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Mobile-Assisted English Vocabulary Learning: A Systematic Review of Platforms, Learning Outcomes, and Implications (2019-2025)

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Abstract. While mobile-assisted vocabulary learning (MAVL) has gained considerable scholarly attention, systematic synthesis of its platforms, learning outcomes, and pedagogical implications remains limited. This systematic literature review examined 36 empirical studies (2019-2025) to identify mobile platform types, analyse learning outcomes, and synthesise implications for research and practice. Following PRISMA guidelines, searches were conducted in Web of Science, Scopus, and ERIC databases using keywords including "mobile," "vocabulary," and "learning." Studies were screened using inclusion criteria specifying empirical research on mobile-based English vocabulary learning in ESL/EFL contexts. Thematic analysis was employed to categorise platforms and identify learning outcomes. Findings reveal six platform types, with game-based applications receiving the greatest research attention, followed by self-learning applications. Three learning outcomes are reported: enhanced word retention through spaced repetition, receptive and productive vocabulary development via multimodal input and interactive exercises, and increased motivation through gamification. However, deeper vocabulary aspects—including lexical organisation, collocation knowledge, and contextual usage—remain underexplored. Four implications emerge: research designs should incorporate longitudinal methodologies, applications require context-responsive features, vocabulary instruction requires multiple dimensions beyond breadth, and teacher facilitation is proven essential. Despite sample size and database limitations, this review provides evidence-based guidance for educators integrating mobile technology and researchers developing pedagogically informed vocabulary learning applications.

Keywords: mobile-assisted vocabulary learning; vocabulary retention; learning motivation; game-based learning; ESL/EFL contexts; systematic review

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1. Introduction

Mobile-assisted language learning (MALL) has become an increasingly important part of English language education, enabling learners to study anytime and anywhere through mobile devices such as smartphones and tablets. With the global mobile learning market valued at over USD 58 billion in 2023 and projected to grow rapidly between now and 2032 (Global Market Insights, 2024), this trend continues to accelerate. As a key aspect of MALL, mobile-assisted vocabulary learning (MAVL) has attracted increasing attention since vocabulary is the foundation of all language skills and directly influences learners' overall communicative ability (Nation & Webb, 2011).

Over the past decade, empirical studies conducted in this field have confirmed the overall benefits of various MAVL platforms such as Instagram (Nasution, 2024), WhatsApp (Lotfi-Khajouei & Salehi, 2024), and WeChat (Song & Xiong, 2023). Additionally, several review studies have explored the role of mobile technologies in enhancing vocabulary learning. Findings suggest that mobile technologies promote ESL/EFL vocabulary acquisition due to being generally convenient, flexible and engaging (Lin & Lin, 2019). More recent reviews have shifted their focus to game-based mobile learning tools (Vnucko & Klimova, 2023) and vocabulary-specific applications (Alhuwaydi, 2022).

Such reviews indicate that tailored apps contribute not only to word retention but also to areas such as spelling, idioms, collocations, and pronunciation. However, despite these advances, a critical gap remains. To date, few reviews have systematically synthesised the learning outcomes reported across MAVL studies or identified how the implications of current MAVL studies can inform future research design and mobile learning practices. Addressing this gap is particularly timely, given the rapid evolution of mobile technologies and their growing integration into language education.

Hence, this study aims to address the following three main objectives: first, to categorise the types of platforms used in MAVL; second, to analyse the learning outcomes of MAVL; third, to offer insights that can benefit both future researchers and material designers in terms of MAVL. Thus, the findings are expected to contribute to both pedagogical practice and future research directions in MAVL. This study reviews the trends of English vocabulary learning through mobile technologies by investigating the following three research questions:

RQ: What are the types of platforms used for English vocabulary learning through mobile devices?

RQ2: What are the learning outcomes of MAVL reported in empirical studies?

RQ3: What are the implications of the reviewed studies for English vocabulary learning assisted by mobile devices?

2. Literature Review

This section outlines key literature that informs the present review. It begins with an overview of vocabulary learning as a foundation of language acquisition, followed by discussions on MAVL and prior review studies in this field.

2.1 Vocabulary Learning

Vocabulary is widely recognised as a fundamental component of language acquisition, due to its essential role in supporting comprehension and production across the four language skills (Nation & Webb, 2011). Contemporary studies in applied linguistics consistently emphasise that vocabulary knowledge constitutes a key linguistic resource for meaningful language use and overall proficiency development (Schmitt, 2020). Yet despite its importance, vocabulary learning remains one of the most challenging aspects of acquiring English as a second or foreign language, largely due to the cognitive demands of committing large numbers of words to long-term memory and the difficulty of retaining them over time (Dörnyei & Csizér, 2002; Lei et al., 2022).

Various theoretical frameworks have conceptualised what it means to “know a word.” Nation (2001) identified three dimensions: form, meaning, and use, which can be further divided into receptive and productive knowledge. Building on this, subsequent research has emphasised additional aspects including vocabulary size, lexical organisation, and automaticity (Daller et al., 2007; Nation & Webb, 2011). Together, these perspectives highlight that vocabulary knowledge extends beyond mere word recognition, encompassing vocabulary size, vocabulary depth and vocabulary usage.

In response to these challenges, several approaches have been proposed over the past decades to enhance vocabulary learning, including cognitive and metacognitive strategies, social and affective strategies, and contextual or incidental learning (Ellis, 1994; Teng & Mizumoto, 2024). More recently, MAVL has emerged as a result of its potential for enabling continuous, self-paced learning across formal and informal contexts (Recard et al., 2023). Mobile technologies support vocabulary acquisition through features such as spaced repetition, which optimises review intervals to minimise forgetting, and gamification, which sustains learner motivation (Kang, 2016; Nakata, 2015). Studies confirm that combining strategies—particularly cognitive and metacognitive strategies—with mobile applications leads to more effective outcomes (Baars & Viberg, 2023).

