

The Effect of Mobile Application Use on the Improvement and Retention of English Vocabulary in EFL Students

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ABSTRACT

Keywords:

Mobile Application,
Vocabulary Retention,
EFL Students,
Vocabulary Learning

Abstract: This study reviews the influence of Environmental, Social, and Governance (ESG) performance on firm value in Indonesia's mining sector listed on the Indonesia Stock Exchange (IDX) during 2022–2024. Using a systematic literature review, the study synthesizes evidence from Scopus-indexed and internationally indexed open-access journals published between 2020 and 2025. Legitimacy Theory and Stakeholder Theory serve as the analytical framework, while Tobin's Q represents firm value. The findings indicate that the relationship between ESG performance and firm value remains inconsistent. Several studies report insignificant or negative effects of overall ESG performance, as well as environmental and governance dimensions, whereas the social dimension shows a more consistent positive association with market valuation. Legitimacy Theory suggests that ESG disclosure in mining companies primarily functions as a compliance and reputational strategy rather than a direct driver of firm value. In contrast, Stakeholder Theory highlights the importance of social engagement in enhancing market perception. Government ownership, industry sensitivity, and corporate governance quality further influence this relationship. The study concludes that ESG performance should be evaluated by individual dimensions rather than composite scores and provides theoretical and practical implications for strengthening ESG implementation and regulation in Indonesia's mining sector.

Kata Kunci:

Aplikasi Seluler,
Retensi Kosakata,
Siswa EFL,
Pembelajaran Kosakata

Abstrak: Penelitian ini bertujuan untuk menganalisis efektivitas penggunaan aplikasi seluler dalam meningkatkan dan mempertahankan kosakata bahasa Inggris di kalangan siswa Bahasa Inggris sebagai Bahasa Asing (EFL). Penguasaan kosakata merupakan komponen mendasar dari kemahiran berbahasa; namun, banyak siswa EFL mengalami kesulitan dalam memperoleh dan mempertahankan kosakata dalam jangka panjang akibat paparan yang terbatas dan strategi pembelajaran yang tidak efektif. Penelitian ini menggunakan pendekatan Tinjauan Pustaka Sistematis (SLR) dengan mengadaptasi pedoman Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Studi-studi yang relevan dikumpulkan dari basis data Google Scholar dan Scopus yang diterbitkan antara tahun 2016 dan 2024. Artikel-artikel yang dipilih berfokus pada penggunaan aplikasi seluler dalam pembelajaran kosakata di kalangan pelajar EFL, khususnya di tingkat pendidikan tinggi. Temuan penelitian menunjukkan bahwa aplikasi seluler berkontribusi secara signifikan terhadap peningkatan kosakata dan retensi jangka panjang melalui paparan berulang, aktivitas pembelajaran interaktif, serta pengalaman belajar yang dipersonalisasi. Fitur-fitur seperti pengulangan berjarak (spaced repetition), gamifikasi, latihan berbasis kuis, sistem pembelajaran adaptif, dan umpan balik langsung terbukti meningkatkan keterlibatan, motivasi, dan retensi memori pelajar. Selain itu, fleksibilitas pembelajaran seluler memungkinkan mahasiswa mengakses materi pembelajaran kapan saja dan di mana saja, sehingga mendukung latihan berkelanjutan di luar kelas. Kesimpulannya, aplikasi seluler merupakan alat yang efektif untuk meningkatkan penguasaan dan retensi kosakata di kalangan siswa EFL, meskipun keberhasilannya sangat bergantung pada konsistensi, motivasi, dan partisipasi aktif peserta didik dalam proses pembelajaran.

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A. INTRODUCTION

Vocabulary is one of the basic elements in language skills that includes listening, speaking, reading, and writing skills. Good vocabulary mastery is very important to support communication skills, both verbally and in writing, because vocabulary is the foundation in understanding and expressing meaning well (Rahim, 2023). English as a foreign language learners often experience various obstacles in mastering vocabulary, such as limited exposure to the language, low frequency of use, and difficulty remembering and using words in the right context (Rachmawati, 2025). In addition, conventional vocabulary teaching methods, such as memorizing a list of words without a clear context, are considered less effective at improving deep understanding and long-term memory. A more creative and contextual approach to learning is needed to address these problems. (Munawwaroh & Hina, 2025).

