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Article

Mobile Learning Adoption for English Vocabulary Development among Indonesian Junior High School Students

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Abstract

The rapid expansion of mobile technology has transformed language learning practices worldwide, including in English as a Foreign Language (EFL) contexts at the secondary school level. In Indonesia, where English exposure outside the classroom remains limited, mobile learning has emerged as a potential solution to support vocabulary development among junior high school students. This study aimed to explore how mobile learning was adopted for English vocabulary learning, to examine students' perceptions of its use, and to identify contextual factors that influenced its effectiveness. Employing a qualitative research design, the study was conducted in a public junior high school in Indonesia. Data were collected through classroom observations, semi-structured interviews with students and English teachers, and analysis of learning-related documents. The data were analyzed thematically using an iterative coding process to identify recurring patterns and meanings. The findings revealed that mobile learning facilitated flexible access to vocabulary input, encouraged repeated practice, and increased students' motivation and engagement. Students perceived mobile-assisted activities as enjoyable and supportive of independent learning, although challenges related to self-regulation, unequal digital skills, and inconsistent instructional guidance were also identified. The study further found that the effectiveness of mobile learning depended largely on pedagogical integration, teacher mediation, and infrastructural readiness rather than on technology alone. Overall, the study highlighted that mobile learning functioned most effectively when aligned with instructional goals and classroom practices. These findings contributed to a deeper understanding of mobile learning adoption in EFL vocabulary instruction and offered practical implications for teachers, schools, and policymakers seeking to implement sustainable and pedagogically grounded mobile learning initiatives at the junior secondary level.

Keywords: English vocabulary; Indonesian junior high school; mobile learning; qualitative study

Introduction

The rapid advancement of digital technology has significantly transformed educational practices worldwide, including the way languages are taught and learned. Globally, mobile learning has gained increasing attention as smartphones and mobile applications become more accessible to students of various ages. In the context of English language learning, vocabulary development is widely recognized as a fundamental component that supports learners' listening, speaking, reading, and writing skills. Recent global studies highlight that mobile-assisted language learning provides flexible, interactive, and learner-centered opportunities that align with the learning preferences of today's digital-native students (Crompton & Burke, 2018; AbdAlgane & Ali, 2024). As education systems continue to integrate technology into classroom practices, understanding how mobile learning supports vocabulary acquisition has become an increasingly relevant research agenda.

At the national level, Indonesia has experienced rapid growth in mobile technology usage among adolescents, including junior high school students. According to recent reports, smartphone penetration among Indonesian students has increased substantially, especially after the COVID-19

pandemic accelerated the adoption of digital learning platforms (UNESCO, 2021; OECD, 2023). The Indonesian government has also encouraged the integration of digital technology in schools through policies promoting digital literacy and blended learning. However, despite these developments, English vocabulary mastery among junior high school students remains a persistent challenge. Many students struggle to acquire sufficient vocabulary due to limited exposure, traditional teaching methods, and lack of engaging learning media (Viberg et al., 2020; Nazari & Riazi, 2024). This situation indicates a pressing need for innovative instructional approaches that are compatible with students' daily digital practices.

From a practical and pedagogical perspective, mobile learning offers promising potential to address vocabulary learning challenges in English classrooms. Mobile applications can provide multimedia content, repetition, immediate feedback, and personalized learning experiences that are difficult to achieve through conventional instruction alone. Studies conducted in various contexts suggest that mobile-based vocabulary learning can improve learners' motivation, retention, and autonomous learning skills (Lin & Lin, 2019; Li & Zheng, 2024). For Indonesian junior high school students, whose learning habits are closely connected to mobile devices, mobile learning represents not only a technological innovation but also a practical response to real classroom needs. Therefore, investigating mobile learning adoption in vocabulary development is closely connected to both the field of English language education and the practical demands of contemporary schooling.