2.2 Mobile-assisted Vocabulary Learning

Mobile-assisted language learning (MALL) has become a central concept in second language acquisition research. By leveraging mobile devices such as phones and tablets, learners can access information and language input that can help address the whole range of language skills (Govindasamy et al., 2019). Moreover, MALL offers complete flexibility by promoting learning anytime and anywhere (McQuiggan et al., 2015), offering authentic, social, and contextual environments that integrate various learning strategies (Kukulska-Hulme, 2009).

A key branch of MALL is mobile-assisted vocabulary learning (MAVL). Recent studies highlight the role of popular social media platforms such as Instagram, Facebook, and TikTok in promoting vocabulary learning through captions (Nasution, 2024). Messaging and communication apps such as Telegram and WhatsApp have demonstrated their effectiveness among university learners (Lotfi-Khajouei & Salehi, 2024), while Chinese platforms such as WeChat and QQ

have been proven to help students maximise their fragmented time free for vocabulary use (Song & Xiong, 2023). Aside from these commercial apps, dedicated vocabulary apps have also been widely studied. For instance, Quiz and Cake have been reported to improve vocabulary acquisition and motivation (Alhadiah, 2020; Putri et al., 2023; Yasar & Kocoglu, 2025;).

However, some popular Chinese apps such as Shanbay and Bai Ci Zhan face criticisms, including limited social interaction, insufficient vocabulary coverage, and weak personalisation (Li et al., 2021; Xu et al., 2025). Despite these drawbacks, the overall benefits of MAVL clearly outweigh its limitations, particularly in vocabulary expansion, mastery, and learner motivation. However, most studies to date have focused on receptive vocabulary gains, leaving gaps in our understanding of the way in which MAVL supports vocabulary depth and productive use (Simonnet, 2025).

2.3 Reviews on Mobile-assisted Vocabulary Learning

Several reviews have examined vocabulary learning supported by mobile technologies. Most report similar conclusions, indicating that MAVL enhances learners' vocabulary retention and is therefore perceived to be an effective approach (Ji & Aziz, 2021; Lin & Lin, 2019). In comparison to traditional learning methods such as paper flashcards, dictionaries and word books, mobile technology use results in better vocabulary learning outcomes (Mahdi, 2018).

However, it should be noted that many of these studies have relied on short-term interventions, without confirming whether such gains are sustained over time (Burston & Giannakou, 2022). In addition, adults are reported to benefit more than young language learners from the use of mobile technologies. Yu and Trainin (2022) found that tertiary level students made better progress via MAVL than their K-12 counterparts. Such findings suggest that MAVL may be more effective than traditional vocabulary learning strategies for younger learners who are open to mobile technologies.

Additionally, other reviews have concentrated on vocabulary-specific applications. Alhuwaydi (2022) synthesised studies focusing on self-designed vocabulary learning apps, noting that learning-tailored apps play a significant role in promoting English vocabulary knowledge. On the other hand, Wang et al. (2021) explored the effectiveness of the 15 most frequently downloaded commercial vocabulary learning apps. Their findings highlight the importance of functions such as translation, example sentences, game modes, timely feedback and reward systems. Together, these findings suggest that both self-developed and commercial mobile apps dedicated to vocabulary acquisition can be impactful due to their various functions and rich learning resources.

More recent reviews have shifted their focus to game-based vocabulary learning tools. Vnucko and Klimova (2023) summarised 13 studies on digital game-based learning, demonstrating that such tools enhance vocabulary retention by creating a relaxing learning environment and fostering positive learning emotions. To make the findings more thorough and comprehensive, some reviews capture the bibliometric features of MAVL studies, such as the most frequently used words,

the most productive countries or the most influential authors (Nawaz et al., 2025; Okumuş Dağdelerm, 2023).

In summary, existing reviews demonstrate the potential of MAVL to support language learning. However, several critical gaps remain. First, while various mobile platforms have been used in vocabulary learning, few reviews have systematically categorised these platforms according to their instructional functions or examined their distribution in empirical research. Second, although most reviews confirm that MAVL improves vocabulary retention, a comprehensive synthesis of the range of learning outcomes reported across studies is lacking.

Third, limited attention has yet been given to synthesising the research and pedagogical implications that could guide future study design and mobile learning practices. Therefore, the present study seeks to address these gaps by (1) systematically categorising platform types; (2) synthesising reported learning outcomes; and (3) analysing implications for research and practice. In doing so, the current review contributes a novel synthesis that will complement prior research.

3. Methodology

This study adopts a systematic review approach to synthesise empirical research on mobile-assisted vocabulary learning. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework was applied in this systematic review due to its comprehensive and adaptable characteristics, as well as its wide acceptance in educational research as a rigorous framework for transparent reporting (Page et al., 2021). The procedures that were undertaken include identification, screening and eligibility. Figure 1 presents the aim and process of this systematic review.

