



The Effect of Lumi Education on Students' Vocabulary Mastery in an EFL Classroom

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Article Info	Abstract
Received: 2025-11-18 Revised: 2026-09-08 Accepted: 2026-09-22 Keywords: <i>Lumi Education;</i> <i>vocabulary mastery;</i> <i>EFL learners;</i> <i>digital learning; gamification</i> DOI: 10.24256/ideas.v14i2.8471 Corresponding Author: Strahayu Fadillah strahayufadillahh@gmail.com English Education Department, Graduate Program, Universitas Negeri Makassar	<i>This study investigates the effect of Lumi Education on students' vocabulary mastery in an EFL classroom at SMAN 13 Sinjai. The research employed a quasi-experimental design with 30 students in the control group and 30 in the experimental group. The data were collected through pre-tests and post-tests to measure students' vocabulary improvement. Results revealed that the implementation of Lumi Education significantly enhanced students' vocabulary mastery. The pre-test mean score was 7.97, while the post-test mean increased to 16.70. The Wilcoxon Signed-Rank Test indicated a statistically significant difference ($Z = -4.537$, $p = .000$). These findings suggest that Lumi Education effectively improves vocabulary learning by integrating interactive activities, gamification, and immediate feedback, which increase student engagement and motivation. Therefore, Lumi Education can serve as an effective digital learning tool for vocabulary acquisition in EFL contexts.</i>

1. Introduction

In today's globalized world, English has become an essential tool for communication, education, and professional development. Mastery of English vocabulary is crucial for successful listening, speaking, reading, and writing, as learners cannot effectively express ideas or comprehend texts without sufficient vocabulary knowledge. Studies indicate that understanding academic texts requires approximately 8.000-9.000 word families, while conversational fluency depends on knowledge of 2.000-7.000 word families (Marshall, 2022; Schmitt & Schmitt, 2020; Enayat, 2021). This highlights vocabulary as a key determinant of language learning success.

Despite its importance, many Indonesian students face challenges in vocabulary acquisition, particularly in semi-rural areas like Sinjai. English instruction is often limited by teachers' lack of specialized training, restricted learning strategies, and minimal exposure to English outside the classroom (Izquierdo et al., 2021). Psychological and social factors, such as language anxiety, low self-confidence, and limited authentic practice, further hinder vocabulary learning. At SMA Negeri 13 Sinjai, students exhibit low vocabulary mastery, affecting their overall English proficiency.

To address these challenges, several strategies have been proposed. Problem-Based Learning (PBL) has been shown to foster critical thinking, problem-solving skills, and deeper engagement in language learning. In addition, digital platforms such as Lumi Education, which incorporate gamification, multimedia integration, and interactive exercises, provide meaningful opportunities for vocabulary practice (Christina et al, 2024; Meytaputri, 2024). Mobile-Assisted Language Learning (MALL), the theoretical foundation of Lumi Education, enables learners to access learning materials anytime and anywhere, promoting active engagement and self-directed learning. Research suggests that MALL-supported interventions enhance vocabulary acquisition more effectively than conventional methods (Van & Thanh, 2022).

Although previous studies have demonstrated the potential of PBL and digital media in improving vocabulary, most research has been conducted in urban or junior high school settings, leaving a gap in understanding the effectiveness of Lumi Education at the senior high school level in semi-rural areas. Furthermore, limited studies have explored how specific features of the platform, such as gamification, interactive exercises, and multimedia content directly influence vocabulary mastery.

Based on these considerations, this study focuses on investigating the effectiveness of Lumi Education in improving students' vocabulary mastery at SMA Negeri 13 Sinjai. The study aims to determine whether the implementation of Lumi Education, grounded in MALL principles and enriched with interactive and gamified learning activities, can enhance students' vocabulary acquisition in the EFL classroom. This investigation directly addresses the gap in the literature regarding digital-assisted vocabulary learning in semi-rural senior high school contexts.

2. Method

This study employed a quasi-experimental non-equivalent control group design to investigate the effect of Lumi Education on students' vocabulary mastery, following the guidelines of Creswell & Creswell (2022), who emphasize the suitability of this design when random assignment of individuals is impractical. Two intact classes of eleventh-grade students at SMA Negeri 13 Sinjai were selected through cluster random sampling (Herman et al., 2020). One class served as the experimental group, receiving instruction using Lumi Education, and the other served as the control group, receiving conventional instruction. Both groups completed a pre-test to establish baseline vocabulary mastery, followed by six instructional sessions, and a post-test to measure learning gains.

Table 1: Population of the Study

Description	Number of students
Total 11 th grade students	169
Male Students	66
Female Students	103

Source: SMA Negeri 13 Sinjai Records, Academic Year 2024/2025

The population consisted of all 11th-grade students at SMA Negeri 13 Sinjai in the 2024/2025 academic year, totaling 169 students, with 66 males and 103 females aged 16-17 years. Two classes were randomly selected as clusters, resulting in a total sample of 64 students, divided equally between the experimental and control groups. The selection of this grade was based on accessibility, curricular relevance, and cognitive readiness for digital-based vocabulary instruction (Teresi, 2022; Creswell, 2012).

