

Navigating Vocabulary Learning in Mobile-Assisted Language Learning: Mapping Benefits and Addressing Challenges

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Abstract

The proliferation of mobile technologies has fueled the growth of mobile-assisted language learning (MALL), providing learners with opportunities to customize their language learning experiences. Numerous studies have investigated the impact of MALL on enhancing language skills such as listening, speaking, reading, and writing, with a particular focus on vocabulary development. However, in addition to the benefits, the use of MALL is accompanied by specific challenges. This study systematically synthesizes existing literature to map the benefits and challenges associated with vocabulary learning within MALL contexts. An analysis of 76 scholarly articles retrieved from the Web of Science Core Collection reveals that MALL substantially facilitates vocabulary acquisition (43%), promotes learner motivation (24%), improves retention of vocabulary items (15%), and offers authentic contexts for vocabulary application (6%). Identified challenges encompass technological constraints of mobile devices and platforms, potential negative impacts associated with smartphone usage, user skepticism regarding the effectiveness of MALL, and external environmental pressures. To fully realize the potential of MALL, further empirical research is necessary to deepen understanding of its advantages and to develop effective strategies for mitigating identified challenges.

Keywords: mobile-assisted language learning, vocabulary learning, benefits, challenges

1. Introduction

The widespread ownership of smartphones and the increasing availability of portable devices such as tablets have sparked interest in mobile learning (Duman et al., 2014). Among the various mobile learning contexts, mobile-assisted language learning (MALL) has experienced particularly notable growth (Burston, 2015; Duman et al., 2014). The proliferation of MALL signifies an important shift in educational paradigms, leveraging the convenience and ubiquity of mobile technology to facilitate language acquisition. By integrating language learning seamlessly into daily routines, MALL offers learners interactive, engaging, and personalized learning experiences. This flexibility overcomes traditional constraints of time and space, enabling continuous, accessible language practice and skill enhancement.

While definitions of MALL vary, they typically emphasize several core attributes such as flexibility in learning schedules and locations, seamless integration across multiple devices, ease of access to resources, and adaptability to individual learner preferences (Duman et al., 2014; Kukulska-Hulme, 2012; Pegrum, 2014; Petersen & Sachs, 2016; Reinders & Pegrum, 2015). These characteristics allow learners to study conveniently in various contexts—such as during commutes, breaks between scheduled tasks, or periods of waiting—thereby showing the accessibility and versatility inherent in MALL.

Research addressing the effectiveness of MALL covers diverse language skills, including speaking, listening, reading, and writing, as well as specific language components such as pronunciation, grammar, and notably vocabulary (Hsu & Liu, 2021; Gutiérrez-Colón et al., 2020; Mallampalli et al., 2021). Vocabulary learning, in particular, has attracted substantial scholarly attention (Mortazavi et al., 2021; Slavuj, 2023; Persson & Nouri, 2018). MALL applications frequently integrate interactive elements like quizzes and games that promote active learner engagement and enrich the learning experience (Fithriani, 2021). Moreover, multimodal features including text, imagery, audio, and video enhance vocabulary comprehension and retention. Despite widespread

affirmation of the efficacy of MALL, some research has provided inconclusive findings or highlighted disadvantages (Derakhshan, 2011; Stockwell, 2007). For example, Derakhshan (2011) found statistically significant impact of text-messaging intentions on vocabulary retention.

Although numerous literature reviews have evaluated the general benefits of MALL (Burston, 2015; Peng et al., 2020; Zhang & Zou, 2020), relatively few have focused specifically on vocabulary learning. Moreover, existing reviews addressing vocabulary learning through MALL (Lin & Lin, 2019; Yang et al., 2021) rarely synthesize both the benefits and challenges comprehensively. Addressing this gap, the current review systematically examines literature on vocabulary learning within MALL contexts, highlighting both the pedagogical advantages and potential challenges. To guide this inquiry, the addresses two research questions:

RQ1: To what extent does MALL enhance vocabulary acquisition and retention among language learners?

