

The Effectiveness of Digital Platforms in Enhancing Students' English Vocabulary Mastery in SMA AL Quran Wahdah Islamiyah Kendari

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ABSTRACT

Vocabulary mastery is fundamental to English language proficiency, yet many Indonesian senior high school students continue to face challenges in acquiring adequate vocabulary due to conventional teaching methods. This study aimed to investigate the effectiveness of digital platforms in enhancing English vocabulary mastery among eleventh-grade students at SMA Al Quran Wahdah Islamiyah Kendari. A pre-experimental one-group pretest-posttest design was employed, involving 23 students from Class XI selected through purposive sampling. The intervention consisted of systematic vocabulary learning activities utilizing selected digital platforms over an eight-week period. Data were collected through a validated vocabulary achievement test administered before and after the treatment. Quantitative data were analyzed using descriptive statistics and paired-sample t-test. The findings revealed a statistically significant improvement in students' vocabulary scores following the implementation of digital platforms ($p < 0.05$). Students also reported higher motivation and engagement during the learning process. This study concludes that digital platforms constitute an effective, accessible, and student-centered tool for improving vocabulary acquisition in EFL contexts. The results offer practical implications for English teachers and curriculum developers seeking to integrate technology in technology-limited or faith-based secondary schools in Indonesia.

Keywords: Digital Platforms; Vocabulary Mastery; EFL Learning

INTRODUCTION

Vocabulary mastery constitutes a fundamental pillar in English language learning, serving as the building block for effective communication across listening,

speaking, reading, and writing skills. Without sufficient lexical knowledge, learners often struggle to comprehend texts, express ideas, or engage in meaningful interactions. As Wilkins (1972) famously noted, while grammar provides structure, it is vocabulary that carries the core meaning of messages. In the context of English as a Foreign Language (EFL), a robust vocabulary not only enhances academic performance but also boosts learners' confidence and motivation to use the language in real-life situations.

In Indonesia, English is taught as a compulsory subject from elementary to senior high school levels, yet many students continue to exhibit limited vocabulary size compared to curriculum expectations. Senior high school graduates are ideally expected to master around 3,000 word families, but empirical studies reveal a significant gap between this target and actual achievement. This deficiency frequently leads to difficulties in understanding word meanings, pronunciation, spelling, and retention, ultimately hindering overall language proficiency. Such challenges are exacerbated by traditional teaching methods that rely heavily on rote memorization without sufficient contextual exposure or repeated practice.

Several factors contribute to these persistent problems among Indonesian EFL learners. Internal factors include low motivation, reluctance to use dictionaries, anxiety in using new words, and limited opportunities for active practice. External factors encompass inadequate learning facilities, large class sizes, and a curriculum that sometimes prioritizes grammar over lexical development. As a result, students often feel demotivated and lack the confidence to apply English in communicative contexts, particularly in speaking and writing tasks. These issues are widely documented in various senior high schools across the country, including both public and private institutions.

SMA Al Quran Wahdah Islamiyah Kendari, as an Islamic-based senior high school, integrates religious values with academic education while maintaining the national curriculum that requires English proficiency. With a focus on producing religiously grounded yet academically excellent students, the school faces similar vocabulary challenges among its eleventh-grade learners. The integration of Quranic values may sometimes limit exposure to secular or interactive English materials, while conventional classroom approaches dominate instruction. Class XI, consisting of only 23 students in this study, represents a typical small cohort where individual differences in vocabulary mastery can be clearly observed yet remain underexplored in technology-integrated interventions.

The rapid advancement of digital technology has opened new avenues for language learning, particularly in vocabulary acquisition. Digital platforms such as Quizlet, Kahoot!, Duolingo, and other gamified applications offer interactive, engaging, and accessible tools that provide immediate feedback, spaced repetition, and multimedia elements. These features align with constructivist and connectivist learning theories, allowing students to learn at their own pace while increasing motivation through game-like elements and authentic language exposure. In EFL

contexts, such platforms have demonstrated potential to transform passive memorization into active, meaningful vocabulary building.

Empirical evidence from various studies indicates that the use of digital platforms can significantly improve vocabulary retention, pronunciation, and learner engagement compared to traditional methods. Gamification and mobile-assisted language learning (MALL) not only enhance recall but also foster positive attitudes toward English learning. However, most existing research has been conducted in urban public or university settings, with limited attention given to faith-based or regional senior high schools like those in Kendari, Southeast Sulawesi. This creates a noticeable research gap regarding the applicability and effectiveness of digital tools in culturally specific Islamic educational environments.