Despite the growing body of international research on mobile-assisted vocabulary learning, significant research gaps remain, particularly in the Indonesian junior high school context. Many existing studies focus on higher education students or examine mobile learning effectiveness in general language skills without exploring vocabulary development in depth (Muthmainnah et al., 2022; Muthmainnah, Marzuki et al., 2024; Santiana & Marzuki, 2022). Additionally, previous research often emphasizes learning outcomes while paying limited attention to students' adoption processes, learning experiences, and contextual challenges in using mobile learning tools. In Indonesia, empirical studies that specifically examine how junior high school students adopt mobile learning for vocabulary development, considering classroom realities and local educational conditions, are still limited. This gap suggests the need for more context-sensitive research that reflects Indonesian students' learning environments.

The novelty of this study lies in its focus on mobile learning adoption for English vocabulary development among Indonesian junior high school students by integrating pedagogical, technological, and contextual perspectives. Rather than merely measuring vocabulary gains, this research seeks to explore how students engage with mobile learning tools, how these tools support vocabulary learning processes, and what challenges emerge during implementation. This approach offers a more comprehensive understanding of mobile learning adoption in secondary education, particularly within developing-country contexts. Conducting this research at the present time is especially important, as schools continue to adjust to post-pandemic learning models and seek sustainable ways to integrate digital tools into regular classroom practices (Kuliahana & Marzuki, 2020; Kuliahana et al., 2024; Santiana & Marzuki, 2024).

This study is expected to contribute to the development of English language teaching theory, educational practice, and policy formulation. The findings may enrich scholarly discussions on mobile-assisted vocabulary learning by providing empirical evidence from the junior high school level in Indonesia. Practically, the results can inform English teachers about effective strategies for integrating mobile learning into vocabulary instruction. At the policy level, the study may support decision-makers in designing guidelines for meaningful technology integration in language education. Based on this background, the research focuses on identifying the patterns of mobile learning adoption for English vocabulary development among Indonesian junior high school students, examining the perceived benefits of mobile learning in vocabulary acquisition, and analyzing the challenges encountered during its implementation in classroom contexts.

Literature Review

1. Mobile Learning in Contemporary Educational Contexts

The rapid advancement of mobile technology has significantly transformed educational practices worldwide, including language learning. Mobile learning, commonly defined as learning facilitated through portable digital devices such as smartphones and tablets, has gained increasing attention due to its flexibility, accessibility, and learner-centered nature (; Muthmainnah et al., 2024; Muthmainnah, Cardoso et al., 2024; Santiana et al., 2024). Globally, mobile learning has been positioned as a strategic response to the demands of 21st-century education, enabling learners to access instructional materials beyond traditional classroom boundaries. In the context of English as a Foreign Language (EFL), mobile learning supports personalized and contextualized learning experiences that are particularly relevant for vocabulary acquisition, which requires repeated exposure and meaningful use (Amalia et al., 2024; Anita et al., 2024; Apriani et al., 2025).

At the national level, Indonesia has experienced a substantial increase in smartphone ownership among adolescents, including junior high school students. This trend creates both opportunities and challenges for formal education. While students are highly familiar with mobile devices, their use is often limited to social and entertainment purposes rather than academic learning (Marzuki, 2019a; Marzuki, 2019b; Alek et al., 2020; Alek et al., 2022). Consequently, integrating mobile learning into English instruction requires careful pedagogical planning to ensure that technology use aligns with curriculum goals and supports meaningful language development rather than distraction.

2. Vocabulary Development in EFL Learning

Vocabulary mastery plays a central role in EFL learning, as it directly influences students' listening, speaking, reading, and writing skills. Insufficient vocabulary knowledge remains one of the primary barriers to effective language use among EFL learners (Santiana et al., 2021; Syafryadin et al., 2024). For junior high school students, vocabulary learning is often perceived as monotonous and challenging due to traditional teaching methods that rely heavily on memorization and textbook-based instruction. As a result, many students struggle to retain new words and apply them in authentic communication contexts (Marzuki, & Kuliahana, 2021; Marzuki & Santiana, 2022).