RQ2: What are the multifaceted challenges and obstacles associated with vocabulary learning in MALL context?

2. Method

This systematic review involves a rigorous approach to identifying, selecting, and synthesizing primary research studies to provide a comprehensive and reliable overview of vocabulary learning in mobile-assisted language learning (MALL) contexts (Oakley, 2012). The reporting adhered to the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines to ensure transparency and rigor in reporting research findings (Bowles & Brindle, 2017).

2.1 Data Source and Search Strategy

The Web of Science Core Collection was selected as the primary data source due to its comprehensive coverage of peer-reviewed, high-quality research articles. The databases included in this review were the Social Sciences Citation Index (SSCI), Science Citation Index Expanded (SCI-EXPANDED), Arts & Humanities Citation Index (A&HCI), and Emerging Source Citation Index (ESCI). The search strategy applied uniformly across these databases consisted of the following keywords: (mobile language learning) (Topic) AND (vocabulary OR word) (Topic).

2.2 Selection Criteria and Process

The initial database search identified 468 studies. These studies were subsequently evaluated based on clearly defined inclusion and exclusion criteria:

- (1) Publication types and languages: Only peer-reviewed journal articles published in English were included. Conference proceedings, books, book chapters, and other non-journal formats were excluded.
- (2) Specific to MALL: Only articles explicitly focused on mobile-assisted language learning (MALL) were included, excluding broader studies on general technology usage or multiple device platforms.
- (3) Empirical studies: Included studies were empirical, involving clearly defined research questions, populations, methodologies for data collection and analysis, as well as presenting detailed results and discussions (Goodwin, 2005).
- (4) Direct focus on vocabulary learning: Studies included in this review were required to explicitly address vocabulary learning or teaching, excluding articles primarily focusing on broader language skills.

Applying these criteria, an initial screening based on publication type and language resulted in the exclusion of 13 studies, including one data paper, one news article, two editorial pieces, and nine non-English articles. Subsequently, titles and abstracts of the remaining articles were screened, leading to the exclusion of 260 studies—66 unrelated to MALL, 59 non-empirical, and 135 not focused explicitly on vocabulary learning.

Following this, full-text availability was assessed for the remaining 195 articles, resulting in the exclusion of 23 records due to unavailability. The remaining 172 articles underwent detailed examination to ensure direct relevance to the research objectives, specifically the benefits and challenges associated with vocabulary acquisition via MALL. Through this stage, an additional 96 articles were excluded.

Ultimately, this systematic process resulted in 76 journal articles being selected from the initial 478 identified sources. The search and selection process are detailed visually in Figure 1.

