ENHANCING YOUNG LEARNERS' ENGLISH VOCABULARY MASTERY THROUGH ANIMAL QUEST GAMIFICATION

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Article Info	Abstract
	English language acquisition is indispensable for cultivating communication competencies and fostering intercultural understanding from an early stage. However, Indonesian elementary students frequently encounter difficulties in vocabulary mastery due to repetitive instructional approaches and a deficiency of engaging, visual media tailored to young learners' concrete learning styles. This research examines the efficacy of the gamified media, Animal Quest, in enhancing students' English vocabulary. Employing a quantitative quasi-experimental methodology, forty first-grade students at SD Negeri 5 Pringsewu Barat were divided into an experimental group and a control group. Data were collected through pre-tests and post-tests and subsequently analyzed using SPSS 25.0 with paired and independent t-tests. The findings reveal a statistically significant improvement within the experimental group, which demonstrated a higher mean post-test score (87.05) compared to the control group (70.20). These results imply that gamification via Animal Quest effectively enhances vocabulary acquisition, engagement, and motivation among young learners. Furthermore, the study underscores that gamified storytelling media can serve as a valuable instructional innovation within primary English education, aligning with the objectives of the Merdeka Belajar curriculum and encouraging educators to adopt more interactive, student-centered pedagogical practices.

INTRODUCTION

English in Indonesia serves a strategic function as a gateway to global knowledge and intercultural communication, beginning at the primary education level (Muslim et al., 2022; Rahmawati et al., 2025; Zein et al., 2020). Instruction in English is designed not only to develop linguistic competence but also to foster students' readiness and confidence in expressing ideas (Liang & Fung, 2021; Souzandehfar & Ahmed Abdel-Al Ibrahim, 2023; Yuan et al., 2022). However, vocabulary mastery, which is widely recognized as the foundation of all language skills, remains a persistent challenge for elementary school learners ((Kamaşak et al., 2021; Kholid et al., 2024; Taye & Mengesha, 2024)).

Recent research shows that young learners frequently face challenges in retaining vocabulary due to cognitive limitations in working memory, difficulty linking word forms with meaningful contexts, and limited exposure to multisensory learning experiences ((Chen et al., 2020; González-Fernández & Schmitt, 2020)). These problems are intensified by repetitive teaching methods, scarce opportunities for practical language use, and media that do not align with children's concrete and creative learning styles (Bjorklund, 2022; Lenskaya, 2025; Osei & Bjorklund, 2024). As a result, students tend to memorize words only on a superficial level, which results in quick forgetting and low motivation.

At the policy level, English instruction in primary schools is expected to follow the Merdeka Belajar (Freedom to Learn) framework, which promotes active participation, creativity, and experiential learning linked to students' everyday lives (Bai & Guo, 2021; Ou-Yang et al., 2020; Yang et al., 2024) . However, in practice, classrooms often rely on repetitive drills, vocabulary lists, and translation exercises with little emphasis on communication ((Adem & Berkessa, 2022; Suzuki & Hanzawa, 2022). Teachers often worry about designing activities that inspire curiosity, imagination, and joy—key elements for helping young learners understand new vocabulary in a meaningful way. (Kirabo et al., 2024). The scarcity of interactive, child-friendly digital media further widens the gap between curriculum goals and actual teaching methods, resulting in teacher-centered and less engaging learning experiences.

Young learners possess distinct cognitive and socio-emotional traits that significantly influence their language acquisition process. They tend to think in concrete terms, respond strongly to visual and auditory stimuli, and are highly motivated by play, imagination, and storytelling (Hidalgo & García-Mayo, 2021; McTigue et al., 2020; Zheng & Zhou, 2022). Their engagement with learning increases notably when lessons incorporate curiosity-driven activities, fantasy elements, sound effects, and visual cues. However, their limited attention spans render traditional methods such as verbal instruction or worksheets less effective in sustaining focus over time (Behnamnia et al., 2020; Ray et al., 2021; Skulmowski, 2023) Consequently, vocabulary instruction should involve contextualized, multisensory experiences that promote learning through play, exploration, and meaningful interaction (Korosidou, 2024; Zhang et al., 2023).

