinforce the vocabulary introduced in each session. Questions required students to select correct meanings, identify synonyms or antonyms, and choose appropriate words for sentence contexts under time pressure. After each quiz, the teacher facilitated a brief discussion of the answers, clarifying misconceptions and highlighting key usage patterns. This cycle of presentation, practice, interactive retrieval, and feedback constituted the core of the Fun-Based Learning approach.

Data Analysis

Descriptive statistics were used to summarize students' pre-test and post-test performance through means, standard deviations, minimum scores, and maximum scores. An independent samples t-test was conducted to examine whether the pre-test scores of the two classes differed significantly. Assumption tests for ANCOVA included the test of homogeneity of regression slopes and Levene's test of equality of error variances. Analysis

of Covariance (ANCOVA) was then used as the main inferential statistical analysis to determine whether there was a significant effect of Fun-Based Learning using Kahoot on students' post-test vocabulary scores after controlling for their pre-test scores. The significance level was set at .05. Estimated marginal means and pairwise comparisons were examined to interpret the adjusted post-test differences between the two classes.

ANCOVA was selected because it allows researchers to adjust post-test means for differences in pre-test performance, thereby providing a more accurate estimate of the treatment effect in non-equivalent groups. The partial eta squared value was reported as a measure of effect size. Homogeneity of regression slopes was tested to ensure that the relationship between pre-test and post-test scores was similar across groups, a key assumption of ANCOVA.

RESULTS AND DISCUSSION

Pre-test and Post-test Performance

The pre-test results indicated that the two groups began the study with different mean scores. The experimental class obtained a mean of 46.42 (SD = 13.765), while the control class obtained a mean of 31.55 (SD = 11.657). An independent samples t-test confirmed that this difference was statistically significant, $t(39) = 3.748$, $p < .001$, with a mean difference of 14.876 points. Therefore, the experimental and control classes had significantly different levels of initial vocabulary mastery before the treatment, and the pre-test scores were included as a covariate in the subsequent ANCOVA.

After the treatment period, the experimental class obtained a substantially higher post-test mean than the control class. The experimental class's mean increased from 46.42 to 70.84 (gain of 24.42 points), while the control class's mean increased from 31.55 to 41.27 (gain of 9.72 points). The descriptive results therefore show a greater improvement in the group that experienced Fun-Based Learning using Kahoot. The larger gain in the experimental group suggests that the instructional approach facilitated more effective vocabulary learning than conventional methods.

Table 2. Descriptive Statistics of Pre-test and Post-test Scores

Group	Test	Mean	SD	N
Experimental	Pre-test	46.42	13.765	19
Experimental	Post-test	70.84	13.769	19
Control	Pre-test	31.55	11.657	22
Control	Post-test	41.27	13.667	22

Assumption Testing and ANCOVA Results

Before conducting ANCOVA, the assumptions were examined. The test of homogeneity of regression slopes showed that the interaction between class and pre-test scores was not statistically significant, $F(1, 37) = 0.813$, $p = .373$, indicating that the assumption was satisfied. Levene's test of equality of error variances was also non-significant, $F(1, 39) = 0.324$, $p = .572$, confirming homogeneity of error variances. These results support the appropriateness of ANCOVA for analyzing the data.

The ANCOVA results showed that the pre-test scores had a statistically significant effect on the post-test scores, $F(1, 38) = 187.526$, $p < .001$, partial $\eta^2 = .832$. More importantly, the effect of class was statistically significant, $F(1, 38) = 51.105$, $p < .001$, with a partial eta squared value of .574. Since the significance value

was lower than .05, the null hypothesis was rejected. This indicates that there was a statistically significant difference in post-test vocabulary mastery between the experimental and control classes after controlling for their initial vocabulary mastery.

Table 3. ANCOVA Tests of Between-Subjects Effects

Source	F	Sig.	Partial Eta Squared
Pre-test	187.526	< .001	.832
Class	51.105	< .001	.574

The estimated marginal means showed that the experimental class obtained an adjusted post-test mean of 62.966, while the control class obtained an adjusted mean of 48.075. The pairwise comparison confirmed a statistically significant difference of 14.891 points ($p < .001$) between the adjusted post-test means of the two classes. Because the pre-test scores had been statistically controlled, these adjusted means provide a more appropriate basis for comparing the post-test vocabulary performance of the two classes. The large effect size (partial $\eta^2 = .574$) indicates that the instructional condition accounted for a substantial proportion of the variance in post-test scores after adjustment for pre-test performance.

Discussion: Why Fun-Based Learning Using Kahoot Produced Higher Scores

The central finding is that students taught using Fun-Based Learning with Kahoot achieved significantly higher vocabulary mastery than students taught using conventional instruction, after controlling for initial differences. This result is consistent with the instructional logic of the treatment. The experimental condition organized vocabulary learning as enjoyable, interactive, and retrieval-oriented practice. Students first encountered target vocabulary through teacher explanation and practice activities, then reinforced their knowledge through Kahoot quizzes that required rapid recognition of meanings, synonyms, antonyms, and contextual usage. Immediate feedback allowed students to identify and correct mistakes during the learning process rather than only after a formal assessment.