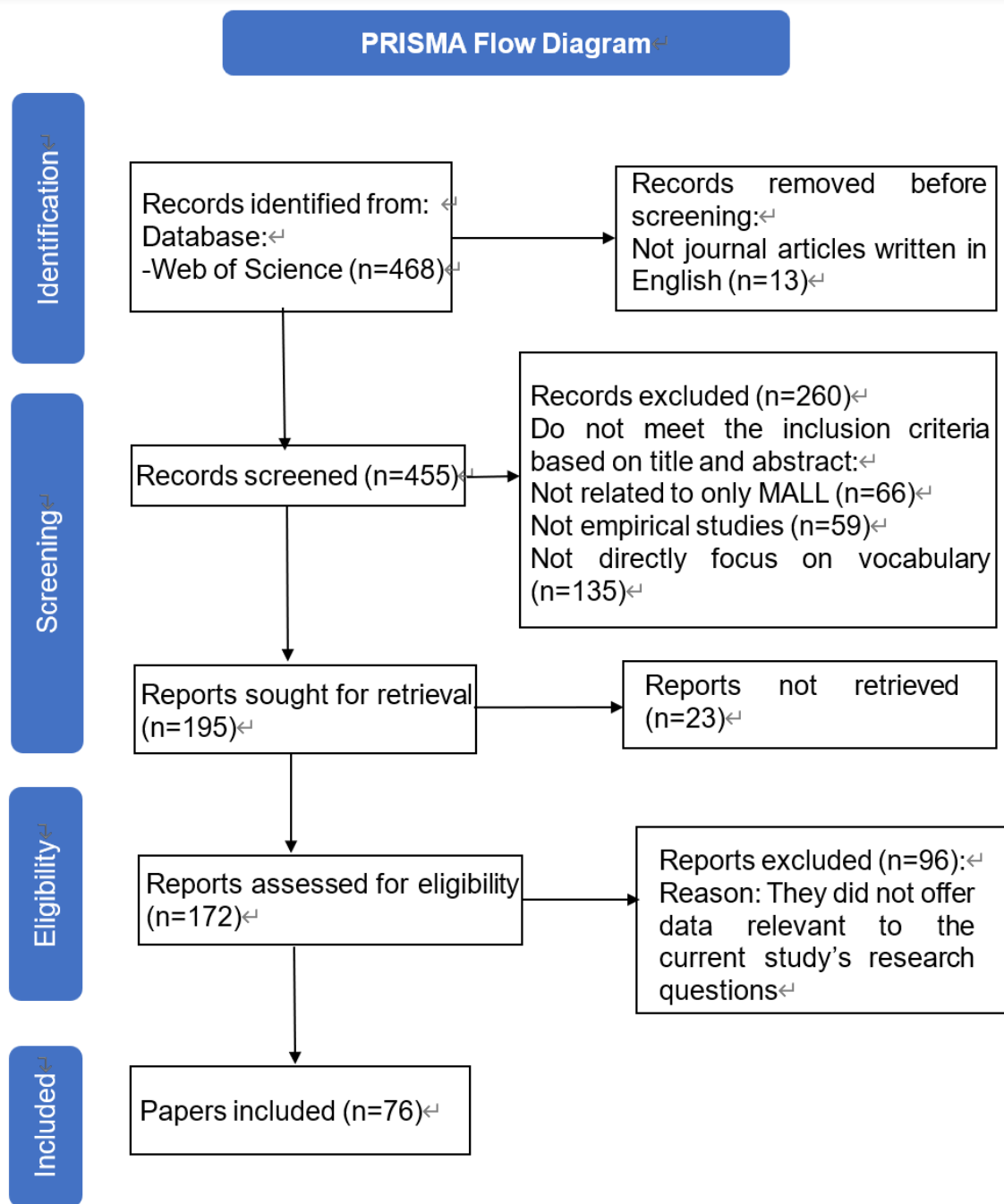


Figure 1. Flow Diagram of the Systematic Search and Selection Process of Sources

3. Results

The results were presented and discussed below for each research question.

3.1 To What Extent does MALL Enhance Vocabulary Acquisition and Retention among Language Learners?

Out of the 76 selected sources, 68 specifically address RQ1. Analysis of these studies reveals several primary benefits associated with vocabulary learning through MALL (See Figure 2)

