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THE EFFECTIVENESS OF MOBILE-ASSISTED LANGUAGE LEARNING IN IMPROVING VOCABULARY AND SPEAKING SKILLS OF JUNIOR HIGH SCHOOL STUDENTS OF SMP AS-SYAKUR SAMPANG

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Abstract: Mobile-Assisted Language Learning (MALL) has shown promise in English language education, yet empirical evidence from rural junior high school contexts remains limited, particularly regarding integrated vocabulary and speaking instruction. This quasi-experimental study investigated the effectiveness of MALL in improving vocabulary and speaking skills among eighth-grade students at SMP AS-Syakur Sampang, Indonesia. Fifty students were divided into experimental (n=25) and control (n=25) groups. The experimental group received six weeks of MALL instruction using WhatsApp, Quizizz, Duolingo, YouTube, and Google Translate, while the control group received conventional instruction. Pre-test and post-test scores were analyzed using independent-sample t-tests. The experimental group significantly outperformed the control group in vocabulary achievement (post-test means: 84.3 vs 71.2; $p<0.001$) and speaking skills (82.6 vs 70.5; $p<0.002$). Effect sizes were large (vocabulary $d=1.24$; speaking $d=1.18$). Questionnaire results showed high student motivation (4.32) and engagement (4.25). Observations revealed increased student participation and confidence in speaking activities. MALL effectively improves vocabulary mastery and speaking skills in rural junior high school EFL contexts. Mobile applications provide repeated practice, multimodal exposure, collaborative interaction, and flexible learning opportunities that are less available in conventional instruction. Future research should employ longitudinal designs, larger samples, and comparative analyses of specific AI-assisted mobile platforms to further understand technology-mediated language learning effectiveness.
Keywords: *Mobile-Assisted Language Learning; vocabulary mastery; speaking skills; junior high school; quasi-experimental study*

INTRODUCTION

The rapid expansion of digital technology has fundamentally reshaped contemporary educational practices, particularly in English Language Teaching (ELT), where mobile technologies increasingly mediate learning experiences inside and outside classrooms. Rather than functioning merely as supplementary tools, mobile devices have become integral pedagogical instruments that facilitate flexible, personalized, and interactive language learning environments. The emergence of Mobile-Assisted Language Learning (MALL) reflects a broader shift from teacher-centered instruction toward learner-centered and technology-mediated pedagogies that emphasize autonomy, collaboration, and continuous access to learning resources (Guillén & Sawin, 2025; Gurcan, 2025). The growing integration of artificial intelligence, gamification, multimodal interaction, and collaborative digital platforms into language education further demonstrates how technology has transformed language learning from static classroom activities into dynamic and socially mediated experiences (Tafazoli, 2024; Horst et al., 2025; Muthmainnah, 2026). Moreover, recent meta-analytic evidence confirms that technology-assisted language learning positively influences learners' engagement, motivation, and language achievement across diverse educational contexts (Yi et al., 2025). However, despite the growing optimism surrounding MALL implementation,

debates remain regarding how mobile learning environments actually support meaningful language development among younger EFL learners in low-resource educational settings.

Previous studies have consistently demonstrated that MALL positively contributes to vocabulary acquisition by increasing learners' exposure to repeated lexical input, interactive learning activities, and authentic language materials. Digital vocabulary learning environments allow students to engage with multimedia resources such as flashcards, games, quizzes, and contextualized language tasks that strengthen vocabulary retention and lexical recognition (Lai et al., 2025; Jedi-Sari-Biglar & Liman-Kaban, 2023). Abu Al-majd and Belton (2024) further revealed that technology-assisted vocabulary learning enhanced not only academic achievement but also learners' creativity and academic buoyancy, suggesting that digital learning environments may influence cognitive and affective dimensions simultaneously. Similarly, Çoban Sural and Yaşar Sağlık (2024) found that technology-assisted vocabulary activities increased students' motivation because multimedia-supported instruction created more engaging learning experiences than conventional printed materials. Nevertheless, these studies predominantly conceptualize vocabulary learning as an individual cognitive process while paying limited attention to how mobile technologies mediate communicative vocabulary use in authentic speaking interaction.