The game-based elements of Kahoot—points, rankings, time limits, and competition—introduced motivational features that conventional instruction typically lacks. These features likely increased students' attention and willingness to engage with the target vocabulary repeatedly. The Fun-Based Learning framework ensured that Kahoot was not used merely as an assessment tool but as an integrated component of enjoyable and student-centered vocabulary practice. The partial eta squared value of .574 indicates a large effect, suggesting that the instructional difference accounted for a substantial proportion of the variance in post-test scores after controlling for pre-test performance.

The finding is consistent with previous studies. Mawarni and Susanto (2021) reported that Kahoot improved students' vocabulary mastery and classroom participation. Wang and Tahir (2020) highlighted Kahoot's capacity to enhance motivation, engagement, and academic performance. Marinda et al. (2025) also found positive effects of Kahoot on vocabulary acquisition in an EFL context. The present study extends this evidence by positioning Kahoot within a structured Fun-Based Learning approach and by using ANCOVA to control for initial group differences, thereby strengthening the causal interpretation of the treatment effect in a quasi-experimental setting.

From a theoretical perspective, the results support the view that active retrieval practice combined with immediate feedback and positive affective conditions can enhance vocabulary learning. The competitive elements of Kahoot may have increased arousal and attention, while the Fun-Based Learning frame reduced

anxiety and encouraged participation. Together, these factors appear to have produced more robust learning than conventional teacher-centered instruction.

Pedagogical Implications

The findings have several practical implications for English teachers at the junior high school level. Teachers can integrate Kahoot into Fun-Based Learning activities to provide interactive vocabulary practice with immediate feedback. Kahoot should be used as a supplementary learning medium rather than solely as an assessment tool, and it should be aligned with clear learning objectives and target vocabulary. A manageable set of vocabulary items per meeting, combined with explanation, practice, and interactive quizzes, can help students strengthen recognition and recall. After foundational recall is established, teachers can extend activities to contextualized use of the words in sentences, dialogues, or short writing tasks.

Teachers should also consider classroom management and technology readiness when implementing Kahoot. Access to devices and stable internet connectivity are practical prerequisites. Clear instructions and practice with the platform can help students focus on the content rather than on technical difficulties. Finally, teachers can use the competitive rankings in Kahoot constructively, emphasizing improvement and effort rather than only relative standing, so that lower-performing students remain motivated.

Limitations and Future Research Directions

The study has several limitations. The sample was limited to 41 students from two intact classes at one junior high school, so the results are context-specific. The quasi-experimental design did not involve individual random assignment. The outcome was measured through a written vocabulary test focused on recognition, synonyms, antonyms, and simple contextual use, and therefore does not establish gains in spontaneous communicative use or long-term retention beyond the post-test. Future studies may involve larger samples from several schools, longer treatment periods, delayed post-tests, and outcome measures that include contextual vocabulary use in speaking and writing. Researchers may also compare different configurations of Fun-Based Learning and digital game-based platforms to identify optimal instructional sequences for junior high school EFL learners.

Additionally, qualitative data on students' experiences and perceptions of Fun-Based Learning with Kahoot could complement the quantitative findings and provide insights into the mechanisms underlying the observed gains. Investigating how different types of Kahoot questions (e.g., recognition versus production) contribute to learning would also be a valuable direction for future research.

CONCLUSION

This study found a statistically significant effect of Fun-Based Learning using Kahoot on students' vocabulary mastery at SMP Negeri 3 Baranti. The experimental class improved from a pre-test mean of 46.42 to a post-test mean of 70.84, while the control class improved from 31.55 to 41.27. After controlling for initial vocabulary mastery through ANCOVA, the effect of class remained significant, $F(1, 38) = 51.105$, $p < .001$, partial $\eta^2 = .574$. The estimated marginal means were 62.966 for the experimental class and 48.075 for the control class, with a pairwise mean difference of 14.891 points ($p < .001$). These results indicate that, under the conditions of the study, students receiving Fun-Based Learning integrated with Kahoot achieved significantly higher adjusted vocabulary mastery than students receiving conventional instruction.

Fun-Based Learning using Kahoot can therefore be considered an effective alternative approach for teaching vocabulary to ninth-grade students. Teachers are encouraged to combine interactive digital quizzes with clear vocabulary targets, explanation, practice, and feedback so that students strengthen recognition and recall while remaining engaged. Future research with larger samples, delayed post-tests, and broader outcome measures will help clarify the longer-term and communicative benefits of this instructional integration. The study contributes to the growing body of evidence supporting the use of game-based digital tools within pedagogically coherent frameworks for EFL vocabulary instruction.

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