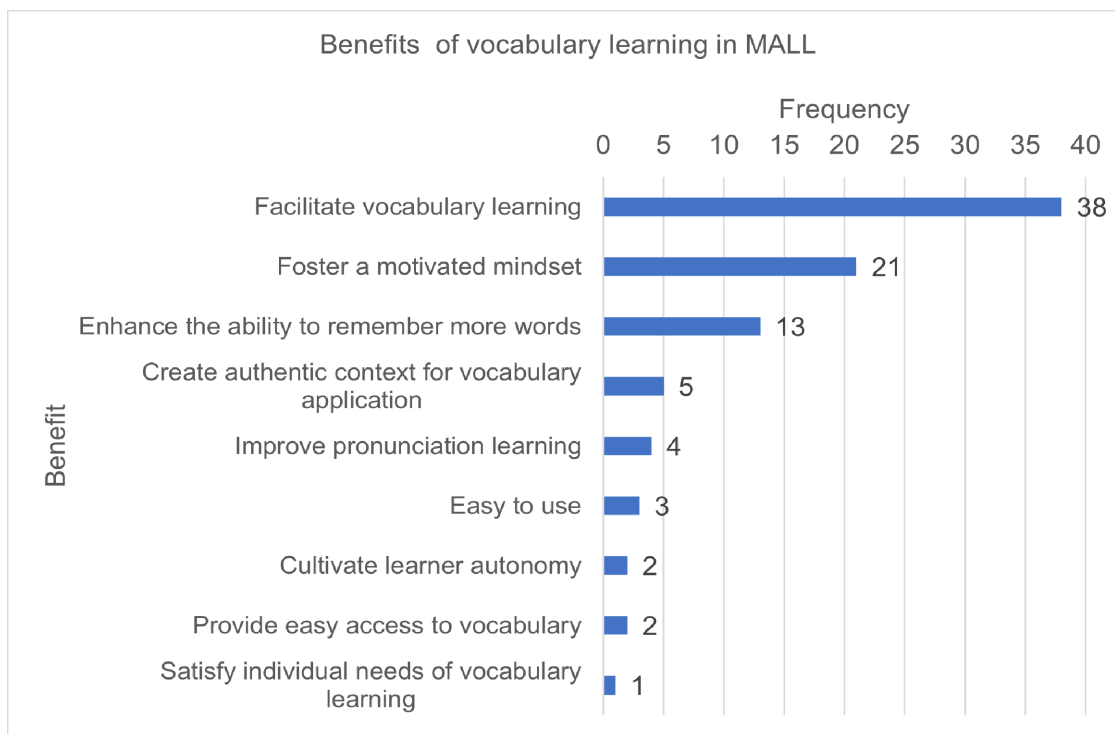


Figure 2. Benefits of vocabulary learning in MALL

Figure 2 illustrates that facilitating vocabulary acquisition is the most frequently reported benefit, identified in 38 studies (43%). Other notable benefits include fostering learner motivation (24%), enhancing word retention (15%), and creating authentic contexts for vocabulary application (6%).

3.1.1 Facilitating Vocabulary Acquisition

Thirty-eight empirical studies (e.g., Chen et al., 2019; Hasan et al., 2022; Todorova, 2023; Zakian et al., 2022) confirmed that MALL significantly enhances vocabulary learning. For instance, Zakian et al. (2022) reported that learners utilizing a mobile vocabulary app outperformed their peers who used traditional learning materials. Hasan et al. (2022) similarly noted higher post-test scores among students employing WhatsApp for vocabulary practice compared to traditional methods. These findings collectively highlight MALL's effectiveness in facilitating vocabulary learning.

3.1.2 Fostering Learner Motivation

Twenty-one studies emphasized the role of MALL in fostering learners' motivation and positive attitudes toward vocabulary learning. Hasan et al. (2022) observed increased positivity among learners using WhatsApp for vocabulary enhancement. Lu et al. (2023) also reported a significant improvement in learner attitudes during mobile-assisted vocabulary learning activities. Furthermore, Kohnke (2020) indicated that students were particularly motivated by gamified smartphone apps. Polakova and Klimova (2022) found that 71% of participants reported increased motivation due to improved learning outcomes, with 100% finding the experience enjoyable and stress-free.

3.1.3 Enhancing Word Retention

Thirteen studies documented improvements in vocabulary retention through MALL. Jiang and Liou's (2022) study using Quizlet demonstrated sustained enhancement in vocabulary retention and practical application over four weeks. Chen et al. (2021) conducted a semester-long quasi-experimental study, which showed substantial vocabulary gains attributable to mobile-assisted learning. These findings were further supported by studies from Gürkan (2018) and Wong and Looi (2010), reinforcing the positive influence of MALL on vocabulary retention.

