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The Effect of Educaplay-Assisted Game-Based Learning Model on English Vocabulary Mastery and Learning Outcomes of Fifth-Grade Elementary School Students

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Keywords:
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ABSTRACT

English vocabulary mastery of fifth-grade students of Kewunen Elementary School is relatively low, with an average score of only 50% and below the Minimum Completion Criteria (KKM) of 65%. This condition is caused by the dominance of conventional learning methods and the minimal use of interactive media in the learning process. This study aims to analyze the effect of the Game Based Learning (GBL) model assisted by the Educaplay template Froggy Jumps platform on English vocabulary mastery and learning outcomes of fifth-grade elementary school students on the material Parts of Our Body That Work Together. The study used a quantitative approach with a One Group Pretest-Posttest pre-experimental design involving 38 sixth-grade students of Kewunen Elementary School, determined through a saturated sampling technique. Data were collected through tests, response questionnaires, and documentation, then analyzed using Paired Sample t-Test and N-Gain Score assisted by SPSS version 26. The results of the hypothesis test showed a significant effect on vocabulary mastery (t = 18.391; Sig. = 0.000) and learning outcomes (t = 12.105; Sig. = 0.000), with N-Gain Scores of 62.18% (medium category) and 25.37% (low category), respectively. Student responses to the implementation of this model were classified as very strong (84.78%). These findings confirm that the Game Based Learning model assisted by Educaplay is effective in improving English vocabulary mastery and learning outcomes of elementary school students, while creating interactive, fun, and meaningful learning.

Article Information

Kata Kunci:
Game Based Learning; Educaplay; kosakata bahasa Inggris; hasil belajar; sekolah dasar

ABSTRACT

Penguasaan kosakata bahasa Inggris siswa kelas V SDN Kewunen tergolong rendah, dengan nilai rata-rata baru mencapai 50% dan berada di bawah Kriteria Ketuntasan Minimal (KKM) sebesar 65%. Kondisi ini disebabkan oleh dominasi metode pembelajaran konvensional serta minimnya pemanfaatan media interaktif dalam proses pembelajaran. Penelitian ini bertujuan menganalisis pengaruh model *Game Based Learning* (GBL) berbantuan platform *Educaplay* template Froggy Jumps terhadap penguasaan kosakata bahasa Inggris dan hasil belajar siswa kelas V sekolah dasar pada materi Parts of Our Body That Work Together. Penelitian menggunakan pendekatan kuantitatif dengan desain pre-eksperimen One Group Pretest-Posttest yang melibatkan 38 siswa kelas V B SDN Kewunen, ditentukan melalui teknik sampling jenuh. Data dikumpulkan melalui tes, angket respons, dan dokumentasi, kemudian dianalisis menggunakan uji Paired Sample t-Test dan N-Gain Score berbantuan SPSS versi 26. Hasil uji hipotesis menunjukkan pengaruh signifikan terhadap penguasaan kosakata (t = 18,391; Sig. = 0,000) dan hasil belajar (t = 12,105; Sig. = 0,000), dengan N-Gain Score masing-masing sebesar 62,18% (kategori sedang) dan 25,37% (kategori rendah). Respons siswa terhadap penerapan model ini tergolong sangat kuat (84,78%). Temuan ini mengonfirmasi bahwa model *Game Based Learning* berbantuan *Educaplay* efektif meningkatkan penguasaan kosakata bahasa Inggris dan hasil belajar siswa sekolah dasar, sekaligus menciptakan pembelajaran yang interaktif, menyenangkan, dan bermakna.

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1. Introduction

English language proficiency is an important competency that needs to be developed from elementary school level, considering its position as an international language in communication across nations and cultures. English learning for elementary school-aged children should ideally be carried out in a fun, contextual, and meaningful manner so that students can understand and use the language effectively in everyday life (Rahmadhani & Satianingsih, 2026). Among the various language components, vocabulary mastery occupies the most fundamental position because it is the foundation for listening, speaking, reading, and writing skills; without adequate vocabulary, these four skills cannot develop optimally (Muliawan et al., 2025).