This study focuses on the necessity to develop instructional media that are in accordance with children's developmental characteristics and adhere to the pedagogical principles outlined in the national curriculum. Animal Quest was conceived as a gamified educational instrument integrating interactive storytelling, adventure-based activities, and visual-auditory vocabulary recognition (Conde et al., 2023; Roslan et al., 2022; Zekan et al., 2024). Gamified narratives enable learners to acquire vocabulary organically through engaging stories, contextual cues, and immediate feedback on responses (Kanellopoulou et al., 2019; Liu et al., 2018; Nami & Asadnia, 2024). This approach promotes repeated practice free from boredom, strengthens the association between words and images, and encourages motivation and autonomous learning.

Although gamification has garnered considerable interest within the realm of global language education research, its particular application for young learners of English as a Foreign Language (EFL)—specifically in Indonesia—remains limited and insufficiently examined. Recent scholarly investigations indicate that many gamified educational tools designed for children predominantly focus on quiz-like mechanics rather than on narrative immersion or emotional engagement (Fithriani, 2021; Pambudi et al., 2019; Slamet & Basthomi, 2024; Tsai, 2024a). Concurrently, linguistic acquisition theories such as Krashen's Input Hypothesis, Piaget's Constructivist Theory, and Vygotsky's Scaffolding Concept emphasize that children learn most effectively through interactive, meaningful, and socially facilitated experiences. These theoretical frameworks underpin the proposition that gamified storytelling possesses the potential to effectively integrate children's inherent play tendencies with the objective of acquiring academic vocabulary.

A stimulating learning environment that encourages curiosity, participation, and emotional connection is essential for improving vocabulary retention and fostering positive attitudes toward language learning (Covelli, 2024; Khudaverdiyeva, 2024). Incorporating simple reward systems, interactions rich in visuals, and narrative-based tasks can boost motivation, build self-confidence, and promote experimentation with language. When used effectively, gamification can transform the classroom into an energetic, student-centered space that encourages exploration, creativity, and long-term engagement (Alenazi, 2025a; Bräuer & Mazarakis, 2024). Given the limited number of studies that explicitly associate gamification with interactive storytelling for vocabulary instruction among Indonesian primary students, this research endeavors to address this gap by developing and assessing the effectiveness of Animal Quest as a gamified pedagogical tool. By integrating storytelling, challenge-based exercises, and visually appealing elements appropriate for children, the study aims to introduce an educational approach that is developmentally suitable, easily implementable by educators, and consistent with Indonesia's objectives for more contextualized, inclusive, and engaging foreign language education.

RESEARCH METHOD
Research Design
This study employed a quantitative methodology with a quasi-experimental design, specifically utilizing the pretest–posttest control group approach. This design was chosen because random allocation of participants was not feasible due to the existing administrative class divisions within the school. To mitigate this limitation, efforts were undertaken to minimize selection bias by selecting two comparable classes with similar academic backgrounds and learning environments. The study involved two groups: an experimental group and a control group. Both groups completed identical pretests to evaluate their initial vocabulary proficiency. The experimental group subsequently received instruction via the Animal Quest gamified learning media, whereas the control group was instructed using traditional methods, including teacher explanations, picture flashcards, and repetitive vocabulary drills. Following the instructional sessions, both groups participated in an equivalent posttest to assess vocabulary improvement. This configuration facilitated a controlled comparison of learning progress between the groups and demonstrated the efficacy of Animal Quest in advancing vocabulary acquisition.

Population and Sample
The study's population comprised all first-grade students at SD Negeri 5 Pringsewu Barat, Pringsewu Regency, Lampung Province, during the second semester of 2024/2025. The institution was selected due to its offering of English as a local content subject and its adequate digital learning resources, which support the effective utilization of gamified learning media. A total of 40 students were chosen through purposive sampling from two parallel first-grade classes. Class I.A (20 students) served as the experimental group, while Class I.B (20 students) functioned as the control group. These classes were chosen based on their similarity in teacher assessments of academic ability, cognitive development, and prior exposure to English. The majority of students were aged 6–7 years and had limited prior English instruction, primarily involving basic vocabulary acquired during early childhood education. This homogeneity was intended to enhance the internal validity of the study by reducing potential confounding variables.

Instruments
The primary instrument employed in this research was an English vocabulary assessment tailored to the elementary English curriculum, specifically within the theme of Animals. The assessment comprised 20 picture-based multiple-choice items designed to evaluate three aspects of vocabulary mastery: recognition, comprehension, and application. Participants were

tasked with matching English words to animal images, identifying meanings, and selecting appropriate vocabulary based on straightforward contextual cues. To enhance the instrument's validity, the test was reviewed by two elementary English educators and a language education lecturer to evaluate content relevance and clarity. A pilot study involving 15 students from an alternative school was carried out to examine item difficulty, discriminative capacity, and clarity of instructions. Reliability analysis using the Kuder–Richardson Formula 20 (KR-20) produced a coefficient of 0.82, indicating high internal consistency and confirming the test's reliability for administering to young learners.

