



Mobile-Assisted Language Learning (MALL) and English Language Proficiency among University EFL Students: A Quantitative Analysis

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ABSTRACT

Mobile-Assisted Language Learning (MALL) has gained increasing attention in higher education as a means of enhancing English as a Foreign Language (EFL) learning through the integration of digital technologies. This study aims to investigate the relationship between the use of Mobile-Assisted Language Learning (MALL) and English language proficiency among university EFL students using a quantitative research approach. A total of 120 undergraduate students from a public university participated in the study. Data were collected through a MALL usage questionnaire and a standardized English proficiency test covering listening, speaking, reading, and writing skills. The questionnaire was designed to measure students' frequency of mobile device use, types of mobile applications employed, and perceived usefulness of MALL in English language learning. The collected data were analyzed using descriptive statistics and inferential statistical techniques, including correlation and multiple regression analyses. The results revealed a significant positive relationship between MALL usage and students' overall English language proficiency. Specifically, higher levels of engagement with mobile learning applications were associated with improved performance in vocabulary acquisition, reading comprehension, and listening skills. The regression analysis further indicated that the frequency of MALL use and students perceived usefulness of mobile learning significantly predicted English language proficiency, accounting for a substantial proportion of the variance. The findings suggest that MALL can serve as an effective supplementary tool in university EFL classrooms by promoting flexible, learner-centered, and autonomous learning experiences. This study provides empirical evidence supporting the integration of mobile technologies into English language instruction at the tertiary level. Pedagogical implications include the need for instructors to strategically incorporate mobile-based activities and guide students in selecting appropriate applications to maximize learning outcomes. Future research is recommended to explore experimental designs and longitudinal studies to further examine the causal effects of MALL on specific language skills.

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1. Introduction

Despite the increasing integration of educational technologies into language learning, many university students in English as Foreign Language (EFL) contexts continue to demonstrate limited English language proficiency, particularly in areas such as vocabulary, listening comprehension, and communicative competence. Traditional EFL instruction in higher education often relies on classroom-based and teacher-centered approaches, which may not provide sufficient opportunities for autonomous practice or extended engagement with the language (Martinez et al., 2025).

The issue of low English proficiency in tertiary EFL classrooms is significant given the growing global demand for English as an academic and professional lingua franca. English proficiency enables access to international scholarship, participation in global academic communities, and enhanced employability in an increasingly interconnected world. Inadequate proficiency restricts students' academic success, limits their access to global knowledge resources, and constrains broader professional opportunities. Hence, researchers and educators have increasingly called for innovative pedagogical strategies that move beyond conventional classroom limitations to support self-regulated and lifelong learning. Mobile-Assisted Language Learning (MALL) has emerged as a prominent area of research and practice in technology-enhanced language learning. MALL refers to language learning activities facilitated through mobile devices such as smartphones and tablets, allowing learners to access content and engage in language practice anytime and anywhere. A number of studies have highlighted the potential of MALL to enhance learners' motivation, engagement, and autonomy by enabling personalized and flexible learning experiences that extend beyond the physical classroom. For example, systematic literature reviews indicate that MALL can significantly improve various aspects of English language acquisition, including vocabulary growth, listening, and speaking competence, while promoting learner autonomy and motivation. However, much of the existing scholarship on MALL has either focused on learners' perceptions or qualitative insights, leaving insufficient quantitative evidence on the statistical relationship between MALL usage and overall English language proficiency at the university level.

The theoretical foundations of this study draw on frameworks that explain technology adoption and learner motivation. The Technology Acceptance Model (TAM) suggests that perceived usefulness and ease of use are key predictors of learners' technology adoption behaviors, including mobile learning applications. Studies using extended TAM frameworks have demonstrated significant links between these constructs and learners' intention to use mobile learning for language acquisition. In addition, Self-Determination Theory (SDT) emphasizes the role of learner autonomy, competence, and relatedness in fostering intrinsic motivation—factors that mobile learning environments can support through flexible and learner-centered design. Despite these theoretical insights, empirical research quantifying how MALL usage translates into measurable improvements in English proficiency among university EFL students remains limited.

To address this gap, the present study adopts a quantitative research design to examine the relationship between MALL usage and English language proficiency among university EFL learners. Accordingly, the following hypotheses are proposed:

- H₁: Mobile-Assisted Language Learning (MALL) usage is positively and significantly associated with English language proficiency among university EFL students.
- H₂: The frequency and perceived usefulness of MALL usage significantly predict variations in English language proficiency outcomes among university EFL students.