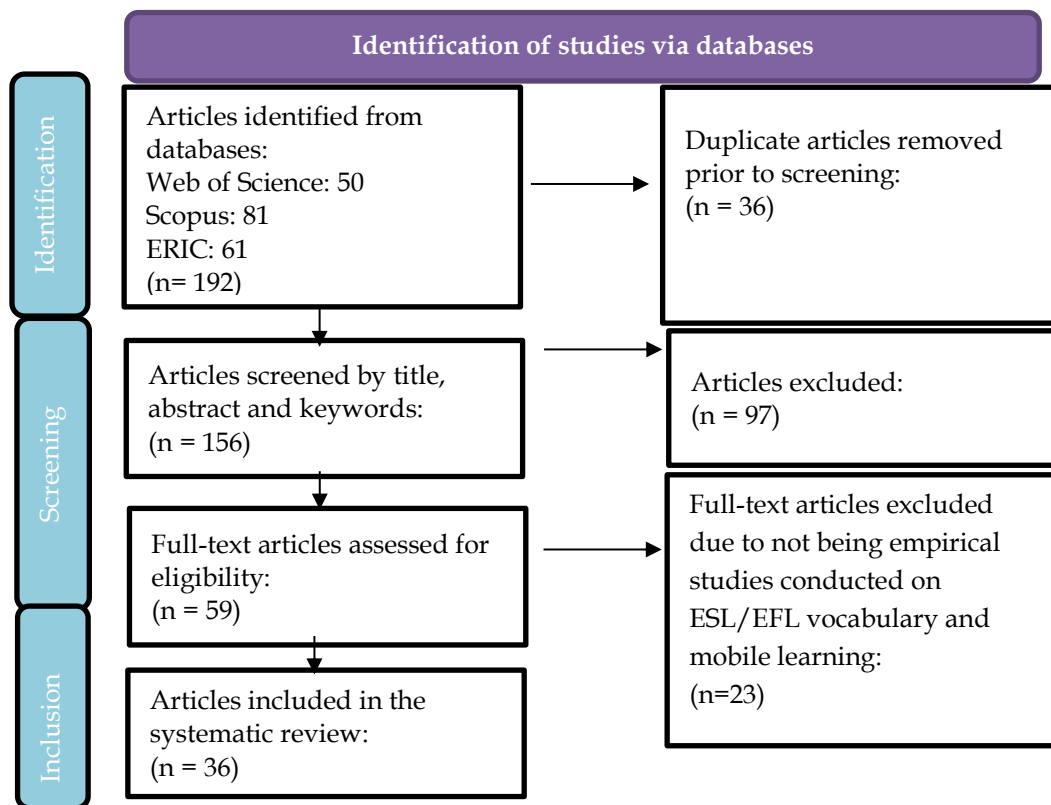


Figure 1: PRISMA flow diagram adapted from Page et al. (2021)

3.1 Identification

As specified in the PRISMA guidelines, the first step of this systematic review was identification. Three databases—Scopus, WoS, and Education Resource Information Center (ERIC)—were selected for the review. Key terms relating to vocabulary learning and mobile learning were carefully constructed to reflect the concepts to be synthesised. Table 1 shows the search strings used across the databases in this study.

Table 1: Search string used in this study

Database	Search String
Web of Science (WoS)	TS = (("English vocabulary *" OR "vocabulary learning" OR "vocabulary acquisition *") AND ("mobile learning *" OR "mobile assisted language learning *" OR "mobile app *" OR "m-learning" OR "mobile device *"))
Scopus	TITLE-ABS-KEY (("English vocabulary" OR "vocabulary learning" OR "vocabulary acquisition") AND ("mobile learning" OR "mobile assisted language learning" OR "mobile app" OR "m-learning" OR "mobile device"))
ERIC	title/abstract/key words: mobile vocabulary learning -review pubyearmin:2019

3.2 Screening

Step two was data screening, which incorporated several procedures. First, duplicates were excluded across all databases. A total of 192 articles were

identified from three databases. After removing 36 duplicate articles, 156 articles were retained for further screening. Next, the title, abstract and keywords of those 156 articles were screened to ensure their relevance to vocabulary learning and mobile learning. As a result, 97 articles were removed as they appeared to be irrelevant to the aim of this study. The third step was to screen the remaining 59 articles, based on the inclusion and exclusion criteria shown in Table 2.

Table 2: Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Timeline	2019-2025	Prior to 2019
Language	English	Non-English
Literature Type	Journal (Article)	Conference, Review, Book
Type of Study	Empirical	Non-empirical
Field	Mobile learning and English vocabulary	Not mobile learning and English vocabulary

Following this careful screening process, 36 out of 59 articles were deemed to have met the inclusion criteria and were retained for review. Despite having been initially evaluated, book chapters and conference proceedings were ultimately excluded because they were deemed less comprehensive. The timeframe of 2019 to 2025 was chosen because the outbreak of COVID-19 in 2019 accelerated the adoption of mobile learning and established it as an essential component of education (Adedoyin & Soykan, 2020; Bond, 2020).

3.3 Included Studies

The studies included in this systematic literature review are centred around mobile-assisted English vocabulary learning. Table 3 provides a summary of the studies included. As can be seen from the table, a total of 36 journal articles were selected, all of which expressed a purpose and objectives that directly related to English vocabulary learning supported by mobile devices. Among these 36 studies, 22 were from WoS, 11 from Scopus and three from ERIC. These three databases were chosen because they comprehensively index high-quality research in language and education studies. Therefore, they were considered appropriate sources for addressing the aims of the present study.

Table 3: Summary of the reviewed studies

Study	Samples	Findings	Implications
Vargo et al. (2023)	46 college students	The system benefited vocabulary retention only for some users due to different personality traits and learning styles.	It indicates the need for the development of more personalised learning applications.
Wang et al. (2020)	55 freshmen majoring in English	The model was effective. The treatment group showed higher vocabulary achievement and motivation.	Future research should include more participants, longer duration treatment, or distinguish between different proficiency students.
Chaikovska & Zbaravska (2020)	50 A2 level university juniors	Quizlet was effective. The results were 2% higher due to embedding the Ebbinghaus forgetting curve.	Future research should use two different vocabulary platforms over a longer period.
Poláková & Klímová (2019)	20 students at a vocational school	App use was effective, enjoyable and promoted collaborative learning. However, not everyone was interested.	Future research should involve larger sample sizes.
Uz Bilgin & Tokel (2019)	25 elementary-level university students	Contextual vocabulary learning can be supported with mobile technologies.	VR should be developed to cater to the learner's interest, learning strategies, and anxiety levels.
Klimova (2019)	33 third-year Tourism Management students	MAVL was effective when designed around students' needs. It can serve as a complementary material and was welcomed by students.	Further research should extend the mobile app to the Apple platform and iOS.
Chen et al. (2021)	114 university freshmen	MAVL improved vocabulary gains, automaticity and overall academic performance.	Future studies of mobile learning should focus on automaticity and vocabulary organisation.
Chen et al. (2018)	46 primary students	EVLAPP-SRLM was effective in enhancing learning performance and motivation for both genders.	Future design should include game function and ranking mechanism.
Lu et al. (2023)	108 non-English majors	The app improved vocabulary learning and prevented rapid memory loss. Participants held a positive attitude.	Apps should develop independence and meet each student's needs.
Li (2023)	5 students and 3	Students were positive. Drawbacks were distracting learning	WALL should develop various academic skills