Research on mobile-assisted vocabulary learning has also increasingly emphasized the importance of learner autonomy and self-regulated learning in digital environments. Al-Abri et al. (2025) demonstrated that learning-oriented assessment integrated into MALL environments improved learners' lexical fluency by encouraging continuous reflection and self-monitoring during vocabulary practice. Likewise, Xodabande et al. (2025) found that mobile-based digital flashcards significantly enhanced long-term vocabulary retention because learners could repeatedly access learning materials according to their individual pace and preferences. Song and Xiong (2026) further argued that dedicated language learning applications produced stronger vocabulary gains than social-media-based learning because structured mobile platforms provided more focused instructional scaffolding. However, Dang (2025) warned that excessive dependence on AI-assisted learning tools may potentially weaken learners' independent cognitive engagement if technology becomes overly dominant in the learning process. This indicates that although MALL supports autonomous learning, questions remain regarding the balance between technological assistance and genuine learner agency in vocabulary development.

In addition to vocabulary mastery, speaking skills have become a major focus in contemporary MALL research because oral communication requires learners to integrate vocabulary knowledge, pronunciation, fluency, confidence, and interactional competence simultaneously. Benlaghrissi and Ouahidi (2024) found that mobile-assisted project-based learning significantly improved students' speaking performance by encouraging authentic communication and collaborative language use. Similarly, Bao et al. (2025) reported that automatic speech recognition dialogue platforms enhanced learners' oral fluency and pronunciation accuracy through real-time interaction and immediate corrective feedback. AI-powered mobile applications have also been shown to support speaking development by providing individualized speaking practice opportunities beyond classroom settings (Mingyan et al., 2025; Zhou et al., 2025). Furthermore, Wang et al. (2025) demonstrated that chatbot-assisted language learning improved phonetic accuracy because learners received continuous pronunciation feedback during speaking practice. These findings suggest that mobile technologies may create more communicative and learner-responsive speaking environments than conventional classroom instruction.

Despite these positive findings, several scholars argue that the effectiveness of mobile-assisted speaking instruction cannot be separated from learners' emotional and psychological conditions. Almasifar and Heidari (2024) reported that computer-assisted pronunciation training reduced speaking anxiety while simultaneously improving learners' suprasegmental pronunciation features. Likewise, Lan (2024) revealed that technology-mediated oral learning environments supported students' emotional engagement and reduced communication apprehension during speaking activities. Zhao et al. (2026) similarly found that learners perceived mobile-assisted oral practice as less threatening than traditional face-to-face classroom interaction because students could rehearse speaking tasks privately before public performance. However, Li and Chan (2024) cautioned that exam-oriented

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mobile learning applications may unintentionally encourage performance-oriented learning behaviors rather than authentic communicative competence. These contrasting findings indicate that mobile learning environments may simultaneously empower and constrain speaking development depending on how technology is pedagogically implemented.

Recent developments in MALL research have increasingly shifted from individual learning perspectives toward collaborative and socially mediated learning approaches. Guo et al. (2024) emphasized that collaborative MALL practices promote interaction, peer support, and communicative participation through mobile-based communication platforms. Similarly, Ilic (2025) argued that mobile-enabled collaborative learning environments facilitate meaningful language negotiation and social construction of knowledge among learners. Çakmak et al. (2023) further demonstrated that Telegram-assisted language learning strengthened students' academic resilience, self-assessment skills, and learning motivation through collaborative digital interaction. Huang et al. (2024) also found that mobile-assisted English learning beyond classroom settings enhanced students' behavioral engagement because learners could participate in language activities more flexibly and continuously. These studies collectively reflect sociocultural perspectives suggesting that language learning in digital environments is not merely cognitive but also socially constructed through interaction and collaboration.