Learners of English as a foreign language, especially college students, have different traits than those who learn a second language. EFL students study in a confined environment, rarely exposed to native languages (Anjarwati et al., 2026). This condition causes the English learning process to be more challenging compared to second language learning which takes place in a more supportive environment. The limited interaction using English in daily life makes students have to rely on formal learning activities and independent learning to expand their vocabulary. As a result, the process of mastering vocabulary requires strategies that are not only effective for understanding new words, but also being able to retain them in long-term memory. In higher education, mastery of vocabulary is essential, including academic vocabulary to understand scientific writing and participate in discussions. Many students have difficulty remembering vocabulary in the long term, making it easy to forget and rarely used (Alibasya et al., 2024). There is a difference between the ability to recognize vocabulary and produce it, with students being better at understanding than using it in speaking and writing.

The development of information and communication technology has changed English teaching through Mobile-Assisted Language Learning (MALL) (Haryadi et al., 2023). These changes are driving the emergence of digital learning innovations that provide a more flexible and learner-centric learning experience. Technology allows students to gain access to learning materials more widely without being limited by space and time. In addition, the integration of technology in language learning also opens up opportunities to present learning activities that are more interesting, interactive, and in accordance with the characteristics of today's digital generation. This method uses a smartphone as a learning tool, allowing for flexibility without time and place restrictions. Mobile phones now function as interactive media tailored to the needs of users. MALL offers easy access to materials, simple use, and personalized learning experience (Wijayatiningsih et al., 2025). The use of mobile apps for learning English is also increasing, with educational apps that improve language skills, especially vocabulary mastery, Increasing teaching and learning effectiveness (Yudhiantara & Sugilar, 2018).

Mobile apps are essential in learning English vocabulary because they offer features that increase learning effectiveness (Lyraa et al., 2024). The presence of various language learning applications provides new alternatives that are more suitable for the needs of modern students. Various applications are designed with aspects of ease of use, user engagement, and learning effectiveness in mind. Through a more dynamic approach, students not only gain learning materials, but also learning experiences that encourage active participation and independent learning. Apps like Duolingo and Quizlet use techniques like flashcards, repetition, and gamification to help college students understand and remember vocabulary. Key features that are often present include scheduled replays, game elements with a point and level system, and live feedback. The combination of these features not only supports learning to increase motivation with a fun and flexible experience (Tabuni et al., 2026).

A number of previous studies have shown the positive role of mobile apps in teaching English vocabulary, improving students' vocabulary mastery (Alda et al., 2025). The findings show that mobile technology has great potential to support more effective and efficient English language learning. Various studies have tested the use of mobile applications in different contexts and groups of learners resulting in a variety of findings that enrich the study of Mobile-Assisted Language Learning (MALL). However, the diversity of results also shows the need for a more comprehensive study to obtain a more complete picture of the effectiveness of mobile application use. Mobile apps can increase vocabulary and speed up the learning process with a flexible and interactive approach (Rasmita & Pohan, 2024). However, there are inconsistent variations in research results due to differences in methods, sample characteristics, and measuring tools. More structured research is needed to understand the effectiveness of mobile apps in vocabulary teaching.

There is a lot of research on mobile phone applications in learning English vocabulary, there are still areas that need more attention (Khabib & Muliana, 2024). One problem is the lack of focus on long-term vocabulary retention, with many studies assessing only short-term mastery (Yusuf et al., 2025). There is still little research that analyzes the increase and retention of vocabulary simultaneously. The study of students learning English as a foreign language is also limited (Rohayati, 2018). The current academic literature still shows real limitations related to the focus of the existing study. The majority of previous studies have focused on evaluating the effectiveness of mobile apps for short-term vocabulary mastery (short-term acquisition). Integrative analyses that specifically review memory resilience or long-term retention (long-term retention) at the higher education level is still partial and inconsistent. Study-based Systematic Literature Review (SLR) that maps synergies between the mechanical features of the application such as spaced repetition with psychological factors of EFL students in Indonesia have also not been found. The novelty of this research rests on a systematic synthesis that links the efficiency of technological features with the sustainability of vocabulary retention in EFL students' long-term memory

Based on the various problems and research gaps that have been described, a study is needed that is able to provide a comprehensive picture of the effectiveness of the use of mobile applications in learning English vocabulary. The study is important to identify how mobile technology contributes to improving vocabulary mastery while retaining it in long-term memory. In addition, a synthesis of various previous research results can help uncover the factors that support or hinder the success of mobile application use in the context of English learning in universities. This study aims to analyze the effectiveness of the use of mobile applications in improving English vocabulary among EFL students. This study also assesses the influence of mobile applications on long-term vocabulary retention. Using the Systematic Literature Review (SLR) approach, this study identified research patterns, techniques used, and key outcomes related to mobile applications in vocabulary teaching. It is hoped that the results of this study will contribute to a more efficient method of learning English.