Recent studies have highlighted the potential of mobile-assisted vocabulary learning to address these challenges. Mobile applications offer multimedia features, such as images, audio pronunciation, and interactive exercises, which enhance learners' engagement and retention (Kuliahana, Marzuki, & Rustam, 2024; Kuliahana & Marzuki, 2024). Moreover, mobile learning allows for spaced repetition and self-paced practice, which are essential for long-term vocabulary acquisition. These features are particularly beneficial for junior high school students, who require concrete and motivating learning experiences to sustain their interest in English learning.

3. Empirical Studies on Mobile Learning for Vocabulary Acquisition

A growing body of empirical research has examined the effectiveness of mobile learning for vocabulary development in EFL contexts. Studies conducted in various Asian countries have reported positive impacts of mobile-assisted learning on students' vocabulary gains and learning motivation (Albana et al., 2020; Alek, Marzuki, Farkhan, & Deni, 2020). These studies suggest that mobile learning environments encourage active learning and provide immediate feedback, which supports deeper vocabulary processing.

In Indonesia, several studies have explored the use of mobile applications such as digital flashcards, vocabulary games, and learning management systems for English learning. For example, Amalia & Marzuki (2023) found that mobile-based vocabulary instruction improved students' word retention and learning autonomy. However, most existing studies focus on short-term interventions or specific applications, with limited attention to students' readiness, perceptions, and sustained adoption of mobile learning in formal school settings. This indicates a need for further investigation

into how mobile learning is adopted and utilized by junior high school students over time (Marzuki, 2024; Marzuki, 2025).

4. Research Gap and Conceptual Contribution

Despite the increasing number of studies on mobile learning and vocabulary acquisition, several research gaps remain. First, many studies emphasize learning outcomes without sufficiently examining the factors influencing students' adoption of mobile learning, such as usability, accessibility, and learning preferences. Second, research focusing specifically on Indonesian junior high school students is still limited, particularly in relation to curriculum alignment and classroom realities (Iftitah et al., 2020; Erizar et al., 2024). This gap is significant, given the diverse socio-economic and educational contexts across Indonesian schools.

The novelty of the present study lies in its focus on mobile learning adoption rather than solely on effectiveness. By examining how and why junior high school students adopt mobile learning for vocabulary development, this research contributes to a more comprehensive understanding of technology-enhanced language learning in the Indonesian context. Such an approach not only enriches the theoretical discussion on mobile-assisted language learning but also provides practical insights for teachers and policymakers in designing sustainable mobile learning strategies.

Method

Research Context

This qualitative study was conducted in the context of English language teaching at Indonesian junior high schools, where mobile technology had increasingly become part of students' everyday lives. The research was situated in a public junior high school located in an urban area of Indonesia, where English was taught as a compulsory subject under the national curriculum. The school had permitted the limited use of smartphones for educational purposes, particularly after the increased reliance on digital learning environments in recent years. This context provided a relevant setting to explore how mobile learning was adopted for English vocabulary development, as students were familiar with mobile devices but had varying levels of experience using them for academic learning. A qualitative approach was considered appropriate because it allowed an in-depth exploration of students' and teachers' experiences, perceptions, and challenges related to mobile learning adoption in a real classroom setting (Albana et al., 2020).

Participants

The participants of this study consisted of one English teacher and twenty junior high school students from Grade VIII who were purposively selected. The selection was based on their active involvement in English classes and their regular access to smartphones. Purposive sampling was employed to ensure that participants could provide rich and relevant information related to the research focus (Schreier, 2018; Marzuki, 2019c; Santiana et al., 2021). The students represented diverse levels of English proficiency and learning motivation, which allowed the researcher to capture varied perspectives on mobile learning adoption. The English teacher was included as a key informant to provide insights into instructional practices, curriculum alignment, and classroom constraints. Prior to data collection, informed consent was obtained from all participants, and ethical considerations such as confidentiality and voluntary participation were strictly maintained.