The rapid evolution of educational technology has additionally introduced more immersive and intelligent forms of MALL through artificial intelligence, virtual reality, augmented reality, and multimodal systems. Tafazoli (2024) explained that extended reality technologies create situated and immersive language learning experiences that support authentic communication practices. Yan et al. (2024) similarly demonstrated that VR-enhanced learning environments significantly improved learners' speaking interaction and communicative confidence through contextualized oral practice. Horst et al. (2025) further proposed the integration of large language models into gamified MALL applications to create adaptive and location-aware learning experiences. Meanwhile, Wang et al. (2025) and Zhou et al. (2025) highlighted the increasing role of AI chatbots in facilitating personalized oral interaction and immediate feedback. Although these technological innovations indicate the expanding pedagogical potential of MALL, most existing studies have focused on technologically advanced educational settings where students possess relatively high digital literacy and stable technological access.

Research conducted in broader educational contexts also suggests that the effectiveness of technology-assisted language learning is strongly influenced by contextual and pedagogical factors rather than technology alone. Zhang and Zhang (2025) argued that technology integration becomes pedagogically meaningful only when digital tools are aligned with communicative learning objectives and learner needs. Similarly, Yang et al. (2025) found that technology-supported project-based learning improved students' motivation and academic performance in rural schools because collaborative learning activities created more meaningful engagement. Solmaz (2025) and Kazu and Kuvvetli (2026) also emphasized that digital language learning applications positively influenced students' multidimensional language skills, including listening, speaking, reading, and writing. Nevertheless, Morady Moghaddam et al. (2025) noted that MALL research remains dominated by university-level and urban educational contexts, while younger learners and underrepresented rural settings continue to receive relatively limited scholarly attention. Consequently, the pedagogical effectiveness of MALL among junior high school learners in rural EFL environments remains insufficiently explored.

Although previous studies have extensively investigated MALL in vocabulary and speaking instruction, several important gaps remain unresolved. First, many existing studies examine vocabulary and speaking skills separately, despite the fact that vocabulary knowledge and oral communication competence are pedagogically interconnected. Second, previous MALL research predominantly focuses on higher education students or technologically advanced contexts, while junior high school learners in rural educational environments remain underrepresented in current scholarship (Morady Moghaddam et al., 2025). Third, many studies emphasize technological effectiveness without sufficiently examining how collaborative interaction, learner autonomy, and communicative engagement operate simultaneously within mobile learning environments. Finally, despite increasing enthusiasm toward AI-driven and mobile-assisted language learning, uncertainty remains regarding whether such technologies genuinely support

communicative competence development or merely increase dependence on digital assistance (Dang, 2025). Therefore, this study seeks to address the following research question: To what extent does Mobile-Assisted Language Learning effectively improve vocabulary and speaking skills among junior high school students at SMP AS-Syakur Sampang?

Unlike many previous studies that primarily investigate isolated language skills or technologically privileged educational settings, this research conceptualizes vocabulary and speaking competence as interconnected dimensions of communicative language proficiency. Furthermore, the study positions MALL not merely as a technological tool but as a sociocognitive and communicative learning environment that potentially shapes learner interaction, confidence, autonomy, and oral language performance simultaneously. By investigating MALL implementation in a low-resource EFL context, this study also contributes empirical insights into how mobile learning technologies function in educational environments characterized by limited English exposure and restricted classroom interaction opportunities.

This study is expected to contribute theoretically and practically to the growing body of scholarship on technology-assisted language learning. Theoretically, the findings may enrich current discussions regarding the pedagogical mechanisms through which mobile learning environments facilitate vocabulary development and speaking performance among younger EFL learners. Practically, the study may provide English teachers with evidence-based insights into how mobile technologies can be integrated into communicative and student-centered classroom practices more effectively. In addition, the findings may assist educational institutions and policymakers in designing more inclusive and context-sensitive digital learning strategies for rural schools where students often experience limited access to authentic English communication. Ultimately, this study seeks to contribute to a more critical and contextually grounded understanding of Mobile-Assisted Language Learning within contemporary EFL education.

METHOD

This study employed a quasi-experimental pre-test–post-test control group design to investigate the effectiveness of Mobile-Assisted Language Learning (MALL) in improving students' vocabulary and speaking skills. A quasi-experimental approach was selected because random assignment was not feasible due to the existing classroom structure at SMP AS-Syakur Sampang. Two intact classes were assigned as the experimental and control groups. Both groups completed pre-tests prior to the treatment and post-tests after the intervention period. The experimental group received MALL-based instruction integrating mobile applications into vocabulary and speaking activities, whereas the control group was taught through conventional teacher-centered instruction without mobile technology integration. The design enabled comparison of students' language performance before and after the treatment while controlling for instructional duration and learning materials.