Data Collection Procedures

Data collection was conducted over a period of four weeks, encompassing pretests, treatment sessions, and posttests. These assessments were administered within the students' regular classrooms under standardized and controlled conditions to minimize external variables. All students received uniform instructions, were allotted equal time for tasks, and were supervised by both the researcher and their classroom teacher to ensure consistency. Participants were instructed not to interact or share answers, and seating arrangements were modified to reduce distractions. The experimental group underwent treatment in the school's digital learning room, whereas the control group continued their lessons in their customary classrooms. All sessions adhered to the established school schedule to preserve ecological validity.

Data Analysis

Quantitative data were analyzed using SPSS version 25. Prior to hypothesis testing, assumption checks were conducted. The Kolmogorov–Smirnov test evaluated the normality of data distribution, and Levene's Test assessed the homogeneity of variances across groups. Given that both assumptions were satisfied, parametric tests were deemed appropriate. The subsequent primary analyses included: the Paired Sample t-Test, which compared pretest and posttest scores within each group to determine whether students demonstrated improvement following the intervention; and the Independent Sample t-Test, which compared posttest scores between the experimental and control groups to evaluate whether Animal Quest contributed more significantly to vocabulary mastery than traditional methods. A significance level of $\alpha = 0.05$ was adopted, with differences considered statistically significant if $p < 0.05$. These findings strongly support the effectiveness of Animal Quest gamified learning in enhancing the vocabulary skills of first-grade students.

RESEARCH FINDINGS AND DISCUSSION
Research Findings

This section provides a descriptive statistical analysis of students' vocabulary mastery prior to and following the utilization of the gamified learning media, Animal Quest. To directly address the research question (RQ): "Does Animal Quest significantly improve students' English vocabulary in comparison to conventional methods?" the subsequent interpretation elucidates how each descriptive indicator corresponds with the objectives of the study.

Table 1
Descriptive Statistical Analysis

Statistics	Pre-Test Experiment	Post-Test Experiment	Pre-Test Control	Post-Test Control
N Valid	20	20	20	20
Missing	0	0	0	0
Mean	58.65	87.05.00	58.80	70.20.00
Median	59.00.00	87.00.00	59.00.00	70.00.00
Mode	60	85	60	70
Std. Deviation	0,23125	03.17	02.35	02.14
Variance	24.30.00	10.05	05.52	04.58

Statistics	Pre-Test Experiment	Post-Test Experiment	Pre-Test Control	Post-Test Control
Range	20	12	8	8
Minimum	50	80	55	66
Maximum	70	92	63	74
Sum	1,173	1,741	1,176	1,404

Table 1 demonstrates that both groups commenced the study with comparable baseline vocabulary skills, evidenced by mean pre-test scores of 58.65 for the experimental group and 58.80 for the control group. This parity is crucial for addressing RQ, as it ensures that any observed differences subsequent to the intervention are attributable to the treatment rather than initial disparities. Post-intervention, the experimental group's mean score experienced a substantial increase from 58.65 to 87.05, representing a gain of 28.40 points. Conversely, the control group exhibited a modest improvement from 58.80 to 70.20, with an increase of 11.40 points. This indicates that Animal Quest exerted a more significant influence on vocabulary development compared to traditional methods. Supporting this conclusion, the median and mode within the experimental group increased markedly, signifying consistent progress among the majority of students. Additionally, the standard deviation decreased from 4.93 to 3.17, suggesting that vocabulary mastery became more homogeneous following the intervention— an important indicator of its efficacy for young learners. The minimum score increased from 50 to 80, demonstrating notable gains among lower-performing students, while the maximum score rose to 92, reflecting substantial improvements among high-achieving students. The total score for the experimental group increased from 1,173 to 1,741, indicating a considerable overall enhancement. These findings directly address RQ by confirming that Animal Quest produced significantly greater vocabulary gains than conventional instructional approaches. Furthermore, the descriptive statistics suggest that integrating gamified learning with narrative and visual scaffolding enhances vocabulary retention and cognitive engagement more effectively than traditional rote learning commonly employed in primary education.