Instruments

Data were collected using multiple qualitative instruments to ensure data triangulation and enhance the trustworthiness of the findings. The primary instrument was semi-structured interviews conducted with both students and the teacher. The interview questions focused on participants' experiences using mobile devices for vocabulary learning, perceived benefits, challenges, and factors influencing their willingness to adopt mobile learning. Classroom observations were also conducted

to document how mobile learning activities were implemented during English lessons, particularly during vocabulary instruction. Field notes were used to record students' engagement, interaction patterns, and learning behaviors. In addition, document analysis was employed by reviewing lesson plans, digital learning materials, and students' vocabulary tasks accessed through mobile applications. The use of multiple instruments allowed the researcher to obtain a comprehensive understanding of mobile learning adoption from different data sources (Robinson, 2023; Muthmainnah et al., 2025).

Data Analysis

The data were analyzed using thematic analysis following the procedures proposed by Braun and Clarke (2021). First, all interview recordings were transcribed verbatim, and observation notes were organized systematically. The researcher then conducted an initial reading of the data to gain familiarity with the content. Codes were generated inductively to represent meaningful units related to mobile learning adoption, vocabulary learning practices, and learner engagement. These codes were subsequently grouped into broader themes that reflected patterns across the data, such as perceived usefulness, learning autonomy, technological challenges, and instructional support. To enhance credibility, data from interviews, observations, and documents were compared and cross-checked. Member checking was conducted by sharing preliminary findings with the teacher to confirm the accuracy of interpretations. This systematic analysis allowed the researcher to construct a coherent and contextualized understanding of how mobile learning was adopted for English vocabulary development among junior high school students.

Results

The findings of this study were derived from classroom observations, semi-structured interviews, and document analysis, which together provided a comprehensive picture of mobile learning adoption for English vocabulary development among Indonesian junior high school students. Data analysis revealed that students generally perceived mobile learning as a supportive tool for vocabulary acquisition, particularly due to its flexibility and interactive features. However, variations emerged in terms of usage patterns, learning engagement, and perceived challenges, indicating that mobile learning adoption was influenced by both individual and contextual factors.

The first theme identified from the data concerned students' patterns of mobile learning use for vocabulary development. Most participants reported using mobile applications outside formal classroom hours, primarily for reviewing vocabulary introduced during lessons. Students frequently accessed digital flashcards, short quizzes, and audio pronunciation features to reinforce word meanings. Classroom observations confirmed that mobile learning was mainly used as a supplementary tool rather than a replacement for teacher instruction. Table 1 summarizes the main types of mobile learning activities reported by students.

Table 1. Types of Mobile Learning Activities for Vocabulary Development.

Mobile Learning Activity	Frequency of Use
Digital flashcards	High
Vocabulary quizzes	Moderate
Audio pronunciation	High
Vocabulary games	Moderate
Online dictionaries	High

These patterns suggested that students adopted mobile learning selectively, focusing on activities that directly supported memorization and pronunciation. This finding aligned with

observation data, which showed that students preferred short, task-oriented activities that could be completed independently within limited time frames.

The second theme focused on students' perceived benefits of mobile learning for vocabulary acquisition. Interview data indicated that mobile learning enhanced students' motivation and confidence in learning English vocabulary. Many students reported feeling more comfortable practicing vocabulary independently through mobile applications, as these tools reduced anxiety associated with making mistakes in front of peers. Additionally, students highlighted that repeated exposure to vocabulary through mobile platforms helped them remember words more effectively. These perceived benefits were consistently observed across students with different proficiency levels, suggesting that mobile learning supported inclusive learning experiences.