The reality on the ground shows conditions that have not met expectations. Initial observations in April 2026 at Kewunen Elementary School revealed that the average English vocabulary mastery and learning outcomes of fifth-grade students only reached 50%, below the school's Minimum Completion Criteria (KKM) of 65%. Interviews with class teachers confirmed that students had difficulty remembering and using new vocabulary due to conventional learning methods and a lack of interactive media, resulting in monotonous learning and a lack of active student engagement.

The Game-Based Learning (GBL) model offers an alternative solution to these problems. GBL is a learning approach that integrates educational games into the teaching and learning process to achieve learning objectives through meaningful play experiences (Plass, Homer, & Kinzer, 2020). The implementation of GBL has been proven to create a fun and inclusive learning environment, is effective as an alternative English language learning method, and increases student interest, active participation, and self-confidence (Muliawan et al., 2025).

One digital platform that can support the implementation of GBL is Educaplay, a web-based educational game platform that provides various interactive activities such as quizzes, puzzles, and word-matching games related to learning materials. The implementation of gadget-based Educaplay media has been shown to have a significant impact on student learning outcomes (Ray & Ilangovan, 2024); its attractive appearance and gamification properties increase student engagement and motivation compared to conventional media. Previous studies have examined the use of Educaplay in elementary schools, but their scope is still limited. Qonita Mujahidah and Elvi Mailani (2025) found that the Froggy Jumps template on Educaplay had a significant impact on fourth-grade students' mathematics learning outcomes, while Suryaningsih Ge' and Dahlan (2025) reported a significant effect of Educaplay on fifth-grade students' science learning outcomes, but only measured one dependent variable. Both studies have not addressed the realm of English language learning or linked vocabulary mastery to learning outcomes simultaneously.

Previous studies have examined the use of digital games for English vocabulary learning and the use of Educaplay in school learning. Nurbaiti et al. (2025) examined the application of the Game-Based Learning model assisted by Educaplay to improve elementary school students' English vocabulary mastery. Wati and Mansur (2025) also examined the use of Educaplay in fifth-grade students' English vocabulary learning on body parts. Meanwhile, Mahmud et al. (2026) examined the use of the Froggy Jump game on the Educaplay platform to improve seventh-grade students' vocabulary mastery. These studies show that the use of Educaplay and digital games has become part of language learning studies, so the novelty of this study cannot be based solely on the use of the Educaplay platform, the Froggy Jumps template, or its application at the elementary school level.

Based on previous research, this study aims to provide more specific empirical evidence regarding changes in two aspects of learning outcomes after the implementation of the Game-Based Learning model assisted by Educaplay, namely English vocabulary mastery and cognitive learning outcomes of fifth-grade elementary school students. The treatment was implemented using the Froggy Jumps template on the Parts of Our Body That Work Together material. Different from studies that focus on one aspect of learning outcomes, this study measures both variables simultaneously and compares the magnitude of improvement based on the N-Gain value. This comparison is expected to provide a more detailed picture of the pattern of improvement in vocabulary mastery and cognitive learning outcomes of students after participating in digital game-based learning.

Thus, the contribution of this study lies in the simultaneous assessment of two learning outcomes in the context of English learning in fifth grade elementary school, the application of the Froggy Jumps template to the material studied, and the analysis of differences in improvement between vocabulary mastery and cognitive learning outcomes. Considering that this study used a One Group Pretest-Posttest design without a control group, the results of the study are interpreted as changes observed after treatment and are not intended as definitive causal evidence or evidence of superiority over other learning methods. This study aims to (1) analyze differences in English vocabulary mastery and student learning outcomes before and after the application of the Game-Based Learning model assisted by Educaplay and (2) test the significance of the differences between the two variables before and after treatment.