B. RESEARCH METHODS

This study uses the Systematic Literature Review (SLR) method by adapting the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). This method is used to identify, select, evaluate, and synthesize previous research on the effectiveness of mobile application use on the improvement and retention of English vocabulary in EFL students. The literature was obtained through a systematic search of the Google Scholar and Scopus databases with a publication range of 2016–2024. The selected articles are selected based on the inclusion and exclusion criteria that have been set to ensure the relevance and quality of the sources used.

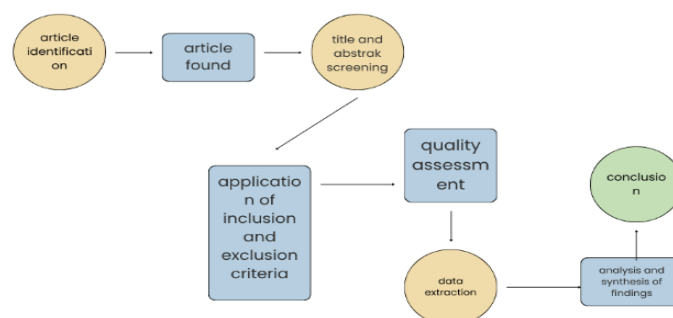


Figure 1. Stages of SLR Research Based on PRISMA

Figure 1 shows the stages of research conducted in the Systematic Literature Review (SLR) process. The first stage begins with the identification of articles through searches on the Google Scholar and Scopus databases using keywords related to the use of mobile applications in learning English vocabulary. The articles

found were then selected through a screening process based on title, abstract, year of publication, and suitability with the research focus on improving and retaining vocabulary in EFL students. Furthermore, articles that passed the screening stage were evaluated using inclusion and exclusion criteria and a quality assessment was carried out to ensure the quality of the research methodology. Articles that met all the requirements were then extracted from the data and systematically analyzed to identify patterns of findings, factors influencing the effectiveness of mobile applications, and their impact on the improvement and retention of English vocabulary. The results of the synthesis are used as a basis for compiling research conclusions.

C. RESULTS AND DISCUSSION

Based on the results of the analysis of articles that have met the selection criteria, it was found that several main study focuses were consistently discussed in the research on the use of mobile applications in learning English vocabulary in EFL students. These focuses include the effectiveness of mobile applications in improving vocabulary mastery, the influence of mobile applications on long-term vocabulary retention, and factors that affect the success of their use. To facilitate the identification of research patterns and the synthesis of findings obtained from various sources, the results of the study are grouped based on the similarity of the research focus, the authors involved, and the main variables or insights produced. The grouping is presented in Table 1.

Table 1. Grouping of Research Results Based on Study Focus

No	Field/Focus	Name of the Author in the Field	Insight / Research Variables
1	The Effectiveness of Mobile Applications in Improving EFL Students' Vocabulary	Jumiati et al. (2025); Khabib & Muliana (2024); Saleh et al. (2026)	The use of mobile applications has been proven to improve English vocabulary mastery through flexible, interactive, and contextual learning. The dominant variables include learning flexibility, interactivity, gamification, instant feedback, adaptive learning, and increased vocabulary mastery.
2	The Influence of Mobile Apps on Long-Term Vocabulary Retention	Purnama et al. (2026); Zhang et al. (2022)	Mobile apps help retain vocabulary in long-term memory through repeated exposure and structured learning. The main variables included vocabulary retention, spaced repetition, quiz-based learning, long-term memory, frequency of use, and learning consistency.
3	Factors Affecting the Effectiveness of Mobile Application Use	Megawati (2016); Nirtha et al. (2024); Majid & Setiyawan (2024); Alda et al. (2025)	The effectiveness of mobile apps is influenced by internal and external factors. Internal factors include learning motivation, interest, user engagement, and autonomous learning. External factors include application design, feature quality, user-friendly interface, lecturer support, and technology integration in learning.