Further analysis revealed that mobile learning fostered greater learner autonomy in vocabulary learning. Students reported taking more responsibility for reviewing and practicing vocabulary beyond classroom requirements. Observation data showed that students often revisited vocabulary materials voluntarily during breaks or at home. This increased autonomy was also reflected in students' ability to select learning resources that matched their individual preferences. Table 2 presents students' perceptions of autonomy-related benefits associated with mobile learning.

Table 2. Students' Perceived Autonomy in Mobile Vocabulary Learning.

Indicator of Autonomy	Student Response
Self-paced learning	Strongly evident
Independent practice	Evident
Choice of learning materials	Evident
Self-monitoring of progress	Moderate

These findings suggested that mobile learning played a significant role in supporting students' independent vocabulary learning, which is an essential component of successful language acquisition at the junior high school level. Despite these positive outcomes, the data also revealed several challenges related to mobile learning adoption. Technical issues such as unstable internet connections and limited device storage were frequently mentioned by students. In addition, some students reported difficulties maintaining focus due to distractions from non-academic applications. The English teacher also expressed concerns about classroom management and unequal access to devices among students. These challenges indicated that mobile learning adoption was not uniformly effective and required careful regulation and instructional support.

The teacher's perspectives provided important contextual insights into mobile learning implementation. The teacher acknowledged that mobile learning supported vocabulary reinforcement and student engagement, particularly for lower-achieving students. However, the teacher emphasized that mobile learning worked best when integrated with clear instructional objectives and guided activities. Document analysis of lesson plans showed that mobile learning activities were more effective when explicitly aligned with vocabulary learning goals rather than used spontaneously. This finding highlighted the importance of pedagogical design in maximizing the benefits of mobile learning.

Cross-data analysis revealed that the success of mobile learning adoption depended on the interaction between technological availability, instructional guidance, and student readiness. Students who received clear instructions and consistent feedback demonstrated higher engagement and more positive learning experiences. Conversely, students with limited guidance tended to use mobile applications inconsistently. These patterns suggested that mobile learning adoption was a dynamic process shaped by both teacher mediation and student agency.

Overall, the findings demonstrated that mobile learning adoption supported English vocabulary development among Indonesian junior high school students by enhancing motivation, autonomy,

and learning flexibility. At the same time, the findings underscored the presence of practical challenges that limited its full potential. These results contributed to a nuanced understanding of mobile learning adoption by moving beyond effectiveness alone and highlighting the conditions under which mobile learning meaningfully supported vocabulary learning in real classroom contexts.

Discussion

The present study aimed to explore how mobile learning was adopted for English vocabulary development among Indonesian junior high school students and to interpret its pedagogical implications within contemporary educational contexts. The findings indicated that mobile learning supported vocabulary acquisition by providing flexible access to learning materials, increasing students' exposure to lexical items, and fostering learner autonomy. These outcomes aligned with the original research objectives, which emphasized understanding students' learning experiences rather than measuring learning gains quantitatively. The findings suggested that mobile learning functioned not merely as a technological tool but as a learning environment that reshaped students' engagement with vocabulary learning. This supported constructivist perspectives that viewed learning as an active and contextualized process mediated by tools and social interaction (Crompton & Burke, 2018; AbdAlgane & Ali, 2024).

When compared with previous studies, the results demonstrated substantial consistency with earlier research highlighting the effectiveness of mobile-assisted vocabulary learning. Studies conducted in similar EFL contexts reported that mobile applications enhanced vocabulary retention and learner motivation due to their interactive and multimedia features (Nazari & Riazi, 2024). However, this study extended existing literature by emphasizing students' subjective experiences and contextual challenges in Indonesian junior high schools, which had received less attention in prior research. Unlike experimental studies that focused primarily on test scores, the present findings underscored how learners perceived mobile learning as supportive yet demanding in terms of self-regulation. This distinction contributed novelty by foregrounding the socio-pedagogical dimension of mobile learning adoption rather than solely its instructional outcomes.