3.1.4 Creating Authentic Contexts for Vocabulary Application

Five studies highlighted MALL's capability to create authentic vocabulary-learning contexts, particularly through virtual reality (VR) and mobile applications. Tai and Chen (2022) demonstrated that VR applications provided learners with realistic environments, enhancing vocabulary engagement and interactivity. Wong et al.

(2016) similarly found that mobile technologies, such as the My CLOUD app, effectively contextualized language learning, encouraging vocabulary application in informal settings. These findings were supported by Uz Bilgin and Tokel (2018) and Wong and Looi (2010).

In summary, MALL substantially benefits vocabulary acquisition, learner motivation, word retention, and authentic application contexts. Nonetheless, challenges persist within the MALL domain.

3.2 What are the Multifaceted Challenges and Obstacles Associated with Vocabulary Learning in MALL Context?

Fifteen studies explored the challenges associated with vocabulary learning via MALL. Prominent challenges include improving mobile learning applications and managing the negative impacts associated with smartphone use. Additional challenges identified were technological limitations, skepticism regarding MALL's effectiveness, and external pressures from excessive mobile device usage (see Table 1).

Table 1. Challenges of vocabulary learning in MALL

Challenge	Frequency
Need for improving learning applications	5
Adverse effects of using smartphones for learning	5
Technological limitations	3
Doubts about the usefulness of mobile-assisted language learning	2
External pressure resulting from excessive mobile use	2

3.2.1 Need for Improving Learning Applications

The need for improving mobile learning applications involves refining interfaces, enhancing personalization, and better meeting learner-specific needs. Ma (2022) found certain dictionary apps inadequate for specialized vocabulary needs. Additionally, Cojocnean (2016) highlighted the importance of meeting MALL tools with individual learning styles for optimal efficacy.

3.2.2 Adverse Effects of Using Smartphones for Learning

Notable negative impacts from mobile learning include distraction and health-related concerns such as eyestrain. Xodabande and Hashemi (2023) reported that distractions from social media notifications significantly impeded learners' study focus. Moreover, prolonged mobile device usage was associated with health issues, causing physical strain and discomfort.

3.2.3 Technological Limitations

Technological limitations represent significant challenges. Lu (2017) indicated difficulties for students in consistently accessing mobile devices, while Nguyen (2019) emphasized infrastructural barriers in rural regions, including unstable internet connections and inadequate device access.

3.2.4 Doubts about Effectiveness of MALL

Skepticism regarding the effectiveness of MALL poses challenges. Li et al. (2021) reported reduced engagement and test scores in a WeChat-assisted vocabulary program, reflecting learner reservations. Cojocnean (2016) similarly documented neutral or negative attitudes toward digital learning tools, suggesting learners perceived these tools primarily as entertainment rather than educational resources.

3.2.5 External Pressures due to Excessive Mobile Use

External pressures from excessive mobile use, such as parental concerns highlighted by Xodabande and Hashemi (2023), further complicate the effective implementation of MALL.

In conclusion, significant challenges exist in optimizing MALL for vocabulary learning, including refining learning applications, addressing negative impacts and technological barriers, overcoming skepticism regarding effectiveness, and managing external pressures.

4. Discussion

This study systematically reviewed literature regarding the benefits and challenges of utilizing mobile technology for vocabulary learning, analyzing 76 scholarly articles. This discussion provides an in-depth interpretation of key findings and offers targeted recommendations for future research.

4.1 Benefits of Vocabulary Learning in MALL

The analysis identified four primary benefits of MALL: facilitating vocabulary acquisition, enhancing learner motivation, improving word retention, and creating authentic contexts for vocabulary application. These findings accord with those of Rachman et al (2023) which emphasized MALL's role in improving vocabulary retention and learner engagement. Similarly, Wang Ji and Adul Aziz (2021) confirmed that mobile-assisted learning platforms positively influence vocabulary retention and increase learner motivation.