2. RESEARCH METHOD

This study used a quantitative approach with a pre-experimental design, a research design that uses one group without a control group for comparison. The design used was a One Group Pretest-Posttest. This design was chosen because the study involved only one class as subjects, so the focus of the analysis was directed at differences in student conditions before and after the treatment.

The treatment was carried out in May 2026 in English learning for fifth grade students of SDN Kewunen using the Game-Based Learning model assisted by the Educaplay template Froggy Jumps on the material Parts of Our Body That Work Together. Before the treatment, students took a pretest to measure their initial English vocabulary mastery and cognitive learning outcomes. After all treatment sessions were completed, students took a posttest using the prepared instrument. A student response questionnaire was given to determine their responses to the use of Educaplay in learning.

In general, learning activities include: (1) preliminary activities, namely the teacher conveys the learning objectives and activates students' initial knowledge about body parts and their functions; (2) presentation of material, namely the teacher explains vocabulary and the relationship between body parts according to the learning material; (3) game activities, namely students work on challenges on the Educaplay Froggy Jumps template that are adapted to the material; (4) discussion and reinforcement,

namely the teacher discusses answers, provides feedback, and clarifies misunderstandings; and (5) closing, namely the teacher and students conclude the material and reflect on the learning.

The research instruments consisted of an English vocabulary mastery test, a cognitive learning outcome test, and a student response questionnaire. The vocabulary mastery test consisted of 12 items arranged based on three indicators: knowing vocabulary, understanding vocabulary, and using vocabulary in sentences. The cognitive learning outcome test consisted of 12 items referring to the revised Bloom's Taxonomy, covering remembering (C1), understanding (C2), applying (C3), and analyzing (C4). Both test instruments were used to obtain data before and after treatment.

The student response questionnaire consisted of 12 statements on a five-point Likert scale, ranging from strongly agree to strongly disagree. The questionnaire statements covered four indicators: ease of use of Educaplay, vocabulary mastery through Educaplay, learning motivation, and active engagement and learning atmosphere.

Data analysis techniques were assisted by SPSS version 26. Prerequisite tests included the Shapiro-Wilk normality test (selected because n < 50) and Levene's Test homogeneity test, with data declared normal/homogeneous if Sig. > 0.05. Hypothesis testing used the Paired Sample t-Test to compare the pretest and posttest averages at a significance level of $\alpha = 0.05$; H_0 was rejected if Sig. (2-tailed) < 0.05. The magnitude of the increase was calculated using the N-Gain Score, with categories of high ($g \geq 0.70$), moderate ($0.30 \leq g < 0.70$), and low ($g < 0.30$). Questionnaire data were analyzed using percentage techniques, with interpretation categories: 0–20% very weak, 21–40% weak, 41–60% sufficient, 61–80% strong, and 81–100% very strong.

3. RESULTS AND DISCUSSION

3.1 Research Results

3.1.1 Statistical Description of Pretest and Posttest

Table 1. Statistical Description of Pretest and Posttest Vocabulary Mastery and Learning Outcomes

Variables	N	Min.	Max.	Mean	Std. Dev.
Vocabulary Pretest	38	8	75	48.47	15.11
Vocabulary Posttest	38	50	100	79.82	12.04
Learning Outcome Pretest	38	16	83	44.95	16.84
Posttest Learning Outcomes	38	50	100	76.75	12.28

The average vocabulary mastery score increased from 48.47 in the pretest to 79.82 in the posttest, while learning outcomes increased from 44.95 to 76.75. Both posttest averages have exceeded the KKM of 65. The decrease in standard deviation in both variables—from 15.11 to 12.04 in vocabulary mastery, and from 16.84 to 12.28 in learning outcomes—indicates that students' abilities have become more even (homogeneous) after the implementation of the Game Based Learning model assisted by Educaplay.