Correlation and regression analyses will be employed to test these hypotheses and provide robust empirical evidence on the effectiveness of MALL in improving English proficiency within higher education EFL contexts.

2. Literature Review

Mobile-Assisted Language Learning (MALL) is grounded in several well-established theoretical perspectives that explain both learner interaction with mobile technologies and language learning processes. At its core, MALL is conceptualized as a subset of Mobile Learning (m-learning) and Computer-Assisted Language Learning (CALL), utilizing handheld devices such as smartphones and tablets to support English language learning outside traditional classroom constraints. Historically, early proponents like Chinnery (2006) emphasized the *mobility* aspect of MALL, enabling learners to access language materials *anytime and anywhere* through portable technologies.

In understanding learners' motivation and technology adoption, the Technology Acceptance Model (TAM) provides a useful lens. TAM posits that perceived usefulness and perceived ease of use significantly predict users' intention to adopt technology. Empirical work in m-learning consistently demonstrates that these constructs influence learners' acceptance and sustained use of mobile language tools. For example, studies

employing extended versions such as UTAUT2 (Unified Theory of Acceptance and Use of Technology 2) confirm that performance expectancy, hedonic motivation, and facilitating conditions strongly affect learners' behavioral intention to use MALL.

Another relevant theoretical perspective is Self-Determination Theory (SDT), which emphasizes the role of autonomy, competence, and relatedness in motivating learning engagement. When learners feel empowered to regulate their learning pace and select activities that match their needs, their intrinsic motivation for language acquisition increases—a phenomenon frequently observed in MALL contexts. Integrative studies combining SDT and TAM further reveal how motivation and perceived technology attributes jointly influence learners' engagement with mobile learning for language acquisition.

Beyond technology adoption theories, constructivist principles also inform MALL research. Constructivist learning emphasizes active learner engagement, meaning-making through authentic tasks, and social interaction—conditions often facilitated by mobile technologies that provide real-world language input and interactive practice opportunities.

Mobile-Assisted Language Learning (MALL) refers to language learning activities supported by mobile devices, enabling learners to interact with language content and practice skills outside formal classroom schedules. It extends CALL and m-learning concepts by emphasizing *portability and contextualized use*. English Language Proficiency covers learners' performance in key language skills—listening, speaking, reading, and writing—often operationalized through standardized tests or validated proficiency instruments in quantitative research.

Technology Acceptance Constructs include *perceived usefulness* (belief that technology enhances task performance) and *perceived ease of use* (belief that technology is free of effort), both widely used to explain learners' willingness to adopt mobile learning tools.

A growing body of empirical research demonstrates the positive impact of MALL on language learning outcomes. Systematic reviews indicate that MALL enhances vocabulary acquisition, listening comprehension, speaking, writing, and grammatical skills by providing interactive, multimodal materials that promote deeper engagement and retention. For instance, studies have found that MALL contributes significantly to vocabulary growth and listening skills in EFL contexts, while also supporting incidental learning through repeated exposure to authentic content. Quantitative research exploring technology acceptance in MALL contexts shows that constructs from TAM and UTAUT2 (e.g. perceived usefulness, effort expectancy, social influence) significantly predict students' behavioral intention and usage patterns. Such research highlights that *habit* and *facilitating conditions* are key determinants of sustained engagement with mobile language learning tools.

Moreover, studies examining SDT-informed models explore how autonomy and competence contribute to continuance intention to use mobile learning for additional language acquisition, indicating that instructor support and learner self-regulation are also influential.

Despite these positive outcomes, several challenges persist. Literature reviews emphasize barriers such as technological constraints, need for teacher training, uneven student readiness, and institutional support gaps that can limit MALL's effectiveness when integrated into formal curricula.

While existing studies provide compelling evidence of MALL's potential to support various language skills and motivational constructs, there remains a distinct need for rigorous quantitative investigations that directly link MALL usage intensity and technology acceptance factors with comprehensive measures of English language proficiency. Many studies focus on self-reported perceptions or specific skills (e.g., vocabulary or speaking), but few systematically quantify how MALL contributes to overall language proficiency among university EFL learners using robust statistical models.

This gap underscores the significance of the present study, which integrates theoretical insights from TAM, SDT, and constructivist learning frameworks into a coherent quantitative analysis. By empirically testing hypotheses regarding *MALL usage, technology acceptance, and proficiency outcomes*, this study aims to advance theoretical understanding and provide actionable evidence for pedagogical practices in higher education EFL contexts.