	English teachers	environments and uncertain learning effects.	and involve the support of instructors.
Yang & Song (2023)	44 primary school students	Students used the app to set goals and plan strategies. They posted and reviewed learning logs.	It informs the design of future apps for students with different SRVL behavioural patterns.
Jiang & Liou (2022)	26 English major freshmen	Vocabulary gains were retained and transferred to writing. Positive effects included higher test scores, greater use of academic vocabulary, and sustained learner satisfaction.	MALL design should include example sentences with word meanings and multi-word instruction.
Xodabande & Hashemi (2023)	90 freshmen in different majors	Mobile textbooks led to vocabulary gains with long-lasting learning effects. Benefits were episodic learning and enjoyment; challenges were health concerns and distractions.	High-quality and user-friendly materials are needed to complement traditional resources.
Lei et al. (2022)	175 EFL learners in a language institute	The program increased vocabulary learning attitudes and self-regulatory capacity. These changes were positively correlated across individuals.	MAVL should foster not only receptive but also productive vocabulary knowledge.
Zakian et al. (2022)	86 university students	The app contributed to vocabulary knowledge development, proving the long-term impacts of MALL.	Developers should address gaps in vocabulary knowledge. Learners may benefit from training in the use of MALL.
Polakova & Klimova (2022)	36 students in the Secondary Vocational School	Using MALL-blended learning was impactful. Students' overall satisfaction - vocabulary gains, ease of use, and motivation - confirmed its usefulness.	Teachers should use apps with organised content, formative assessment, and feedback. Students should choose whether to use apps.
Daly (2022)	134 students from two different sessions	The app group achieved higher test scores, while learner characteristics such as gender, ability, and preferred device showed no significant impact. The amount of time spent using the app and performance on a difficult quiz were significant	Future research should focus on developing valid and reliable measures of vocabulary learning efficiency. Such studies need to carefully control variables and precisely track app usage time to provide robust empirical evidence.

		moderators, highlighting the effectiveness of app-based learning compared to rote memorisation.	
Mohammadi & Masoumi (2021)	32 Iranian intermediate EFL learners	MALL offers flexibility while reducing the impact of social anxiety and loneliness in language learning.	Future research should examine learners of different proficiency levels and attitudes, comparing various forms of e-learning.
Tahounehchi (2021)	26 female students	The experimental group significantly outperformed the control group. Learners using WhatsApp demonstrated a more positive attitude towards EFL learning.	Teachers' additional efforts or learners' prior orientations may have influenced the results. Future research should investigate WhatsApp's role across different proficiency levels.
Elaish et al. (2019)	64 primary students	MALL enhanced students' motivation, boosting the confidence of initially low-performing learners.	Mobile game applications should be integrated into the daily English curriculum over long-term use.
Govindasamy et al. (2019)	50 form 5 arts stream pupils in Malaysia	Mobile phones enhance learners' vocabulary knowledge more effectively than printed dictionaries. MALL is beneficial because it enables faster and deeper word learning.	Effective use of mobile phones in learning requires internet access and teacher readiness, supported by school policies that allow restricted but productive use.
Zarrati et al. (2024)	112 sophomore and junior students in a TEFL course	All groups improved in vocabulary, but the smartphone group outperformed others, confirming the superior effectiveness of mobile devices.	Integrating MALL needs to align with students' device preferences. Educators should design digital flashcards with intentional and targeted vocabulary instruction.
Arumugam & Noor (2021)	60 primary students	Students using the app outperformed those in the control group. The app's game-like design fostered personalised vocabulary growth and enhanced learners' motivation and enjoyment.	A mobile app based on personalised instruction enhances vocabulary learning, making it an engaging and cost-efficient tool.
Mohammadi et al. (2024)	86 Iranian EFL university students	Digital flashcards significantly improve vocabulary learning, especially receptive knowledge. However, gains in productive vocabulary were smaller.	App developers should integrate features that foster both receptive and productive vocabulary knowledge.

Cabrera-Solano et al. (2019)	42 EFL pre-service teachers at a private university	The app was effective as a metacognitive strategy, enhancing vocabulary and positive attitudes with immediate feedback and confidence building.	Future research should consider using a larger sample and checking the availability of mobile technology for EFL students.
Benlaghrissi & Ouahidi (2023)	60 EFL secondary school students	The experimental group using the Flashcard World app outperformed, showing that the application was more effective than conventional teaching.	Educators should use mobile apps for enhancing vocabulary and other language skills.
Tsai (2020)	60 pupils (low, intermediate and high level of English)	AR was more effective across proficiency levels. Flashcard use showed no difference between high and intermediate groups.	Using AR in children's vocabulary learning is beneficial.
Alhadiah (2020)	38 Saudi EFL freshmen	Students had positive attitudes, valuing the app's ease of use and future applicability. They preferred it because it supported different learning styles and goals.	Further research should examine learners' attitudes, considering factors such as age, gender, learning style, and proficiency.
Zakian (2022)	71 young language learners	Learners using apps outperformed the control group, confirming the effectiveness of MAVL.	Developers should align textbooks with technological tools; teachers should be trained to use m-learning with YLL.
Lai et al. (2020)	56 Information and Computer Engineering sophomores	The combination was effective. It reduced students' anxiety and enhanced their motivation, engagement, and vocabulary achievement.	Future improvements include developing an iOS version, providing constant story updates, and adding phonetic symbols.
Barzani & Omar (2024)	60 Kurdish EFL learners	WhatsApp was an effective tool for teaching vocabulary, enhancing students' motivation and engagement.	Future research should confirm the tool's effectiveness across contexts.
Al Shihri et al. (2025)	60 second- and third-year EFL university students	Students using mobile apps outperformed those taught traditionally. They also reported positive, engaging learning experiences.	Future research should include larger, more diverse samples, and integrate multiple MALL tools to examine long-term sustainability.
Baraa Ahmed Shiekh et al. (2024)	39 students at the Community College	Positive attitude was detected. Challenges included technical issues,	Future research should include multiple institutions and test more than one app.