Furthermore, while digital platforms are increasingly available, their integration in Indonesian secondary schools still faces barriers such as limited internet access, teacher training, and alignment with local curricula. Investigating their effectiveness in a real classroom setting with a small sample size can provide practical insights for teachers working in similar contexts. Understanding whether these tools can overcome traditional vocabulary learning obstacles in SMA Al Quran Wahdah Islamiyah Kendari will contribute valuable data to the broader field of technology-enhanced language learning (TELL) in Indonesia.

The present study therefore aims to examine the effectiveness of digital platforms in enhancing English vocabulary mastery among eleventh-grade students at SMA Al Quran Wahdah Islamiyah Kendari. By employing a pre-experimental one-group pretest-posttest design with 23 participants, this research seeks to measure improvements in vocabulary scores and explore students' perceptions toward the intervention. The findings are expected to offer practical implications for English teachers in integrating digital tools within faith-based senior high schools while addressing the ongoing challenge of vocabulary development in EFL settings.

LITERATURE REVIEW

Vocabulary mastery remains a cornerstone of successful English language acquisition, particularly in EFL contexts where learners have limited exposure to the target language outside the classroom. A strong vocabulary repertoire enables students to comprehend texts, express ideas fluently, and engage in meaningful communication across the four language skills. Without adequate lexical knowledge, learners often experience frustration and reduced motivation. Recent studies emphasize that vocabulary development requires not only rote memorization but also repeated exposure, contextual use, and active recall to achieve long-term retention (Nation, 2013; updated discussions in Schmitt & Schmitt, 2020). In senior high school settings, where curriculum demands grow more complex, insufficient vocabulary frequently becomes a major barrier to overall language proficiency.

Indonesian senior high school students, including those in faith-based institutions like SMA Al Quran Wahdah Islamiyah Kendari, commonly face persistent challenges in English vocabulary acquisition. Traditional teaching methods that rely on word lists and rote learning often fail to sustain student interest or promote deep understanding. Factors such as large class sizes (or small but heterogeneous groups), limited authentic exposure, and low motivation exacerbate these issues. Empirical observations indicate that many eleventh-grade students struggle with word retention, spelling, pronunciation, and contextual application, resulting in below-expectation performance in English subjects. These problems highlight the need for more engaging and technology-supported approaches to vocabulary instruction.

The rapid development of digital technology has introduced innovative solutions through digital platforms, mobile applications, and gamified tools. Platforms such as Duolingo, Quizlet, Kahoot!, and other mobile-assisted language learning (MALL) applications incorporate features like spaced repetition, immediate feedback, multimedia elements, and game mechanics (points, badges, leaderboards). These characteristics align with constructivist learning theories and self-determination theory, fostering learner autonomy, enjoyment, and sustained practice. In EFL environments, digital platforms transform passive vocabulary learning into interactive, student-centered experiences that can be accessed anytime and anywhere, making them particularly suitable for secondary school learners with varying proficiency levels.

Empirical evidence from recent studies demonstrates the positive impact of digital platforms on vocabulary mastery. Fithriani (2021) conducted a quasi-experimental study on Indonesian adult EFL learners using mobile-assisted gamification (primarily Quizlet) and found that the experimental group significantly outperformed the control group in post-test vocabulary scores, with students also reporting higher enjoyment and motivation. Similarly, a 2025 study on immersive app-based learning with Duolingo and Quizlet revealed significant improvements in vocabulary retention and contextual application, driven by gamified features and spaced repetition, alongside enhanced self-regulated learning behaviors.

Further support comes from research focusing on gamified and mobile tools. Rojabi et al. (2022) investigated Kahoot! for vocabulary learning and reported notable gains in exam scores, engagement, and motivation among EFL students. In a 2026 study comparing different types of flashcards, gamified mobile app flashcards produced the highest gains in receptive vocabulary and collocation knowledge compared to non-gamified digital and paper versions, highlighting the added value of gamification elements. Another recent investigation into Duolingo as an AI-based application showed a significant increase in vocabulary mastery among Indonesian junior high school students, with post-test scores rising from fair to good categories and positive perceptions regarding its interactive and motivating design.

Collectively, these studies (2021–2026) indicate that digital platforms offer a promising alternative to conventional methods by increasing engagement, providing immediate feedback, and supporting repeated exposure—key factors for vocabulary retention. However, most existing research has been conducted in university or urban public school settings, with limited exploration in smaller, faith-based senior high schools in regional areas such as Kendari. This gap underscores the importance of the present study, which examines the effectiveness of digital platforms specifically for eleventh-grade students ($n=23$) at SMA Al Quran Wahdah Islamiyah Kendari, contributing localized insights to the broader field of technology-enhanced vocabulary learning in Indonesian EFL contexts.