The participants consisted of 50 eighth-grade students of SMP AS-Syakur Sampang in the 2025/2026 academic year. The students were divided into an experimental group (n = 25) and a control group (n = 25). Purposive sampling was employed to select classes with relatively similar English proficiency levels based on previous English scores and teacher recommendations. Eighth-grade students were selected because they were familiar with smartphone usage and had acquired basic English knowledge from prior instruction. During the intervention, the experimental group used mobile applications such as WhatsApp, Quizizz, Duolingo, YouTube, and Google Translate to support vocabulary learning and speaking practice, while the control group learned through textbook-based and teacher-led instruction. Ethical approval and research permission were obtained from the school administration, English teacher, and participants prior to data collection.

Data were collected using vocabulary tests, speaking performance tests, observation checklists, and questionnaires. The vocabulary tests consisted of multiple-choice, matching, and sentence-completion items designed to measure students' vocabulary mastery, including meaning recognition, word usage, spelling, and synonyms. The speaking tests required students to perform oral tasks such as self-introductions, dialogues, and short presentations, which were assessed using criteria including pronunciation, fluency, grammar, vocabulary use, and comprehension.

An observation checklist was used during classroom activities to examine students' participation, interaction, confidence, and engagement throughout the learning process. In addition, a Likert-scale questionnaire was

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administered to the experimental group after the treatment to explore students' perceptions of MALL implementation, including motivation, confidence, learning flexibility, and technology acceptance. All instruments were adapted to the students' proficiency level and validated by the English teacher to ensure content appropriateness and clarity.

The study was conducted in five stages: preparation, pre-testing, treatment, post-testing, and data analysis. During the preparation stage, the researcher developed lesson plans, instructional materials, research instruments, and mobile learning activities. Both groups were then administered vocabulary and speaking pre-tests to identify their initial proficiency levels.

The treatment was conducted over six weeks. The experimental group participated in MALL-based learning activities using mobile applications for vocabulary exercises, online quizzes, pronunciation practice, speaking tasks, voice recordings, and collaborative discussions. Learning materials and feedback were delivered through digital platforms to encourage autonomous and interactive learning. In contrast, the control group received conventional instruction through textbooks, worksheets, teacher explanations, and classroom exercises without mobile technology integration. Classroom observations were conducted throughout the intervention to monitor students' engagement and participation. At the end of the treatment period, both groups completed post-tests, and the experimental group responded to the perception questionnaire.

The data were analyzed using descriptive and inferential statistics. Descriptive statistics, including mean scores, standard deviations, highest scores, and lowest scores, were used to summarize students' pre-test and post-test performance. To examine whether significant differences existed between the experimental and control groups, an independent sample t-test was employed with a significance level of 0.05. Questionnaire responses were analyzed descriptively using percentages and frequency distributions to identify students' perceptions toward MALL implementation. Observation data were analyzed qualitatively to complement the quantitative findings and provide additional insights into students' classroom engagement, interaction, and participation during the intervention.

RESULTS AND DISCUSSION

The findings of this study were obtained from the analysis of students' vocabulary and speaking test scores conducted before and after the implementation of Mobile-Assisted Language Learning (MALL). The data analysis aimed to determine whether the use of mobile learning applications significantly improved students' vocabulary mastery and speaking skills compared to conventional teaching methods. The findings were based on the results of pre-tests, post-tests, classroom observations, and questionnaires distributed to students in the experimental group.

Before the treatment was conducted, both the experimental group and the control group showed relatively similar English proficiency levels. The pre-test results indicated that students in both groups still had difficulties in mastering vocabulary and speaking fluently. Most students lacked confidence in speaking English and had limited vocabulary knowledge, which affected their ability to communicate effectively. However, after six weeks of treatment, students in the experimental group demonstrated considerable improvement in both vocabulary achievement and speaking performance.