Table 2
Tests of Normality

	Class	Kolmogorov-Smirnova			Shapiro–Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Result	Pre-Test Eksperimen	.122	20	.200*	.969	20	.704
	Post-Test Eksperimen	.116	20	.200*	.973	20	.754
	Pre-Test Kontrol	.108	20	.200*	.976	20	.814
	Post-Test Kontrol	.094	20	.200*	.981	20	.901

All significance values in the Kolmogorov–Smirnov and Shapiro–Wilk tests exceed .05, indicating that the pre-test and post-test scores for both the experimental and control groups follow a normal distribution. This confirms that the data satisfy the normality assumption required for parametric statistical tests. Meeting this condition is essential because it guarantees that the subsequent inferential analyses, such as the paired sample t-test and independent sample t-test, produce valid and reliable results. For RQ, the data's normal distribution enhances the validity of the statistical methods used to evaluate Animal Quest's effectiveness. Since both groups are normally distributed, any differences identified during hypothesis testing can be more confidently attributed to the intervention rather than violations of statistical assumptions. This also supports the robustness of the study's conclusions about the significant impact of gamified learning on vocabulary mastery.

Table 3
Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Result	Based on Mean	2.193	1	38	.145
	Based on Median	1.762	1	38	.192
	Based on Median and with adjusted df	1.845	1	37.214	.180
	Based on trimmed mean	2.084	1	38	.155

All Levene's Test p-values exceed .05 across the four statistical bases (Mean, Median, Median with adjusted df, and Trimmed Mean), indicating that the variances of post-test scores between the experimental and control groups are statistically equal. Ensuring the homogeneity of variance is crucial, as it validates the use of the independent sample t-test and the comparison of group means. This condition supports the interpretation of findings related to RQ by confirming that any differences in vocabulary mastery are not due to unequal data dispersion but are genuinely attributable to the treatment. In essence, homogeneity of variances underpins the reliability of concluding that Animal Quest had a real, statistically significant impact on students' vocabulary achievement. By meeting this assumption, the study maintains strong internal validity and enables confident claims about the effectiveness of the gamified learning intervention.

Table 4
Post-Test Hypothesis Testing

Independent Samples Test

		Levene's Test for Equality of Variances t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Total Test	Equal variances assumed	2.193	.145	19.704	38	.000	0,7256944	.855	15.12	18.58
	Equal variances not assumed			19.704	37.582	.000	0,7256944	.855	15.12	18.59

The results of the Independent Samples t-Test presented in Table 4 reveal a t-value of 19.704 accompanied by a p-value of .000, which is substantially below the .05 threshold. This denotes a highly significant difference in post-test vocabulary scores between the experimental group, which utilized Animal Quest, and the control group, which received conventional instruction. As Levene's Test yields a significance level of .145, surpassing .05, the assumption of equal variances is satisfied. Consequently, the relevant interpretation should be based on the "Equal variances assumed" row. The mean difference of 16.85 points indicates a considerable advantage for students who engaged with the gamified learning tool. The 95% confidence interval, spanning from 15.12 to 18.58, corroborates the stability and precision of the estimate. Since this interval does not encompass zero, it affirms that the observed difference is statistically significant and unlikely attributable to chance. It also suggests that the positive effect of Animal Quest is consistent across the sample, thereby reinforcing the robustness of these findings.

Regarding RQ, these results compellingly indicate that Animal Quest significantly enhances young learners' English vocabulary skills. The substantial mean difference suggests a large effect size, implying that the impact holds both statistical and pedagogical significance. The experimental group exhibited markedly higher vocabulary levels compared to their counterparts taught through traditional methods such as rote memorization and teacher-centered explanations. Accordingly, the findings support the conclusion that gamified educational tools, such as Animal Quest, can effectively facilitate vocabulary acquisition in primary education.

Discussion

This study investigated the effectiveness of the gamified learning tool, Animal Quest, in enhancing English vocabulary skills among elementary students. The results demonstrated a statistically significant difference in learning outcomes between the experimental group and the control group. Participants who engaged with Animal Quest achieved an average score of 87.05 on the post-test, considerably higher than the control group's mean score of 70.20. These findings suggest that gamification promotes a more engaging and efficacious learning environment, particularly for young learners who respond favorably to visual, interactive, and challenge-oriented activities.