		academic dishonesty, and distraction.	
Maenza & Gajic (2024)	68 university students in Belgrade	WordUp offered engaging, gamified alternatives to traditional vocabulary learning; hence, it was preferred by learners.	Future research should involve larger samples and longitudinal designs to assess WordUp's long-term impact.
Wulandari et al. (2023)	33 Business Management students	Quizlet supported self-learning and contextual usage. Its engaging and interactive features enhance motivation.	Future mobile apps should align digital materials with the curriculum, tailored to learners' needs.
Nguyen et al. (2023)	47 Nursing students	Memrise improved students' vocabulary, making the process effective and enjoyable. Challenges were unstable internet and weak devices.	Future research should use longer treatment, larger sample, long-term measurement and better Wi-Fi access support.

3.4 Data Analysis Procedure

All of the selected articles (n = 36) were imported into *Zotero* for reference management and preliminary organisation. Each paper was then examined to extract bibliographic information, key findings and implications related to each research question. Tags and notes were used in *Zotero* to record recurring patterns emerging from literature. Following this step, a thematic analysis was conducted manually using Microsoft Excel, which allowed for a structured comparison of studies. Codes were generated inductively based on recurring concepts, before being organised into broader themes in response to the three research questions.

To enhance reliability, the coding framework and thematic categories were cross-checked after several rounds of review to minimise researcher bias and confirm interpretive coherence (Braun & Clarke, 2022). The combined use of *Zotero* and Excel provided a flexible but systematic synthesis process, which is appropriate for lightweight thematic analysis in systematic reviews (Lorenzetti & Ghali, 2013). The following section presents results derived from the analysis of the selected articles.

4. Results

This section reports the results of the analysis, which are organised according to the three research questions concerning platform types, learning outcomes, and research implications.

4.1 Types of Mobile Platforms for Vocabulary Learning

This review identified six types of platforms used for English vocabulary learning through mobile devices: (1) game-based platforms; (2) self-learning vocabulary apps; (3) social and messaging platforms; (4) teaching and learning apps; (5) assessment apps; and (6) exam-oriented apps. This classification emerged from the literature and was based on the platform's main instructional functions and

the level of learner autonomy. Each category represents a specific way in which mobile technology supports vocabulary learning in EFL and ESL settings. Table 4 shows the type of categorisation, the number of studies and the percentage of each type of mobile learning platform.

Table 4: Types of platforms used in mobile-assisted vocabulary learning

Type	Examples	Number of studies	Percentage
Game-based platforms	Quizlet; NGSL builder; Anki; Flashcards World; Words716; digital flashcards; VocabGame; Juju English vocabulary; CSIEC; AR; WordWall	17	47.2%
Self-learning vocabulary apps	Vocabulometer; Angličtina TODAY; Vocab; Visual Vocabulary; VOC 4 FUN; WordUp; Memrise	8	22.2%
Social and messaging platforms	WhatsApp, Telegram, WeChat; CSDMLE model	6	16.7%
Teaching-oriented apps	Electronic textbook app; Learn English Vocabulary – Kids	2	5.6%
Assessment apps	Kahoot	1	2.8%
Exam-oriented apps	Mobile App for CET 4 Vocabulary Learning	1	2.8%
Not specified		3	8.3%

Among the various categories, game-based platforms received the greatest attention, with 17 studies accounting for 47.2% of the total. Of these, Quizlet was by far the most frequently studied. Findings showed that learners using Quizlet outperformed those relying on paper-based methods, reporting higher motivation and stronger long-term vocabulary retention (Chaikovska & Zbaravska, 2020; Daly, 2022). Other digital flashcard applications, such as NGSL Builder, Anki, Flashcards World, and Words716, also demonstrated benefits for both receptive and productive vocabulary knowledge, while innovative designs integrating images and stories into flashcards further enhanced engagement (Zakian et al., 2022; Zarrati et al., 2024).

Additionally, game-based platforms such as VocabGame, Juju English vocabulary, CSIEC, AR tools, and WordWall were found to boost learner interest. Furthermore, such applications were found to improve outcomes across different proficiency levels, with particular benefits for lower-achieving students (Chen et al., 2021; Elaish et al., 2019). In general, game-based platforms, especially Quizlet and digital flashcard-related apps, are the most widely studied mobile learning tools in the past seven years.

Following game-based platforms, self-learning vocabulary apps and social and messaging platforms received the most academic attention, with eight and six studies, respectively. Most apps such as Vocab + and Visual Vocabulary are believed to positively affect the vocabulary learning process and learning outcome (Cabrera-Solano et al., 2019; Yang & Song, 2023). However, some studies

have reported mixed results. For instance, compared to traditional flashcards, Vocabulometer was only beneficial for users with certain learning preferences (Vargo et al. 2023). Tools such as WhatsApp, Telegram, and WeChat were generally effective in improving vocabulary learning. WhatsApp-based interventions were associated with higher vocabulary test scores and stronger learner motivation (Al Shihri et al., 2025). On the other hand, Telegram was reported to reduce learners' anxiety and isolation, enabling students to practice vocabulary free from time and location constraints (Mohammadi & Masoumi, 2021).