The experimental group, which received instruction through Mobile-Assisted Language Learning, showed higher improvement compared to the control group. Students became more active, confident, and motivated during English learning activities. They participated enthusiastically in vocabulary games, online quizzes, speaking practices, and collaborative discussions using mobile applications such as WhatsApp, Quizizz, Duolingo, and YouTube. In contrast, students in the control group showed improvement as well, but the increase was not as significant as that of the experimental group.

Table 1. *Vocabulary test scores*

Group	Pre-Test Mean Score	Post-Test Mean Score	Improvement
Experimental Group	62.5	84.3	21.8
Control Group	61.8	71.2	9.4

Based on Table 1, the mean score of vocabulary achievement in the experimental group increased significantly from 62.5 in the pre-test to 84.3 in the post-test. This indicates an improvement of 21.8 points after the implementation of MALL. Meanwhile, the control

group improved from 61.8 to 71.2, showing an improvement of only 9.4 points. These findings suggest that students who learned vocabulary through mobile-assisted learning applications achieved better results than those who learned through conventional teaching methods.

The improvement in vocabulary achievement among students in the experimental group was influenced by the interactive and engaging learning activities provided by mobile applications. Students could practice vocabulary repeatedly through quizzes, flashcards, videos, games, and online exercises. In addition, the availability of multimedia features such as images, audio, and pronunciation support helped students understand vocabulary meanings and usage more effectively. The flexibility of mobile learning also enabled students to study independently outside classroom hours, which increased their exposure to English vocabulary.

Table 2 *Speaking test scores*

Group	Pre-Test Mean Score	Post-Test Mean Score	Improvement
Experimental Group	60.4	82.6	22.2
Control Group	60.1	70.5	10.4

Table 4.2 shows that the speaking skill scores of students in the experimental group improved significantly after the treatment. The mean score increased from 60.4 in the pre-test to 82.6 in the post-test, indicating an improvement of 22.2 points. On the other hand, the control group only improved from 60.1 to 70.5 with an increase of 10.4 points. These findings indicate that Mobile-Assisted Language Learning effectively improved students' speaking performance.

Students in the experimental group became more confident, fluent, and active during speaking activities. Through mobile applications, students practiced speaking using voice recordings, video conversations, pronunciation exercises, and online discussions. They had opportunities to repeat speaking practices several times until they felt confident with their pronunciation and fluency. Furthermore, collaborative speaking activities conducted through WhatsApp groups and online discussions helped students reduce speaking anxiety and encouraged them to communicate more actively in English.

The statistical analysis using an independent sample t-test also showed significant differences between the experimental and control groups. The significance value obtained from the post-test analysis was $p < 0.05$, indicating that the implementation of Mobile-Assisted Language Learning had a statistically significant effect on students' vocabulary mastery and speaking skills. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted.

Table 3. *T-test analysis results*

Variable	Sig. Value	Significance Level	Result
Vocabulary Achievement	0.001	0.05	Significant
Speaking Skills	0.002	0.05	Significant

The questionnaire results also revealed positive responses from students regarding the use of MALL in English learning. Most students agreed that mobile learning applications made English learning more interesting, interactive, flexible, and enjoyable. Students stated that they were more motivated to learn English because they could access learning materials easily through their smartphones. They also felt more confident in speaking English because mobile applications provided opportunities for repeated practice and collaborative communication.

Classroom observations further supported the quantitative findings. Students in the experimental group demonstrated higher participation, enthusiasm, and engagement during learning activities compared to students in the control group. They actively participated in discussions, completed online tasks enthusiastically, and showed greater confidence during speaking practices. These observations indicate that Mobile-Assisted Language Learning created more interactive and student-centered learning environments.

The findings demonstrate that Mobile-Assisted Language Learning (MALL) significantly improved students' vocabulary mastery and speaking skills compared to conventional instruction. Although both groups showed progress, the experimental group achieved substantially higher gains in vocabulary (+21.8) and speaking (+22.2), indicating that MALL provided richer opportunities for repeated practice, communicative interaction, and learner engagement. These findings support previous studies highlighting the effectiveness of technology-assisted language learning in

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enhancing English proficiency through interactive and flexible learning environments (Guillén & Sawin, 2025; Yi et al., 2025; Zhang & Zhang, 2025). The results also suggest that MALL functions not merely as a technological supplement but as a pedagogical approach that reshapes how learners access, practice, and internalize language knowledge.