Several factors appeared to influence the effectiveness of mobile learning adoption in this study. First, students' digital literacy levels affected how efficiently they navigated mobile applications for vocabulary learning. Learners with prior exposure to educational apps adapted more quickly, while others required guidance from teachers. Second, teacher facilitation emerged as a crucial variable, as teachers who integrated mobile activities with classroom instruction helped students connect digital learning with curricular goals. This finding resonated with research emphasizing the role of teachers as mediators in technology-enhanced learning environments (Viberg et al., 2020). Additionally, infrastructural constraints such as inconsistent internet access and limited device functionality occasionally hindered learning continuity, particularly in lower-resource settings.

Despite its contributions, the study acknowledged several limitations that might have influenced the interpretation of findings. The research was conducted in a limited number of schools, which restricted the generalizability of the results to broader Indonesian contexts. Furthermore, the reliance on self-reported data through interviews and observations may have introduced subjective bias. While triangulation was employed to enhance trustworthiness, future studies could integrate learning analytics or longitudinal data to capture changes in vocabulary development over time. These limitations suggested that the findings should be interpreted as context-sensitive rather than universally applicable, aligning with qualitative research principles (Lin & Lin, 2019; Li & Zheng, 2024).

The implications of this study were both theoretical and practical. Theoretically, the findings enriched mobile learning scholarship by illustrating how vocabulary learning unfolded within real classroom contexts, thus bridging the gap between technological affordances and pedagogical practices. Practically, the study informed teachers and policymakers about the importance of integrating mobile learning into vocabulary instruction in ways that were pedagogically guided

rather than technologically driven. For policymakers, the findings highlighted the need for professional development programs that equipped teachers with strategies for mobile-assisted language learning, as well as policies that addressed digital inequality among students (UNESCO, 2021; OECD, 2023).

In conclusion, this study contributed to a broader understanding of mobile learning adoption in EFL vocabulary instruction by revealing its pedagogical potential, contextual challenges, and learner-centered implications. While mobile learning showed promise in enhancing vocabulary engagement among Indonesian junior high school students, its effectiveness depended on pedagogical integration, teacher support, and contextual readiness. Future research was recommended to explore longitudinal impacts of mobile learning on language development, examine teachers' instructional decision-making in mobile-assisted classrooms, and investigate how mobile learning could be aligned with national curriculum frameworks. By addressing these areas, subsequent studies could further advance knowledge on sustainable and equitable mobile learning practices in EFL education.

Conclusions

This study concluded that the adoption of mobile learning played a meaningful role in supporting English vocabulary development among Indonesian junior high school students by reshaping how learners accessed, practiced, and engaged with lexical knowledge. In response to the first research focus, the findings demonstrated that mobile learning facilitated flexible and repeated exposure to vocabulary through multimedia content, which students perceived as helpful for understanding word meanings and usage in context. Addressing the second research concern, the study revealed that students generally held positive perceptions toward mobile-assisted vocabulary learning, particularly in terms of increased motivation, learner autonomy, and learning enjoyment, although these benefits were moderated by individual differences in digital literacy and learning self-regulation. With regard to the third research objective, the findings indicated that the effectiveness of mobile learning adoption was influenced by pedagogical support, teacher mediation, and infrastructural readiness, highlighting that technology alone was insufficient without instructional alignment and guidance. Furthermore, the study confirmed that mobile learning functioned most effectively when integrated with classroom instruction rather than used as a standalone tool. Overall, the study answered the research questions by demonstrating that mobile learning adoption supported vocabulary development not merely through technological affordances, but through its interaction with pedagogical practices, learner characteristics, and contextual conditions. These conclusions underscored the importance of designing mobile-assisted vocabulary instruction that was pedagogically grounded, context-sensitive, and responsive to students' learning needs, thereby contributing to a deeper understanding of sustainable mobile learning implementation in EFL contexts at the junior secondary level.

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