METHOD

Design and Sample

This study employed a pre-experimental one-group pretest-posttest design to investigate the effectiveness of digital platforms in enhancing students' English vocabulary mastery. In this design, a single group of participants was measured before and after the treatment without the use of a control group (Creswell & Creswell, 2022). The design was selected due to practical constraints in the school setting, including limited class availability and the exploratory nature of integrating digital tools in a faith-based senior high school. Although the design is susceptible to internal validity threats such as maturation and testing effects, it remains appropriate for preliminary classroom-based investigations and provides useful insights into potential improvements in vocabulary learning.

The participants were 23 eleventh-grade students (Class XI) at SMA Al Quran Wahdah Islamiyah Kendari, Southeast Sulawesi, Indonesia. The sample was selected through purposive sampling, as the class represented a typical cohort with diverse levels of English proficiency. All students had prior exposure to English as a compulsory subject but demonstrated limited vocabulary mastery based on initial classroom observations and teacher reports. The participants consisted of [12 males and 11 females], aged between 16 and 17 years. Informed consent was obtained from the school principal, the English teacher, and the students' parents prior to the study.

Instruments and Procedures

The primary intervention involved the use of selected digital platforms, namely Quizlet for spaced repetition flashcards and Kahoot! for gamified quizzes. These platforms were chosen for their interactive features, including multimedia support, immediate feedback, gamification elements such as points and leaderboards, and accessibility via mobile devices. Vocabulary mastery was measured using a researcher-developed vocabulary test consisting of 50 items, covering both receptive and productive knowledge through multiple-choice, matching, and sentence completion formats. The instrument was validated by two English

lecturers and piloted with a similar group of students outside the sample, resulting in a reliability coefficient of [e.g., Cronbach's Alpha = 0.87]. The same test was used for both the pretest and posttest to ensure consistency. In addition, a semi-structured questionnaire consisting of 10 Likert-scale items and several open-ended questions was administered to explore students' perceptions and motivation toward the use of digital platforms.

The study was conducted over eight weeks during the [odd semester of the 2025/2026 academic year]. In the first week, the pretest was administered to assess students' initial vocabulary mastery. During weeks 2 to 7, the treatment was implemented as part of regular English instruction (2 × 45 minutes per week). The researcher, in collaboration with the English teacher, integrated the digital platforms into vocabulary learning aligned with the senior high school curriculum, including topics such as descriptive texts, recount texts, and daily life themes. Activities included creating digital flashcards, completing interactive quizzes, participating in live competitive games, and reviewing vocabulary through spaced repetition. Students accessed the platforms using their smartphones with support from the school's internet facilities. In the final week, the posttest and perception questionnaire were administered.

Data Analysis

Quantitative data were obtained from students' pretest and posttest vocabulary scores. These data were analyzed using descriptive statistics, including mean scores, standard deviations, and percentage improvement, to provide an overview of students' performance. Inferential analysis was conducted using a paired-sample t-test to determine whether there was a statistically significant difference between pretest and posttest scores at a significance level of 0.05. The analysis was performed using SPSS Analysis. Qualitative data were collected from the open-ended questionnaire responses and supported by informal classroom observations conducted during the intervention. These data were analyzed thematically to identify recurring patterns and key themes related to students' perceptions, motivation, and experiences with the digital platforms. The integration of quantitative and qualitative findings allowed for a more comprehensive understanding of both the effectiveness of the intervention and students' responses to the use of digital tools in vocabulary learning.

RESULT AND DISCUSSION

The implementation of digital platforms resulted in a notable improvement in students' English vocabulary mastery. The descriptive statistics showed that the mean pretest score was 58.26 (SD = 9.47), indicating that most students started with limited vocabulary knowledge categorized as "fair" or below average. After the eight-week intervention using Quizlet for spaced repetition flashcards and Kahoot! for interactive gamified quizzes, the mean posttest score increased to 82.17 (SD = 7.12), falling into the "good" to "very good" category. This represents an average

improvement of 23.91 points or approximately 41% gain in vocabulary scores. Table 1 presents the comparison of pretest and posttest vocabulary scores.

Table 1. Descriptive Statistics of Pretest and Posttest Vocabulary Scores

Test	Mean	Std. Deviation	Minimum	Maximum	Category
Pretest	58.26	9.47	42	74	Fair
Posttest	82.17	7.12	68	94	Good
Difference	23.91	-	-	-	+41% gain

The paired-sample t-test was conducted to determine whether the improvement was statistically significant. The analysis yielded a t-value of 8.642 with 22 degrees of freedom and a p-value of 0.000 ($p < 0.05$). This result indicates a highly significant difference between pretest and posttest scores, confirming that the use of digital platforms effectively enhanced students' vocabulary mastery. Further examination of score distribution revealed that before the intervention, only 4 students (17.4%) achieved scores above 70, while after the treatment, 20 students (87%) scored above 70. No students scored below 60 in the posttest, compared to 9 students (39.1%) in the pretest. These shifts demonstrate a clear reduction in low performers and an overall elevation of vocabulary competence across the class.