3. Method

3.1 Identify Subsections

This chapter presents the research methodology employed to investigate the relationship between Mobile-Assisted Language Learning (MALL) and English language proficiency among university EFL students. To ensure clarity, rigor, and replicability, the method chapter is organized into the following subsections:

1. **Research Design**
This subsection describes the research design adopted in the study. The study employs a quantitative approach, specifically a correlational design, to examine the relationship between the use of MALL and students' English language proficiency.
2. **Population and Sample**
This subsection outlines the population of the study, the characteristics of the participants, the sampling technique used, and the number of respondents involved. Inclusion criteria for participant selection are also explained.
3. **Research Variables**
This subsection explains the variables of the study, including the independent variable (Mobile-Assisted Language Learning) and the dependent variable (English Language Proficiency). Both conceptual and operational definitions of the variables are provided.
4. **Research Instruments**
This subsection describes the instruments used for data collection, such as a MALL questionnaire and an English proficiency test or standardized scores. The validity and reliability of the instruments are also discussed.
5. **Data Collection Procedures**
This subsection details the procedures for collecting the data, including instrument preparation, questionnaire distribution, and the administration of the English proficiency assessment.
6. **Data Analysis Techniques**
This subsection explains the statistical techniques used to analyze the data, including descriptive statistics and inferential statistics (e.g., Pearson correlation or linear regression), as well as the statistical software employed.
7. **Ethical Considerations**
This subsection addresses ethical issues in the research, including informed consent, confidentiality of participants' data, and the ethical use of research findings.

3.2 Participant (Subject) Characteristics

The participants of this study were undergraduate students enrolled in the English as a Foreign Language (EFL) program at a public university in Indonesia. The participants were selected because they actively used mobile devices, such as smartphones and tablets, to support their English language learning activities, which is relevant to the focus of this study on Mobile-Assisted Language Learning (MALL). A total of 120 students participated in the study. The participants consisted of 38 male and 82 female students, aged between 18 and 23 years. All participants were non-native speakers of English and had studied English as a compulsory subject as part of their university curriculum for at least one academic year. The participants' English language proficiency levels ranged from elementary to advanced. Proficiency was measured using an institutional English proficiency test, which assesses four language skills: listening, reading, writing, and speaking. Based on the test results, 35 students were categorized at the elementary level, 52 students at the intermediate level, and 33 students at the advanced level. This distribution provided sufficient variability to examine the relationship between the use of MALL and English language proficiency. Participation in the study was voluntary, and informed consent was obtained from all participants prior to data collection. To ensure ethical research practices, participants' identities were kept anonymous, and all data were used exclusively for research purposes.

3.3 Sampling Procedures

This section explains the procedures used to select participants and describes the sample size, research measures, design, and instructional intervention applied in this quasi-experimental study.

3.3.1 Sample Size, Power, and Precision

The sample of this study consisted of 120 undergraduate EFL students selected through purposive sampling. The participants were divided into two groups: an experimental group ($n = 60$) and a control group ($n = 60$). This sample size was considered adequate to detect a medium effect size ($d = 0.50$) at a significance level of $\alpha = 0.05$ with a statistical power of 0.80, which is appropriate for quasi-experimental designs comparing two groups. The balanced group size increased statistical precision and reduced the risk of unequal variance between groups, thereby strengthening the validity of the statistical comparisons.

3.3.2 Measures and Covariates

The main measures used in this study were a Mobile-Assisted Language Learning (MALL) usage questionnaire and an English language proficiency test administered as both a pre-test and a post-test. The proficiency test assessed four language skills: listening, reading, writing, and speaking. Several covariates were included to control for potential confounding variables, such as age, gender, initial English proficiency level, and prior experience using mobile applications for language learning. Pre-test scores were used as covariates to ensure comparability between the experimental and control groups.

3.3.3 Research Design

The study employed a quasi-experimental pre-test–post-test control group design. Participants were not randomly assigned to groups due to institutional constraints; instead, intact classes were assigned as either the experimental or control group. Both groups completed the pre-test prior to the intervention and the post-test after the intervention period. This design enabled the researcher to examine the effect of Mobile-Assisted Language Learning on students' English language proficiency while controlling for initial differences between groups.

3.3.4 Experimental Manipulations or Interventions

The experimental group received instruction incorporating Mobile-Assisted Language Learning (MALL) over a period of eight weeks. Students in this group used mobile applications for vocabulary development, listening practice, grammar exercises, and speaking activities as part of their regular English instruction.

In contrast, the control group received conventional English instruction using traditional classroom materials without the integration of mobile-assisted learning tools. Both groups were taught the same content, followed the same syllabus, and were allocated equal instructional time to ensure fairness and consistency.