Based on Table 1 it can be seen that most studies place mobile applications as an effective learning medium in improving English vocabulary mastery in EFL students. In addition to contributing to an increase in the number of vocabulary mastered, mobile apps have also been shown to support long-term vocabulary retention through features such as spaced repetition, quiz-based exercises, and structured learning. The table also shows that the success of using mobile applications is not only determined by the sophistication of the technology used, but also influenced by internal factors of learners such as motivation, interest, and learning independence, as well as external factors such as the quality of application design and lecturer support. These findings show that the effectiveness of mobile applications is the result of the interaction between technological aspects, user characteristics, and learning environments that support each other in improving and maintaining English vocabulary mastery in EFL students.

1. The Effectiveness of Mobile Applications in Improving EFL Students' Vocabulary

The effectiveness of mobile applications in improving English vocabulary mastery in EFL students has been proven through various studies that show a significant increase in the number of vocabulary mastered (Jumiati et al., 2025). The mobile app allows learning to take place flexibly, so students can learn anytime and anywhere

according to their needs. In addition, the interactive and contextual learning approach in the mobile application helps students understand the meaning of words more deeply, not only memorize, but also be able to use them in the right context (Khabib & Muliana, 2024).

This effectiveness is strengthened by various innovative features contained in the mobile application, such as scheduled repetitions (spaced repetitions), gamification, and instant feedback. (Saleh et al., 2026) These features play a role in increasing student motivation and involvement in the learning process. In addition, some apps also provide adaptive learning systems, which allow materials to be tailored to the user's ability level. (Khabib & Muliana, 2024b) This makes the learning process more personal and efficient, thus contributing to increasing vocabulary mastery more optimally compared to traditional learning methods.

Based on this description, it can be concluded that mobile applications are an effective learning medium in improving English vocabulary mastery in EFL students. Flexibility, interactivity, and support for innovative learning features make mobile applications able to improve the quality and intensity of learning. However, the effectiveness still depends on the level of involvement and consistency of students in utilizing the application optimally in the learning process.

2. The Influence of Mobile Applications on Long-Term Vocabulary Retention

The use of mobile apps in English learning has a significant influence on long-term vocabulary retention in EFL students (Purnama et al., 2026). Various studies show that mobile apps are able to help learners retain vocabulary in long-term memory through repetitive and structured exposure. The flexibility of using the app allows students to access the material consistently outside of the classroom, thus strengthening the repetition process that is key to the formation of long-term memory. Thus, mobile applications not only serve as a tool to improve vocabulary mastery, but also as a means to maintain these learning outcomes over a longer period of time.

The effectiveness of vocabulary retention through mobile apps is strongly supported by specially designed learning features, such as spaced repetitions, quiz-based exercises, and live feedback. The scheduled repetition feature allows vocabulary to be repeated in a specific time interval, strengthening memory and reducing the chance of forgetting (Zhang et al., 2022). In addition, interactive and gamification elements in the application also play a role in increasing user engagement, which indirectly impacts information retention. However, the success of retention is greatly influenced by the intensity of use, consistency of learning, and duration of interventions carried out by learners.

Based on this description, it can be concluded that mobile applications have an important role in improving long-term vocabulary retention in EFL students. The advantages of providing repetitive exercises, adaptive features, and flexible access make mobile applications an effective medium for maintaining vocabulary. Nonetheless, the success of retention still depends on the consistency of use and active involvement of students in utilizing the application on an ongoing basis.

3. Factors Affecting the Effectiveness of Mobile Application Use

The success of the use of mobile applications in learning English vocabulary in EFL students is influenced by various internal factors related to the characteristics of learners (Megawati, 2016). These factors include learning motivation, interest, and the level of student involvement in using the application as a learning medium (Nirtha et al., 2024). Students who have high motivation tend to be more consistent in practicing and utilizing the available features, so as to obtain more optimal results in mastering vocabulary. In addition, the ability to learn independently (autonomous learning) is also an important factor, considering that the use of mobile applications is generally carried out individually outside the classroom. Thus, learners' readiness and commitment are the main keys in determining the success of mobile-based learning

External factors such as application design, feature quality, and learning environment support also determine the effectiveness of using mobile applications (Majid & Setiyawan, 2024). Applications that have a user-friendly interface, interactive features such as gamification, and adaptive learning systems will be better able to increase user engagement. In addition, the role of lecturers or lecturers in integrating mobile applications into the learning process is also an important factor, especially in providing direction, monitoring, and evaluation of application use (Alda et al., 2025). A good integration between technology and learning strategies will result in a more structured and meaningful learning experience for students.