Among these benefits, facilitating vocabulary acquisition emerged most prominently, supported by substantial empirical evidence from 38 studies. However, the majority of these studies primarily focused on comparative outcomes between experimental groups using mobile devices and control groups employing traditional methods. While these results convincingly demonstrate MALL's effectiveness, they often lack detailed exploration into specific cognitive and instructional mechanisms underlying vocabulary acquisition processes, such as the role of mobile-assisted strategies in enhancing vocabulary breadth and retention. Consequently, there remains a critical need for more nuanced investigations to deepen understanding of how MALL specifically impacts various dimensions of vocabulary learning, which would provide valuable insights for educators and researchers aiming to optimize instructional strategies.

Additionally, while studies frequently emphasize vocabulary expansion, relatively fewer address the practical application of vocabulary knowledge. According to Channell (1988), effective second language (L2) vocabulary acquisition requires learners to both comprehend and actively use vocabulary in real-world contexts, moving beyond traditional memorization approaches (Amirian & Momeni, 2012; Horst, 2014). Given that many L2 learners face limited opportunities for authentic language practice, mobile technologies offer significant potential for creating immersive, contextualized vocabulary learning environments. However, research significantly exploring the effectiveness of contextualized mobile vocabulary learning remains scarce. Future studies should investigate this area further, examining the role of context-rich mobile learning tools and identifying moderating variables to enhance the effectiveness of vocabulary instruction via mobile technology.

4.2 Challenges of Vocabulary Learning in MALL

Despite its numerous advantages, MALL faces several significant challenges, including the need for improved learning applications, the adverse impacts associated with smartphone usage, skepticism regarding MALL's efficacy, technological constraints, and external pressures related to excessive mobile device use.

The first three challenges primarily pertain to the design and functionality of mobile learning tools, including their meeting of learner needs, the mitigation of adverse effects, and gaining learner trust. To address these challenges, developers should systematically assess learner requirements, actively seek user feedback, and continually refine learning apps. To minimize negative effects, such as learner distraction from smartphones, three key strategies are recommended: firstly, designing engaging and interactive educational content to sustain learner focus; secondly, implementing effective device control software to limit access to non-educational distractions; and thirdly, fostering learner autonomy. While app developers primarily manage the first two strategies, promoting learner autonomy requires additional empirical research to identify effective methods within MALL contexts.

Two additional challenges encompass broader technological and cultural factors. Technological limitations can be mitigated by increasing institutional access to suitable mobile devices and strengthening government-funded infrastructure, particularly in rural areas with limited internet connectivity. Concerning external pressures, enhancing public awareness of the advantages and potential drawbacks associated with MALL is vital. Collaboration among educators, policymakers, and community stakeholders is essential to cultivate supportive environments that effectively integrate mobile technology into language learning.

Notably, among the 76 reviewed articles, only 15 specifically addressed MALL-related challenges. Furthermore, many existing recommendations have not undergone rigorous empirical validation (Rachman et al., 2023; Abdelaziz, 2020). Thus, future research should systematically examine these challenges and empirically test solutions to advance the effective implementation of vocabulary learning through mobile-assisted technologies.

5. Conclusion

This literature review aimed to systematically synthesize the benefits and challenges of employing Mobile-Assisted Language Learning (MALL) for vocabulary acquisition. Findings demonstrate that MALL significantly enhances vocabulary acquisition, increases learner motivation, and contributes positively to word retention. However, several notable challenges were also identified, including the need to improve mobile learning applications, technological constraints, and external pressures arising from extensive mobile device

usage.

To address these findings, future research should specifically investigate the effectiveness of MALL in creating authentic contexts for vocabulary application and explore strategies to mitigate identified challenges within mobile-assisted environments. While the insights derived from this review are valuable, its scope is limited by reliance on a single academic database and a selection of only 76 articles. Subsequent research could enhance comprehensiveness by utilizing multiple databases and incorporating diverse document types, such as books and dissertations, thereby providing a more robust and expansive analysis of vocabulary learning within MALL contexts.

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