Vocabulary tests served as the primary instrument for data collection. The tests consisted of 30 multiple-choice items assessing synonyms, antonyms, contextual meaning, collocations, and sentence completion, aligned with the national curriculum. The pre-test was administered prior to the intervention, and the post-test was administered after six instructional sessions.

Quantitative data were analyzed using descriptive statistics (mean, standard deviation, frequency distribution) and non-parametric inferential statistics due to the non-normal distribution of the data as determined by the Shapiro–Wilk test (Shapiro & Wilk, 1965). The Wilcoxon Signed-Rank Test was employed to examine within-group improvements from pre-test to post-test for both experimental and control groups, while the Mann-Whitney U test was applied to compare post-test scores between groups, controlling for pre-test differences. All analyses were performed using SPSS version 23, with a significance level set at 0.05.

This approach allowed for a rigorous examination of the effectiveness of Lumi Education in enhancing students' vocabulary mastery in the EFL classroom. The use of this design is consistent with prior educational research that evaluates intervention effectiveness in naturalistic classroom settings (Creswell & Creswell, 2022).

3. Result

The effectiveness of Lumi Education in improving students' vocabulary mastery was examined through pre-test and post-test scores of the experimental and control groups. Table 1 presents the descriptive statistics for the pre-test. Both groups started from a similar baseline, with the experimental group achieving a mean score of 7.97 and the control group 7.77. These results suggest that the initial vocabulary mastery of the two groups was comparable, providing a fair basis for examining the effects of the intervention.

Table 2. Pre-Test Scores of Students' Vocabulary Mastery

Group	N	Minimum	Maximum	Mean	Std. Deviation
Control	30	3	24	7.77	3.94
Experiment	30	3	19	7.97	3.73

Following six instructional sessions, the post-test results revealed a substantial improvement in the experimental group compared to the control group (Table 2). The experimental group's mean score increased to 16.70, while the control group's mean score rose slightly to 8.73. This indicates that students who received instruction using Lumi Education experienced significantly greater gains in vocabulary mastery than those who received conventional teaching.

Table 3. Post-Test Scores of Students' Vocabulary Mastery

Group	N	Minimum	Maximum	Mean	Std. Deviation
Control	30	1	27	8.73	4.90
Experiment	30	6	22	16.70	4.68

Since the Shapiro-Wilk test indicated that the pre-test and post-test scores were not normally distributed ($p < 0.05$), non-parametric statistical analysis was employed. The Wilcoxon Signed-Rank Test was conducted to examine within-group improvements in the experimental class. The results revealed that 27 students improved their scores, two students' scores decreased, and one student's score remained unchanged. The test yielded a Z value of -4.537 with a p-value of .000, indicating that the improvement in vocabulary mastery was statistically significant (Table 3).

Table 4. Wilcoxon Signed-Rank Test for Experimental Group

Test Comparison	Z	Asymp. Sig. (2-tailed)
Post-test – Pre-test	-4.537	.000

These findings suggest that the implementation of Lumi Education substantially enhanced students' vocabulary mastery. The integration of interactive activities, gamification, and immediate feedback facilitated active engagement and motivated learners to practice vocabulary effectively. In contrast, the control group showed only minor improvements, highlighting the relative advantage of digital-assisted learning over conventional methods. Overall, the results provide strong evidence that Lumi Education is an effective instructional tool for promoting vocabulary acquisition in the EFL classroom.

4. Discussion

The findings demonstrate that Lumi Education effectively improves vocabulary acquisition in EFL learners. The substantial gains in the experimental group can be attributed to interactive exercises, gamification, and immediate feedback, which foster active engagement and repeated practice. This aligns with constructivist principles, where learners actively construct knowledge through interaction and exploration (Kukulska-Hulme & Shield, 2008). Immediate feedback further supports learning by allowing students to correct mistakes in real time, enhancing retention and comprehension (Hamari et al., 2016).

The low variation in post-test scores suggests equitable learning opportunities, benefiting most students regardless of initial ability. Minor decreases in some students may reflect individual differences in engagement or learning pace, highlighting the potential need for additional scaffolding. Overall, these findings confirm the effectiveness of digital-

assisted, interactive learning in promoting vocabulary mastery, supporting the integration of platforms like Lumi Education in EFL classrooms.

5. Conclusion

The results of this study lead to the conclusion that Lumi Education significantly enhanced students' vocabulary mastery. The experimental group showed a notable increase in mean scores from the pre-test ($M = 7.97$) to the post-test ($M = 16.70$), and the Wilcoxon Signed-Rank Test confirmed that this improvement was statistically significant ($Z = -4.537$, $p = .000$). These findings suggest that Lumi Education serves as an effective digital learning tool that fosters students' engagement and supports vocabulary development more effectively than traditional teaching methods.

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