In China, WeChat proved to be a popular choice, though its effectiveness was sometimes undermined by distractions and inconsistent learning outcomes (Li, 2023). A related platform, the Contribution-oriented Self-Directed Mobile Learning Ecology (CSDMLE) model, also showed positive results in building vocabulary knowledge (Wang et al., 2020). Collectively, these findings indicate that self-learning vocabulary apps and social and messaging platforms have increasingly become the focal points of recent empirical research.

In contrast, teaching-oriented apps have been much less frequently studied. Teaching-oriented apps refer to mobile tools that are integrated into classroom instruction or guided by teachers, combining formal teaching with self-paced learning (Burston, 2015; Kukulska-Hulme, 2009). The effectiveness of only two apps in this category have been investigated; these were an electronic textbook app and Learn English Vocabulary - Kids. Both studies underscored the value of structured, teacher-mediated learning, particularly through features such as feedback, notifications, and episodic content (Xodabande & Hashemi, 2023; Zakian, 2022).

The least studied mobile platforms were assessment apps and exam-oriented apps, with only one study identified for each type. The assessment app Kahoot was found to encourage collaborative learning and vocabulary testing, though the researchers also noted that not all learners were equally motivated by technology use (Al Shihri et al., 2025; Poláková & Klímová, 2019). Similarly, an app designed for the CET-4 exam was found to improve both vocabulary mastery and new word retention (Lu et al., 2023). Finally, three studies reported positive outcomes for mobile learning without specifying the exam platforms (Govindasamy et al., 2019; Lei et al., 2022; Uz Bilgin & Tokel, 2019).

Together, these results demonstrate that in the past seven years, six types of mobile platform have been investigated, generally resulting in positive outcomes related to vocabulary acquisition. Among these six types, game-based platforms dominate the research landscape, while assessment apps and exam-oriented apps remain underexplored. This imbalance suggests a potential research bias towards platforms that are more accessible or easier to implement. Furthermore, it highlights the need for future research to diversify platform selection to provide a more comprehensive understanding of MAVL effectiveness.

4.2 Learning Outcomes of MAVL

Three main learning outcomes of MAVL were identified in this systematic review, which were enhancing word retention, developing receptive and productive vocabulary knowledge, and boosting learner motivation.

Vocabulary retention was the most frequently reported outcome. Several studies demonstrated that mobile apps could support the long-term memorisation of words, whether through dedicated systems such as Vocabulometer (Vargo et al., 2023), web-based apps such as Angličtina TODAY (Klimova, 2019), or exam-oriented platforms such as the CET-4 vocabulary app (Lu et al., 2023). Learners consistently indicated that these tools helped prevent rapid memory loss, improved study habits, and encouraged continued use (Zakian et al., 2022). Similar effects were observed among young language learners using child-focused apps, which improved their ability to recall words over extended periods (Zakian, 2022).

In terms of receptive knowledge, evidence suggested that MAVL could expand vocabulary size and improve students' recognition of word forms and meanings. Social and messaging apps such as WhatsApp were found to enable learners to achieve higher test scores compared to traditional approaches (Tahounchchi, 2021), while mobile tools such as digital flashcards were shown to be more efficient than printed dictionaries (Govindasamy et al., 2019). Teacher-led integration of apps further prompted vocabulary growth in classroom settings (Zakian, 2022). Beyond recognition, a few studies revealed benefits for productive use of vocabulary. For instance, digital flashcards improved both receptive and productive knowledge when compared with paper-based alternatives (Mohammadi et al., 2024), and Quizlet was found to facilitate contextual word use and writing development (Wulandari et al., 2023). However, progress in productive knowledge tended to lag behind receptive knowledge, which points to the value of designing interventions that focus on productive vocabulary use.

A large number of studies emphasised the role of MAVL in enhancing learner motivation (Al Shihri et al., 2025; Arumugam & Noor, 2021; Chen et al., 2018; Lei et al., 2022; Polakova & Klimova, 2022). Motivation to learn English vocabulary was promoted in various ways. First, peer collaboration emerged as a strong factor. Mobile apps that allowed user interaction, such as Vocab+ and WhatsApp, increased learners' engagement (Barzani & Omar, 2024; Yang & Song, 2023). Additionally, game-based features enhanced enjoyment and confidence, which led to more continuous use of apps. This was particularly true for lower-proficiency learners, who needed the constant encouragement of earning badges (Arumugam & Noor, 2021; Xodabande & Hashemi, 2023). App functions such as notifications and immediate feedback also reinforced motivation by reminding learners to practice and providing timely support (Cabrera-Solano et al., 2019). Moreover, as apps with interactive or multimedia features decrease negative affective factors in language learning, MAVL could motivate learning by reducing levels of anxiety and isolation (Lai et al., 2020).

In addition to these main outcomes, several studies depicted broader learning benefits. Learners expressed that apps improved their study habits and could appropriately be integrated into other courses (Klimova, 2019). MAVL was also associated with stronger self-regulation and positive attitudes towards vocabulary learning in the long term (Lei et al., 2022). In comparative studies, mobile devices outperformed laptops and traditional methods in supporting vocabulary growth (Zarrati et al., 2024). Personalised app designs and the variety of features in tools such as Quizlet further enable learners to adapt strategies to their individual needs and goals (Alhadiah, 2020; Arumugam & Noor, 2021). Together, the results indicate that MAVL yields positive learning outcomes, including strengthened word retention, expanded receptive knowledge, gains in productive use, and enhanced learner motivation.