Based on this description, it can be concluded that the success of using mobile applications in vocabulary learning is not only determined by technological sophistication, but also by the internal factors of learners and the accompanying external support. Students' motivation, consistency, and independent learning ability need to be supported by effective application design and proper integration in learning. Therefore, the synergy

between internal and external factors is the main key in maximizing the effectiveness of mobile applications in learning vocabulary for EFL students.

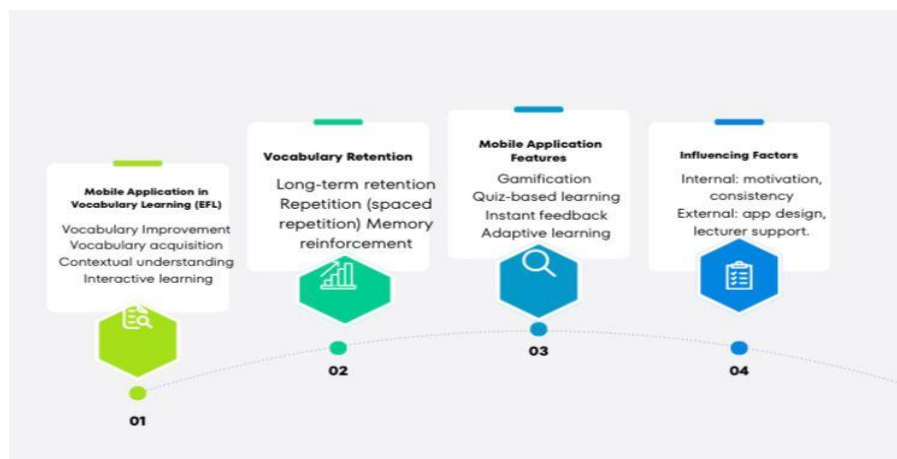


Figure 2. Conceptual Model of Mobile Application Effectiveness for EFL Students' Vocabulary Improvement and Retention

Figure 2 presents a conceptual model developed from the literature synthesis on the effectiveness of mobile applications in improving EFL students' vocabulary and retention.

Based on the results of the study, three main themes were found to be interrelated, namely increasing vocabulary mastery, long-term vocabulary retention, and factors that affect the effectiveness of mobile application use. These three themes appear consistently in various studies analyzed and show the important contribution of mobile technology in supporting the English language learning process.

The chart also shows that the effectiveness of mobile applications is not only influenced by the existence of the technology itself, but also by learning features such as spaced repetition, gamification, quiz-based exercises, and support for student motivation and learning consistency. The interaction between technology and learning factors results in increased vocabulary mastery while strengthening long-term retention. Thus, mobile applications can be seen as an effective learning medium if used in an ongoing manner and supported by the active involvement of students in the learning process.

D. CONCLUSIONS AND RECOMMENDATIONS

The use of mobile applications in English learning has a significant influence on long-term vocabulary retention in EFL students. Various studies show that mobile apps are able to help learners retain vocabulary in long-term memory through repetitive and structured exposure. The flexibility of using the app allows students to access the material consistently outside of the classroom, thus strengthening the repetition process that is key to the formation of long-term memory. Thus, mobile applications not only serve as a tool to improve vocabulary mastery, but also as a means to maintain these learning outcomes over a longer period of time.

Furthermore, the effectiveness of vocabulary retention through mobile applications is strongly supported by specially designed learning features, such as spaced repetitions, quiz-based exercises, and live feedback. The scheduled repetition feature allows vocabulary to be repeated in a certain time interval thus strengthening memory and reducing the possibility of forgetting. In addition, interactive and gamification elements in the application also play a role in increasing user engagement, which indirectly impacts information retention. However, the success of retention is greatly influenced by the intensity of use, consistency of learning, and duration of interventions carried out by learners.

Based on this description, it can be concluded that mobile applications have an important role in improving long-term vocabulary retention in EFL students. The advantages of providing repetitive exercises, adaptive features, and flexible access make mobile applications an effective medium for maintaining vocabulary. Nonetheless, the success of retention still depends on the consistency of use and active involvement of students in utilizing the application on an ongoing basis.

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