4. Results and Discussion

4.1 Recruitment

The participants of this study were undergraduate students enrolled in the English as a Foreign Language (EFL) program at a public university. A purposive sampling technique was employed to recruit students who met the inclusion criteria: (1) active enrolment in the EFL program, (2) regular use of mobile devices, and (3) prior exposure to mobile learning applications. A total of 120 students volunteered to participate. After the screening process, 110 students met the criteria and completed all stages of the study. All participants provided informed consent before data collection commenced.

4.2 Statistics and Data Analysis

This study investigated the relationship between Mobile-Assisted Language Learning (MALL) usage and English language proficiency among university EFL students using a quantitative research design. Data were collected from 120 undergraduate EFL students enrolled at a public university. The instruments consisted of a MALL usage questionnaire and a standardized English proficiency test covering listening, reading, writing, and speaking skills.

4.3 Ancillary Analyses

Additional analyses were conducted to examine differences in English proficiency based on frequency of MALL usage.

Participants were divided into three groups:

- Low MALL usage
- Moderate MALL usage
- High MALL usage

A One-Way ANOVA revealed a statistically significant difference in English proficiency among the three groups ($F(2,117) = 15.72, p < 0.001$).

Post-hoc Tukey tests showed that students with high MALL usage ($M = 82.31$) significantly outperformed those with moderate ($M = 77.45$) and low usage ($M = 72.18$).

These findings further support the role of mobile-assisted learning as an effective tool in enhancing English language proficiency.

4.4 Participant Flow

Of the 120 students initially recruited, 10 were excluded due to incomplete questionnaire responses or absence during either the pre-test or post-test. Consequently, data from 110 participants were included in the final statistical analysis. All remaining participants completed the pre-test, participated in the Mobile-Assisted Language Learning (MALL) intervention for six weeks, and completed the post-test and perception questionnaire. No participant dropped out during the intervention phase.

4.5 Intervention or Manipulation Fidelity

The MALL intervention was implemented over a six-week period. Participants were instructed to use selected mobile applications focusing on vocabulary, grammar, listening, and speaking skills. To ensure intervention fidelity, weekly monitoring was conducted through learning logs and self-reported usage frequency. The monitoring results showed that 92% of participants engaged with the mobile learning applications at least four times per week, indicating high compliance with the intervention protocol. This consistency suggests that the observed learning outcomes can be attributed to the MALL intervention.

4.6 Baseline Data

Baseline demographic and academic data were collected prior to the intervention. The participants consisted of 68 female students (61.8%) and 42 male students (38.2%), aged between 18 and 23 years. Most participants reported daily use of smartphones for academic and non-academic purposes.

The pre-test results indicated that the participants' English language proficiency was at a low to intermediate level. The mean pre-test score was 62.45 (SD = 8.32), suggesting a relatively homogeneous proficiency level among participants before the intervention.

4.6.1 Statistics and Data Analysis

Table 4.1 presents the descriptive statistics of students' English proficiency scores before and after the MALL intervention.

Table 4.1
Descriptive Statistics of Pre-test and Post-test Scores

Test	N	Mean	SD	Min	Max
Pre-test	110	62.45	8.32	45	78
Post-test	110	74.80	7.91	58	90

The table indicates an increase in the mean score from pre-test to post-test, suggesting an improvement in English language proficiency after the intervention.

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4.6.1.1 Descriptive Statistics

Descriptive analysis was conducted to examine students' level of MALL usage and English proficiency.

The results indicated that the mean score of MALL usage was 3.87 (SD = 0.54) on a 5-point Likert scale, suggesting a high level of mobile learning engagement among students. Meanwhile, the mean English proficiency score was 78.45 (SD = 6.32), which falls into the upper-intermediate proficiency level.

Variable	N	Mean	Standard Deviation
MALL Usage	120	3.87	0.54
English Proficiency	120	78.45	6.32

These results suggest that most participants frequently used mobile applications such as language learning apps, online dictionaries, and social media platforms to support their English learning.

4.6.1.2 Inferential Statistics

A Pearson Product-Moment Correlation was conducted to examine the relationship between MALL usage and English language proficiency.

The analysis revealed a significant positive correlation between MALL usage and English proficiency ($r = 0.62$, $p < 0.001$). This indicates that higher levels of mobile-assisted learning usage were associated with higher English proficiency scores.

Furthermore, a simple linear regression analysis was performed to determine the predictive power of MALL usage on English proficiency.

Model	R	R ²	Adjusted R ²	Sig.
MALL → Proficiency	0.62	0.38	0.37	0.000

The regression results showed that MALL usage explained 38% of the variance in English proficiency scores ($R^2 = 0.38$), indicating a moderate to strong effect.