4.3 Implications for Future Research and Practice

The reviewed articles yield a range of implications for future research and practice. These can be broadly grouped into four areas: research design; mobile app development; dimensions of vocabulary learning; and the role of teachers. In terms of research design, many studies highlighted the need for more robust and generalisable studies. Suggestions included increasing sample sizes and adopting multi-stage designs (Wang et al., 2020; Zarrati et al., 2024), as well as extending the duration of interventions to capture the long-term effect on vocabulary development (Maenza & Gajic, 2024; Nguyen et al., 2023).

Several studies also encouraged examining the impact of different types of platforms across diverse learning contexts (Baraa Ahmed Shiekh et al., 2024; Barzani & Omar, 2024; Chaikovska & Zbaravska, 2020). In addition, factors such as learner proficiency levels (Mohammadi & Masoumi, 2021), prior knowledge, learning strategies, anxiety (Uz Bilgin & Tokel, 2019), cultural background, attitudes toward MALL (Alhadiah, 2020), and teacher effort (Tahounehchi, 2021) were identified as variables worthy of closer investigation. Tracking app usage time was also suggested to strengthen the reliability of findings (Daly, 2022).

Regarding mobile app development, a recurring theme in the implications of these studies is the need to design apps that are tailored to learners' needs. Involving learners in the process of selecting vocabulary and shaping app functions was recommended to stimulate engagement (Zarrati et al., 2024). Material developers were also advised to create context-appropriate apps that take into account the differences in learning behaviour preferences and goals (Alhadiah, 2020; Polakova & Klimova, 2022;).

At the technical level, enabling offline access, extending to multiple platforms, and minimising registration barriers were noted as practical improvements (Lai et al., 2020; Klimova, 2019). User-friendly interfaces and high-quality materials were viewed as essential for making learning accessible anytime and anywhere (Xodabande & Hashemi, 2023). To further enhance motivation, researchers suggested embedding features such as games and ranking systems to promote goal achievement (Chen et al., 2018; Elaish et al., 2019).

The third area concerns the dimensions of vocabulary development. It was widely reported in the reviewed studies that future research should consider additional aspects of vocabulary learning beyond vocabulary size and retention. For instance, Xodabande and Hashemi (2023) indicated the potential of combining mobile learning with traditional instruction to maximise vocabulary development outcomes. More importantly, research on the use of mobile platforms to develop different dimensions of vocabulary knowledge was identified as focusing disproportionately on word retention and receptive vocabulary knowledge. Therefore, future researchers are recommended to investigate the ways in which MAVL influences other vocabulary dimensions such as lexical organisation (Chen et al., 2021), vocabulary depth (Zakian, 2022), recognition skills, and productive use (Mohammadi et al., 2024). Only through such comprehensive exploration can the effectiveness of MAVL be confirmed and its potential fully realised.

Finally, the reviewed studies consistently highlighted the role of teachers in supporting MAVL use. Although apps provide opportunities for independent learning, they were found to be most effective when integrated into classroom instruction (Chen et al., 2021; Jiang & Liou, 2022). Teachers play a crucial role in guiding app use, monitoring learner progress, and providing strategies for episodic learning (Li, 2023; Klimova, 2019). To maximise the benefits of mobile learning, teachers also need to update their technical skills and establish rules to keep learners on task (Benlaghrissi & Ouahidi, 2023; Govindasamy et al., 2019).

Collectively, these identified implications suggest that gaps remain in MAVL research. Future research can address these gaps by adopting more rigorous research design, developing more learner-tailored mobile tools, investigating the effect of MALL on different vocabulary dimensions, and integrating teacher facilitation into mobile learning practice. Notably, while the reviewed studies offer valuable recommendations, many implications remain at a conceptual level rather than being empirically tested. This highlights the need for future research to move beyond identifying implications towards systematic validation through rigorous experimental designs.

5. Discussion

5.1 Summary of Major Findings

This review identified six categories of platforms used in MAVL: game-based platforms; self-learning apps; social and messaging platforms; teaching-oriented apps; assessment apps; and exam-oriented apps. The majority of studies focused on game-based platforms, self-learning apps and social and messaging platforms, while teaching-oriented, assessment, and exam-oriented apps remain underexplored. Three main learning outcomes were identified across the reviewed studies, including enhanced vocabulary retention, improved receptive vocabulary knowledge, and increased learner motivation. Additionally, the reviewed studies highlighted implications related to research methodology, the role of educators, and the need to explore deeper dimensions of vocabulary knowledge.

5.2 Interpretation of Findings

Regarding platform types, this distribution pattern aligns with previous reviews (Alhuwaydi, 2022) but reveals a notable shift towards platforms integrating gamification and social features. Game-based platforms such as Quizlet and other digital flashcards have been shown to increase vocabulary retention by combining repetition with interactive features. Messaging apps such as WhatsApp and WeChat promote collaboration and interaction beyond the classroom. Recent studies confirm these advantages, reporting that digital flashcard apps can lead to stronger vocabulary gains than traditional methods (Yasar & Kocoglu, 2025).

The effectiveness of game-based platforms can be explained by their alignment with spaced repetition principles (Cepeda et al., 2006) and Self-Determination Theory (Deci & Ryan, 2013), as gamification elements—such as points, badges, and progress tracking—activate intrinsic motivation. However, effectiveness may vary across learner populations: younger and lower-proficiency learners appear to benefit more from structured game-based apps (Chen et al., 2018), whereas advanced learners prefer self-directed platforms (Daly, 2022). This underlines the emergence of gamification and social interaction as the most prominent strengths of MAVL in recent years (Tan & Yunus, 2023).