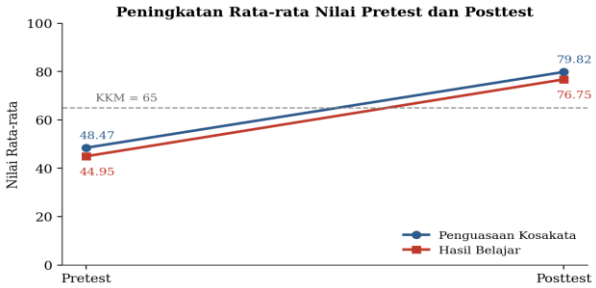


Figure 1. Improvement in Average Pretest and Posttest Scores for Vocabulary Mastery and Learning Outcomes

Figure 1 clarifies the pattern of improvement in both variables: the vocabulary mastery and learning outcomes lines both move sharply upward from pretest to posttest and cross the dotted KKM line (65). The slopes of both lines are relatively parallel, indicating that the magnitude of improvement in both variables is proportional.

3.1.2 Prerequisite Analysis Test

Table 2. Shapiro-Wilk Normality Test Results

Variables	N	Sig. Shapiro-Wilk	Information
Vocabulary Pretest	38	0.077	Normal
Vocabulary Posttest	38	0.076	Normal
Learning Outcome Pretest	38	0.114	Normal
Posttest Learning Outcomes	38	0.079	Normal

All Shapiro-Wilk significance values are above 0.05, so the pretest and posttest data on both variables are declared normally distributed. The Levene's Test homogeneity test on the posttest data of both variables produces a Levene Statistic value = 0.098 with Sig. = 0.755 (> 0.05), which indicates homogeneous data variance. With the normality assumption fulfilled, hypothesis testing is continued using the parametric Paired Sample t-Test.

3.1.3 Hypothesis Testing (Paired Sample t-Test)

Table 3. Paired Sample t-Test Results

Variables	Mean Diff.	t	df	Sig. (2-tailed)	Information
Vocabulary (Pre–Post)	-18,816	18,391	37	0,000	Significant
Learning Outcomes (Pre–Post)	-19,079	12,105	37	0,000	Significant

The results of the Paired Sample t-Test showed a t-count of 18.391 for vocabulary mastery and 12.105 for learning outcomes, with a Sig. (2-tailed) value of 0.000 for both ($p < 0.001$). With df = 37 and t-table = 2.026, the t-count values for both variables exceeded the t-table, so H_0 was rejected. These results indicate a statistically significant difference between the pretest and posttest scores in English vocabulary mastery and learning outcomes of fifth-grade students of SDN Kewunen. This finding indicates an increase in learning outcomes observed after the implementation of the Game-Based Learning model assisted by Educaplay. However, because this study used a One

Group Pretest–Posttest design without a control group, the increase cannot be fully ascertained as a result of the implementation of the learning model.

3.1.4 N-Gain Score Test

The average N-Gain for English vocabulary mastery was 62.18%, categorized as moderate. Meanwhile, the average N-Gain for cognitive learning outcomes was 25.37%, categorized as low, as it fell below the 30% threshold for the moderate category. These results indicate that the relative improvement values for both variables fall into different categories based on the N-Gain classification criteria used. This difference in categories requires careful interpretation because both variables were measured using instruments with different indicators.

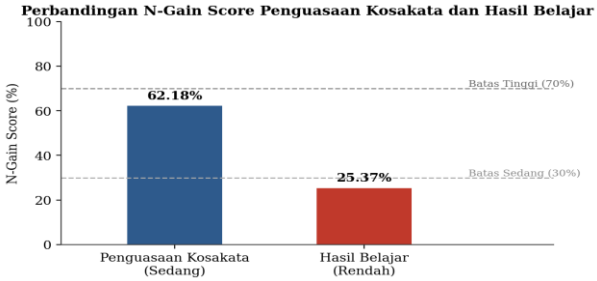


Figure 2. Comparison of N-Gain Score Vocabulary Mastery and Learning Outcomes

The N-Gain analysis results show that English vocabulary mastery increased by 62.18%, falling within the moderate category. Meanwhile, student learning outcomes increased by 25.37%, falling within the low category, as the score fell below the 30% threshold. Therefore, based on the N-Gain interpretation criteria used, vocabulary mastery increased by 62.18%, while learning outcomes decreased by 62.18%.