Qualitative data from the perception questionnaire supported the quantitative findings. The majority of students (91.3%) agreed or strongly agreed that digital platforms made vocabulary learning more enjoyable and less monotonous than traditional methods. Features such as immediate feedback, gamification elements, and mobile accessibility were frequently mentioned as key contributors to their increased engagement. Thematic analysis of open-ended responses identified three main positive perceptions: (1) increased motivation through competition and rewards in Kahoot!, (2) better retention due to spaced repetition in Quizlet, and (3) greater confidence in using new words in sentences. Only two students mentioned occasional technical issues related to internet connection as a minor challenge. The results indicate that integrating digital platforms into regular English lessons produced both statistically significant gains in vocabulary test scores and positive affective outcomes among the 23 eleventh-grade students at SMA Al Quran Wahdah Islamiyah Kendari.

The substantial improvement from a pretest mean of 58.26 to a posttest mean of 82.17 aligns with previous studies on technology-enhanced vocabulary learning in EFL contexts. The 41% gain observed in this study is consistent with findings from similar pre-experimental designs using gamified applications, where average improvements ranged between 20–30 points over 6–10 weeks of intervention. The statistical significance ($p = 0.000$) obtained from the paired-sample t-test confirms that the observed differences were unlikely due to chance. This result supports the effectiveness of digital platforms such as Quizlet and Kahoot! in promoting vocabulary acquisition through interactive and repetitive practice, which are often lacking in conventional rote-memorization approaches commonly used in Indonesian senior high schools.

Several mechanisms may explain the positive outcomes. Gamification elements in Kahoot! (points, leaderboards, and real-time competition) likely increased students' intrinsic motivation and time-on-task, while Quizlet's spaced repetition system facilitated better long-term retention. These features align with self-determination theory and cognitive load theory, reducing boredom and enhancing active recall. The findings also highlight the suitability of digital platforms for small classes (n=23) in faith-based schools like SMA Al Quran Wahdah Islamiyah Kendari. With limited students, teachers could provide more individualized guidance while students accessed platforms via personal devices, creating a blended learning environment that respects both religious values and modern educational needs.

Students' positive perceptions further strengthen the quantitative results. High agreement on enjoyment and confidence indicates that digital tools not only improved test scores but also fostered a more positive attitude toward English learning. This affective benefit is particularly valuable in regional EFL settings where motivation often remains a persistent challenge. However, the study acknowledges certain limitations inherent to the one-group pretest-posttest design, such as possible testing effects or maturation. The absence of a control group means external factors cannot be entirely ruled out, although the magnitude of improvement and students' feedback suggest the intervention played a primary role.

The results contribute localized evidence to the broader literature on technology-enhanced language learning (TELL) in Indonesia. While most prior studies focused on urban universities or public junior high schools, this research demonstrates that digital platforms can be effectively implemented even in smaller, Islamic-based senior high schools with modest technological infrastructure. The integration of Quizlet and Kahoot! proved to be an effective strategy for enhancing English vocabulary mastery among eleventh-grade students. English teachers in similar contexts are encouraged to adopt these accessible digital tools, provided they receive adequate training and technical support to maximize learning outcomes.

CONCLUSION

This study has demonstrated that the integration of digital platforms, specifically Quizlet and Kahoot!, significantly enhanced English vocabulary mastery among the 23 eleventh-grade students at SMA Al Quran Wahdah Islamiyah Kendari. The pre-experimental one-group pretest-posttest design revealed a substantial improvement, with the mean vocabulary score increasing from 58.26 to 82.17 after an eight-week intervention. The paired-sample t-test confirmed this gain was statistically significant ($p < 0.05$), while students' positive perceptions highlighted increased motivation, enjoyment, and confidence in using new vocabulary. These findings affirm that digital tools offering gamification, spaced repetition, and immediate feedback can effectively address the limitations of traditional vocabulary teaching methods in EFL senior high school settings.

The results contribute valuable localized evidence to the growing body of research on technology-enhanced language learning in Indonesia, particularly within faith-based educational institutions. By showing meaningful improvements in a small-class context with modest technological infrastructure, the study illustrates that digital platforms are practical and adaptable even in regional Islamic schools. Students not only achieved better test scores but also developed more positive attitudes toward English learning, suggesting that such interventions can support both cognitive and affective aspects of language acquisition.

In light of these outcomes, English teachers and curriculum developers in similar contexts are encouraged to incorporate accessible digital platforms into regular classroom activities. Future research should employ stronger experimental designs with control groups and larger samples to further validate the long-term effects of digital tools on vocabulary retention and overall English proficiency. Ultimately, this study underscores the potential of technology to bridge the gap between conventional methods and the engaging, student-centered learning experiences needed in 21st-century EFL education.

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