By contrast, teaching-oriented apps, assessment apps, and exam-oriented apps remain less explored. The relative scarcity of research on these platform categories renders it difficult to evaluate their wider impact. Where such platforms have been studied, the effectiveness of MAVL is not consistently demonstrated. Rather, it tends to vary according to learners' digital skills, study habits, and access to resources (Burston, 2021). This is confirmed by Xu et al. (2025), who found that although assessment apps such as Shanbay can encourage steady vocabulary practice and outperform simple wordlists, its positive impact may only apply in certain contexts. These results suggest that the role of less-studied platforms in shaping vocabulary learning has yet to be fully understood.

A consistent theme identified in the learning outcomes across MAVL studies lies in the strengthening of vocabulary retention. Mobile flashcards and related tools provide repeated exposure, which helps learners consolidate vocabulary and recall it over time. This mechanism is grounded in the Involvement Load Hypothesis (Laufer & Hulstijn, 2001), which posits that retention is enhanced when learners engage in tasks requiring need, search, and evaluation—elements commonly incorporated in MALL platforms through active retrieval and feedback features. Improvements in receptive knowledge, such as word forms and meanings, are widely reported, while gains in productive use are less frequently examined. Despite some studies showing positive effects in writing and contextual use (Razaq, 2022), the evidence remains limited. This suggests that developing productive knowledge through MAVL may be more challenging, but it represents an area with considerable potential for future research.

An additional value of MAVL is its ability to shape motivation and learner behaviour. Research indicates that features such as games, notifications, and instant feedback make learning more engaging, while collaborative tasks in

messaging apps reduce anxiety and foster peer support (Noor & Islam, 2024). Such features address learners' psychological needs for competence and relatedness, as outlined in Self-Determination Theory. Recent work suggests that when students incorporate mobile tools into their daily routines, their learning practice becomes more regular and self-directed (Lee & Chang, 2025). However, it should be noted that gamification may lead to extrinsic motivation that diminishes once rewards are removed (Hanus & Fox, 2015). Therefore, future research should explore how this motivational effect can be better strengthened to ensure that MAVL realises its full potential in supporting long-term vocabulary development.

The implications of the reviewed studies can be organised into four dimensions. First, regarding research design, many of the reviewed studies called for longer intervention periods and larger sample sizes. Thus, future studies should adopt longitudinal designs and mixed methods to capture long-term retention effects. Second, in line with previous reviews (Alhuwaydi, 2022) regarding mobile application development, it was found that the impact of mobile apps can be maximised by personalising them to meet learners' needs. For example, Hashim et al. (2021) designed an AR mobile application for children with autism, demonstrating the great potential of needs-tailored apps in facilitating vocabulary acquisition.

Third, most studies have focused on vocabulary size or retention, while deeper aspects—such as lexical organisation, vocabulary depth, and productive use—remain underexplored. Nevertheless, these factors are crucial for language learners to integrate words into actual communication (Nation, 2001). Finally, the role of educators remains crucial. Although mobile apps provide opportunities for independent learning, their effect can be strengthened when facilitated by teachers' instruction in classroom settings. Teachers continue to play a key role in helping learners transfer vocabulary knowledge from recognition to meaningful use (Chall, 2014). Consequently, combining teachers' facilitation with learner-tailored apps offers a solution that can fully realise the potential of mobile learning.

5.3 Limitations and Future Directions

Several limitations of this review should be acknowledged. First, this systematic review only included literature published within the past seven years, resulting in a relatively small sample size of 36 articles. Although this focus captures the most recent developments in MAVL, a broader timeframe could yield a more comprehensive understanding of how mobile vocabulary learning has evolved. Future research may consider extending the scope to trace longitudinal trends across different technological periods.

Second, the reviewed studies predominantly employed short-term experimental designs with interventions lasting only a few weeks. Such designs may not fully capture vocabulary retention over time or the sustained impact on learning behaviours. Longitudinal or mixed-methods approaches could provide a better understanding of how MAVL interacts with long-term vocabulary development.

Third, the concentration of studies in Asian ESL/EFL contexts—particularly China, Malaysia, and Iran—may limit the applicability of these findings to learners from different linguistic and cultural backgrounds. Cross-cultural and comparative research is therefore needed to examine how educational traditions, technological infrastructure, and learner attitudes shape MAVL effectiveness across diverse settings.

6. Conclusion

This systematic literature review analysed the use of MALL platforms for English vocabulary acquisition in ESL or EFL contexts from 2019 to 2025, synthesising 36 articles from WoS, Scopus, and ERIC databases. Regarding platform types (RQ1), six categories were identified, with game-based platforms, self-learning apps, and social platforms receiving the most research attention, while teaching-oriented, assessment, and exam-oriented apps remain underexplored.

In terms of learning outcomes (RQ2), three main findings emerged: enhanced vocabulary retention through repeated exposure; improved receptive vocabulary knowledge (though productive use remains limited); and increased learner motivation fostered by game features, peer collaboration, and instant feedback. With regard to research implications (RQ3), the reviewed studies highlight the need for longer intervention durations, teacher facilitation in bridging receptive and productive knowledge, learner-tailored app design, and greater attention to deeper dimensions of vocabulary knowledge such as lexical organisation and vocabulary depth.

This review contributes to the field by providing a six-category platform taxonomy and clarifying how MAVL supports vocabulary development. In terms of practical implications, educators should employ mobile apps as supplements to classroom instruction, facilitating learners' transition from recognition to meaningful use. App developers should incorporate adaptive difficulty adjustment and personalised progress tracking to address diverse learner needs. A limitation of this review is that it exclusively encompasses literature from the past seven years, which may affect generalisability; however, the recent evolution of MALL renders contemporary studies more beneficial for comprehending its current position.

Future research should employ longitudinal designs, examine vocabulary depth and productive use, and test effectiveness across diverse learner populations. By offering empirical insights and actionable recommendations, this review supports the ongoing development of effective, learner-centred mobile vocabulary learning.

7. Conflicts of Interest

The authors declare no conflict of interests.

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