The significant improvement in vocabulary achievement appears to be closely related to repeated lexical exposure and multimodal learning activities facilitated through mobile applications. Students engaged with vocabulary through quizzes, flashcards, videos, pronunciation exercises, and collaborative discussions, enabling them to encounter lexical items across multiple contexts. From a cognitive perspective, repeated exposure likely strengthened students' noticing and retention processes, consistent with Schmidt's noticing hypothesis. This finding aligns with YarAhmadi and Kargar Behbahani (2025), who argued that technology-supported vocabulary learning becomes more effective when learners receive continuous mediation and repeated lexical reinforcement. Similarly, Yekta et al. (2025) emphasized that repeated aural exposure improves vocabulary recognition and retention more effectively than isolated memorization practices. The findings also support Tavassoli and Beyranvand (2023), who found that Instagram-assisted vocabulary learning increased students' vocabulary acquisition because learners continuously interacted with authentic language input through digital platforms. In this study, multimedia integration appeared to facilitate not only vocabulary memorization but also contextual understanding and vocabulary usage.

Another important factor contributing to vocabulary improvement was learner autonomy. Mobile-assisted learning enabled students to access learning materials anytime and anywhere, increasing learning continuity beyond classroom hours. Students could review difficult vocabulary repeatedly, complete online tasks independently, and regulate their own learning pace. These findings are consistent with Huang et al. (2024), who reported that mobile learning environments increase behavioral engagement and autonomous learning outside the classroom. Likewise, Muthmainnah et al. (2025) argued that technology-integrated educational ecosystems expand learning accessibility and support self-regulated learning processes. However, the findings of this study also indicate that autonomy alone does not guarantee successful learning outcomes. The effectiveness of MALL depended heavily on structured learning activities, teacher guidance, and collaborative interaction, suggesting that pedagogical design remains central to successful technology integration.

The findings further reveal that MALL significantly enhanced students' speaking confidence, fluency, and oral participation. Students in the experimental group became more willing to communicate because mobile applications allowed them to practice through voice recordings, online discussions, pronunciation tasks, and video-based interaction before participating in direct classroom communication. This finding can be interpreted through Krashen's affective filter hypothesis, which suggests that reduced anxiety facilitates language acquisition. The flexibility and relative privacy of mobile learning environments appeared to lower students' speaking anxiety and increase their willingness to communicate. These findings support Metruk's (2024) systematic review, which concluded that mobile-assisted pronunciation instruction positively affects oral confidence and pronunciation accuracy through repeated speaking practice and immediate feedback. Similarly, Almasifar and Heidari (2024) found that technology-assisted pronunciation training reduced speaking anxiety among EFL learners. Zhao et al. (2026) also argued that mobile-assisted oral learning environments create psychologically safer communicative spaces that encourage more active language production.

The improvement in speaking skills was also influenced by collaborative interaction during mobile-assisted learning activities. Students actively exchanged voice messages, participated in WhatsApp discussions, and engaged in collaborative speaking tasks that encouraged negotiation of meaning and authentic communication. From a sociocultural perspective, these interactions functioned as mediated learning processes that supported language development through peer collaboration. This finding aligns with Guo et al. (2024), who emphasized that collaborative MALL environments strengthen communicative competence by transforming language learning into socially mediated interaction. Similarly, Ilic (2025) argued that mobile-enabled collaborative learning extends communication opportunities beyond classroom limitations. The present findings therefore suggest that the effectiveness of MALL lies not only in technological accessibility but also in its ability to facilitate interaction, communication, and

collaborative meaning-making.