3.1.5 Supporting Data: Student Response Questionnaire

All questionnaire indicators achieved percentages above 61%. The English vocabulary mastery indicator through Educaplay achieved the highest percentage (90.35%), followed by motivation and interest in learning (86.49%), ease of use (83.68%), and active engagement and learning atmosphere (78.60%). The overall average of 84.78% is in the Very Good category, which strengthens the interpretation that this model is responded positively by students in terms of motivation and learning engagement.

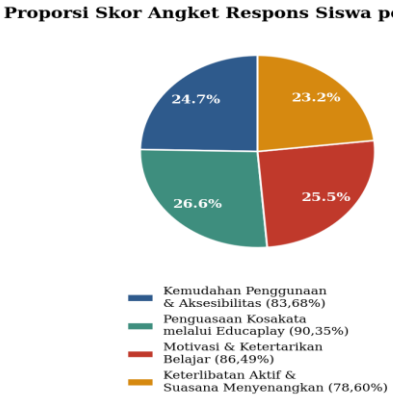


Figure 3. Proportion of Student Response Questionnaire Scores per Indicator

Figure 3 displays the contribution of each indicator to the total questionnaire score of 1,933. The four slices in the diagram are relatively balanced, ranging from 23.2% to 26.6%, with no indicator being extremely dominant. The largest proportion is contributed by the indicator of vocabulary mastery through Educaplay (26.6%), while the smallest proportion comes from the indicator of active involvement and a pleasant learning atmosphere (23.2%). This equality of proportions indicates that positive student responses are not only concentrated on one aspect, but are evenly distributed across the aspects of ease of use, vocabulary mastery, motivation, and active involvement during learning.

3.2 Discussion

Theoretically, the Game-Based Learning model is based on constructivist learning theory, which emphasizes that learning becomes more meaningful when students actively engage in constructing their own knowledge, rather than simply passively receiving information from the teacher. The implementation of this model shifts the learning orientation from teacher-centered to student-centered.

The implementation of the Game-Based Learning model assisted by Educaplay showed an increase in students' cognitive learning outcomes, as measured by indicators C1–C4. Furthermore, the questionnaire results showed a positive student response to the use of Educaplay in learning, with an overall percentage of 84.78%. These responses included ease of use of Educaplay, vocabulary mastery, learning motivation, as well as active engagement and a pleasant learning atmosphere. However, this study did not measure affective and psychomotor learning outcomes directly. Therefore, the research findings are limited to cognitive learning outcomes and student responses obtained through the questionnaire.

Compared to previous research, these findings strengthen and complement previous studies. Qonita Mujahidah and Elvi Mailani (2025) proved the effectiveness of the Froggy Jumps template on Educaplay on fourth-grade Mathematics learning outcomes, while Suryaningsih Ge' and Dahlan (2025) proved the influence of Educaplay on fifth-grade Science learning outcomes. This study extends this empirical evidence to the realm of English language learning by measuring two dependent variables simultaneously—vocabulary mastery and learning outcomes—thus providing a more comprehensive picture of the impact of the Educaplay-assisted Game Based Learning model at the elementary school level.