The improvements observed in the experimental group are attributed to Animal Quest's innovative design, which integrates gameplay with interactive storytelling elements. The adventure narrative, complemented by missions and rewards, incentivized students to participate actively, reducing reliance on traditional memorization strategies. Each stage of the game required students to utilize vocabulary within contextual settings, thereby fostering natural, enjoyable repetition that reinforced memory, improved pronunciation, and deepened lexical comprehension. These features align with existing research indicating that gamified environments create cognitively stimulating conditions conducive to vocabulary development.

Gamification further promotes meaningful learning by integrating enjoyment, engagement, and healthy competition. In the context of language education, game-based tasks provide students with opportunities to connect vocabulary to real-world or contextual situations. Through the narrative elements of Animal Quest, learners not only recognize vocabulary but also comprehend its appropriate application in specific contexts, such as identifying and describing animals. This contextual approach fosters a more communicative and developmentally appropriate learning process for young children (Al-Khresheh, 2025; Navinkumar & Sivakami, 2024; Orak, 2025; Yaccob et al., 2022).

The intervention also enhanced students' motivation and confidence in learning English. Throughout the process, students in the experimental class demonstrated increased enthusiasm and remained actively engaged. The classroom environment became more student-centered, with the teacher acting as a facilitator encouraging exploration rather than merely delivering information. Conversely, students in the control class, which was taught through traditional methods, tended to be more passive and easily distracted. These observations support the premise that gamification is not only an enjoyable learning approach but also an effective pedagogical strategy for improving emotional engagement and motivation (Alenazi, 2025b; Mitchell & Co, 2024; Nami & Asadnia, 2024; Tsai, 2024)

From a theoretical perspective, the findings align with Vygotsky's emphasis on social interaction, mediated learning, and the crucial role of feedback in language development. Animal Quest inherently offers immediate feedback and opportunities for teamwork, thereby reinforcing the language learning process. Similarly, Piaget's constructivist theory is manifested in how Animal Quest enables learners to build knowledge through hands-on experiences and active exploration. Consequently, gamification embodies fundamental concepts from both theories by centering the learning experience on the student (Baldeón et al., 2016; Massad, 2024; Roslan et al., 2022; Shirindzi & Sikhwari, 2025).

The results of this study provide valuable insights for the teaching of English in Indonesian primary schools. Firstly, the success of Animal Quest demonstrates that gamified learning tools can effectively bridge curriculum objectives—such as those outlined in the Merdeka Belajar framework—and practical classroom implementation. These tools assist teachers in creating more engaging, student-centered learning environments tailored to the needs of young learners.

Secondly, the research highlights that teachers can incorporate simple gamified elements—such as story-based tasks, visual challenges, and reward systems—even in the absence of advanced technology. This approach ensures that gamification remains accessible and adaptable across diverse educational settings throughout Indonesia, including rural or resource-constrained areas. Thirdly, the findings underscore the importance of professional development focused on digital teaching strategies and child-friendly materials. Providing teachers with the capacity to develop or implement gamified resources can enhance learning outcomes and foster positive attitudes towards learning English at an early stage. Despite these encouraging findings, certain limitations must be acknowledged. The study involved a small sample size (40 students) from a single school, which constrains the generalizability of the results. Moreover, the quasi-experimental design lacked random assignment, potentially introducing bias despite efforts to ensure group comparability. Another limitation concerns the short duration over which vocabulary gains were assessed. It remains uncertain whether these improvements will be sustained over the long term or if students will continue to engage with the same gamified methodologies. Future research could examine the long-term effects of such interventions.

CONCLUSION

This study demonstrates that Animal Quest markedly enhances elementary students' English vocabulary skills. The experimental group's scores rose from 58.65 to 87.05, whereas the control group's scores increased from 58.80 to 70.20. The t-test (t=19.704, p=0.000) indicates a statistically significant positive impact. Findings suggest that gamification fosters an engaging and effective learning environment. Educators should consider using gamified tools like Animal Quest or simple activities to make lessons more interactive. Schools are encouraged to integrate gamification into their curricula and provide training for teachers to implement these methods successfully. Overall, gamified learning improves vocabulary, motivation, and student engagement.

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INFORMED CONSENT STATEMENT

Participation in this study is entirely voluntary. By agreeing to take part, the participants acknowledge that they have been informed about the purpose, procedures, potential risks, and benefits of the study.

DATA AVAILABILITY STATEMENT
The data utilized in this study cannot be made publicly available due to strict adherence to privacy concerns and ethical obligations that safeguard participant confidentiality. This ensures compliance with ethical research standards and data protection regulations.

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