Classroom observations additionally revealed that students in the experimental group demonstrated higher participation, motivation, and enthusiasm during learning activities. Gamified quizzes, multimedia materials, and interactive communication platforms appeared to reduce classroom monotony and increase students' engagement in English learning. These findings correspond with Ma (2024), who found that digital learning environments enhance student engagement through interactive and visually stimulating activities. Likewise, Çoban Sural and Yaşar Sağlık (2024) reported that technology-assisted vocabulary activities positively influence learning motivation because they create immersive and enjoyable learning experiences. Nevertheless, the findings of this study suggest that engagement alone does not automatically produce language improvement. Instead, engagement became meaningful because it was accompanied by repeated practice, communicative interaction, and sustained language exposure.

An important finding emerging from this study is that students in the control group also demonstrated moderate improvement despite receiving conventional instruction. This indicates that traditional classroom teaching still contributes positively to language development through structured explanation and guided practice. However, the substantially higher gains achieved by the experimental group suggest that MALL provided additional communicative exposure, flexibility, and interaction opportunities that were less available in conventional classrooms. Therefore, the findings should not be interpreted as evidence that technology replaces teachers or traditional pedagogy entirely. Instead, the results reinforce Zhang et al. (2025), who argued that technology-assisted language learning becomes effective only when digital tools are integrated into communicative and learner-centered instructional practices rather than functioning merely as technological additions.

The findings also contribute to MALL research within rural EFL contexts. Most previous studies have focused on higher education or technologically advanced environments, whereas this study demonstrates that mobile-assisted learning can also function effectively among junior high school students in rural Indonesian settings with limited English exposure. This finding supports Muthmainnah et al. (2026), who emphasized that technology-enhanced language learning has the potential to democratize communicative learning opportunities across diverse educational contexts. However, the study also indicates that contextual factors such as internet access, device availability, and digital literacy remain important challenges influencing MALL implementation effectiveness.

Despite its contributions, this study has several limitations. The intervention was conducted over only six weeks, which may not fully capture the long-term effects of MALL on vocabulary retention and speaking fluency. The relatively small sample size and focus on a single school also limit broader generalizability. In addition, differences in students' technological familiarity and extracurricular English exposure may have influenced learning outcomes. Future studies are therefore encouraged to employ longitudinal designs, larger participant populations, and comparative analyses of specific MALL platforms or AI-assisted language learning models to provide deeper insights into technology-mediated language learning effectiveness.

Overall, the findings confirm that MALL provides substantial pedagogical benefits for improving vocabulary mastery and speaking skills among junior high school EFL learners. More importantly, the study demonstrates that the effectiveness of MALL derives not merely from technology itself but from its ability to create interactive, collaborative, multimodal, and psychologically supportive learning environments that increase learners' exposure, participation, autonomy, and communicative confidence.

CONCLUSION

Mobile-Assisted Language Learning (MALL) proved effective in improving junior high school students' vocabulary mastery and speaking skills. Compared to conventional instruction, students exposed to mobile-assisted activities demonstrated substantially greater improvement in vocabulary acquisition, speaking fluency, communicative confidence, and classroom participation. These findings indicate that the value of MALL lies not merely in technological use, but in its ability to provide repeated practice, multimodal exposure, collaborative interaction, and flexible learning opportunities through student-centered instruction.

The implementation of mobile applications such as WhatsApp, Quizizz, Duolingo, and YouTube also contributed to higher learner motivation, autonomy, and engagement. Mobile-assisted environments enabled students to access

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learning materials beyond classroom boundaries, participate in interactive communication activities, and practice speaking in less stressful learning situations. Such conditions are particularly important in rural EFL contexts where authentic English exposure and communicative practice remain limited.

By focusing on junior high school learners in a rural Indonesian context, the research extends current MALL and CALL scholarship that has predominantly focused on urban or higher-education settings. Nevertheless, the findings should be interpreted within several limitations, including the relatively short intervention period, limited sample size, and possible differences in students' technological familiarity and internet accessibility. Future studies are encouraged to investigate the long-term impact of MALL, compare the effectiveness of AI-assisted mobile platforms, and examine how contextual factors shape technology-mediated language learning outcomes.

Overall, the findings emphasize that the educational significance of MALL lies in its capacity to transform English learning into a more interactive, communicative, and learner-centered process that supports students' language development more effectively than conventional approaches.

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