The findings of this study provide a more detailed picture of the changes in two aspects of learning outcomes after the implementation of the Game-Based Learning model assisted by Educaplay. English vocabulary mastery obtained an N-Gain value of 62.18%, categorized as medium, while cognitive learning outcomes obtained an N-Gain value of 25.37%, categorized as low. This difference indicates that the observed increase in vocabulary mastery was greater than the increase in overall cognitive learning outcomes. This finding indicates that vocabulary training through the Froggy Jumps game has the potential to support vocabulary recognition and comprehension, but the improvement of broader cognitive abilities still requires reinforcement through additional learning activities. However, the difference in N-Gain values needs to be interpreted with caution because this study did not use a control group. Therefore, the results of this study cannot confirm that the difference in improvement is solely due to the use of Educaplay. The questionnaire data strengthens the interpretation of the hypothesis test results: the very strong student response

(84.78%), especially on the vocabulary mastery indicator (90.35%), indicates that the effectiveness of this model is not only statistically proven but also directly felt by students in terms of motivation, ease of use, and learning engagement. The direct feedback provided by the Educaplay system after each answer allows students to immediately identify and correct conceptual errors, so that vocabulary understanding can be formed more optimally. Thus, the results of this study consistently support the hypothesis that the Game Based Learning model assisted by Educaplay has a significant effect on English vocabulary mastery and learning outcomes of fifth-grade elementary school students.

The difference in N-Gain categories between vocabulary mastery (medium) and learning outcomes (low) also has important practical implications for teachers. Higher achievement in vocabulary compared to cognitive learning outcomes generally indicates that one treatment cycle using Educaplay is more effective for strengthening word recognition and comprehension than for higher-order thinking skills such as applying and analyzing. Teachers are advised to combine Educaplay activities with vocabulary application exercises in more complex communicative contexts—for example, constructing simple sentences or dialogues—so that cognitive learning outcomes can be improved to a more optimal category.

4. CONCLUSION

This study proves that the Game Based Learning model assisted by Educaplay with the Froggy Jumps template has a significant effect on English vocabulary mastery and learning outcomes of fifth-grade students of SDN Kewunen. The average value of vocabulary mastery increased from 48.47 to 79.82, and learning outcomes increased from 44.95 to 76.75, both exceeding the KKM of 65. The Paired Sample t-Test test showed a significant effect on both variables (vocabulary: t = 18.391; learning outcomes: t = 12.105; Sig. = 0.000 in both), with an N-Gain Score of 62.18% (medium category) for vocabulary mastery and 25.37% (low category) for learning outcomes. Students' responses to the implementation of this model were very positive (84.78%), especially in the aspect of vocabulary mastery through Educaplay (90.35%).

Based on the research results, there was an increase in pretest and posttest scores in English vocabulary mastery and cognitive learning outcomes of fifth-grade students after the implementation of the Game-Based Learning model assisted by Educaplay. The questionnaire results also showed a positive student response with an overall percentage of 84.78%. The findings of this study were limited to vocabulary mastery, cognitive learning outcomes based on indicators C1–C4, and student responses to learning. This study cannot yet conclude that there was an increase in affective and psychomotor learning outcomes because these two domains were not measured directly.

These findings confirm that the Educaplay-assisted Game-Based Learning model is effective as an alternative for English vocabulary learning in elementary schools, as it creates interactive, enjoyable, and student-centered learning. Theoretically, the results of this study reinforce the relevance of constructivist learning theory and the Game-Based Learning concept as an effective approach to language learning at the elementary school level. Practically, teachers can use Educaplay as a variety of digital learning media, by adapting templates and materials to students' characteristics and needs, and combining it with other learning strategies to achieve optimal cognitive learning outcomes.

This study has limitations in the One Group Pretest-Posttest design without a control group and a sample size limited to one class, so generalization of the results needs to be done carefully. Future research is recommended to use a quasi-experimental design or a pure experiment with a control group to strengthen internal validity, expand the sample size and number of schools so that the results can be generalized more widely, measure long-term vocabulary retention through a delayed posttest, and explore other Educaplay templates or its combination with other innovative learning models on more diverse materials and grade levels.

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