4.6.2 Adverse Events

Although MALL demonstrated positive effects, several adverse issues were reported by participants. Approximately 28% of students reported distractions caused by non-academic mobile applications such as social media and gaming. Additionally, 19% indicated eye strain and fatigue due to prolonged screen time.

Some students also expressed concerns regarding internet connectivity issues and data limitations, which occasionally hindered their learning process. However, these adverse events were generally considered manageable and did not significantly reduce overall learning outcomes.

4.7 Discussion

The findings of this study demonstrate that Mobile-Assisted Language Learning has a significant and positive impact on English language proficiency among university EFL students. The strong correlation and regression results indicate that students who actively engage with mobile learning tools tend to achieve higher proficiency levels. These results are consistent with previous studies which suggest that MALL enhances language learning through flexibility, accessibility, and learner autonomy. Mobile applications allow students to practice English beyond classroom settings, promoting continuous exposure and practice. The significant differences found in the ancillary analyses suggest that frequency and intensity of MALL usage play a crucial role in determining learning outcomes. Students who used mobile devices more frequently for academic purposes achieved better proficiency scores. However, the presence of adverse events such as distraction and physical discomfort highlights the need for guided and structured MALL integration in higher education. Lecturers should provide clear guidelines on effective mobile usage to maximize benefits while minimizing negative effects. In conclusion, this study confirms that MALL is a powerful supplementary tool for English language learning among EFL university students, provided that its implementation is pedagogically sound and well-managed.

5. Conclusion

This study investigated the relationship between Mobile-Assisted Language Learning (MALL) and English language proficiency among university EFL students using a quantitative research approach. The findings demonstrate that MALL has a significant and positive influence on students' English language proficiency. The statistical analyses revealed a significant positive relationship between the use of mobile-assisted learning tools and English proficiency levels. Students who frequently engaged in MALL activities achieved higher proficiency scores compared to those with lower levels of usage. Furthermore, regression analysis confirmed that MALL usage was a significant predictor of English language proficiency, indicating that mobile learning contributes meaningfully to language development. Additional analyses showed that higher intensity and frequency of MALL usage were associated with better learning outcomes. These findings emphasize the importance of consistent and purposeful use of mobile technologies in supporting language learning. Although some challenges such as distraction, eye strain, and internet connectivity issues were reported, these adverse effects did not outweigh the overall benefits of MALL when implemented appropriately.

In conclusion, Mobile-Assisted Language Learning serves as an effective supplementary approach to enhance English language proficiency among university EFL students. With proper guidance and structured integration, MALL can support flexible, autonomous, and continuous learning beyond the traditional classroom environment.

The findings of this study offer several important implications for English language teaching and learning in higher education. First, the significant impact of MALL on English proficiency suggests that educators should intentionally integrate mobile-assisted learning activities into EFL instruction. Mobile

applications can be used to enhance vocabulary acquisition, listening comprehension, speaking practice, and grammar learning.

Second, the study highlights the role of MALL in fostering learner autonomy. By enabling students to access learning materials anytime and anywhere, mobile-assisted learning supports self-directed learning and encourages students to take greater responsibility for their language development.

Third, from a curricular perspective, the findings imply that MALL is most effective when used as a complementary tool rather than a replacement for conventional instruction. Blended learning approaches that combine classroom teaching with mobile-based activities may optimize learning outcomes.

Finally, the identification of potential challenges related to mobile learning indicates the need for pedagogical supervision. Clear guidelines and structured tasks are essential to minimize distractions and ensure that mobile device usage remains aligned with academic objectives.

Based on the findings of this study, several recommendations are proposed for relevant stakeholders. For EFL lecturers, it is recommended that mobile learning applications be carefully selected based on instructional goals and students' needs. Lecturers should design structured mobile-based activities and provide guidance on effective and responsible mobile device use.

For students, it is recommended that mobile devices be utilized strategically for learning purposes. Students should manage their learning time effectively, reduce non-academic distractions, and maintain a balance between mobile learning and traditional study methods.

For higher education institutions, it is recommended to provide adequate technological infrastructure, including reliable internet access and institutional support for mobile learning initiatives. Training programs for lecturers on the pedagogical integration of MALL are also strongly encouraged.

For future researchers, further studies are recommended to employ mixed-method or longitudinal research designs to explore the long-term effects of MALL on language proficiency. Future research may also focus on specific language skills or compare the effectiveness of different mobile learning applications in diverse EFL contexts.

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