

# *A Review of Research on Mobile-Assisted Vocabulary Learning*

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**Abstract:** More academics are concentrating on the topic of mobile-assisted language learning (MALL) on account of the advancement of mobile technology and the widespread use of mobile electronics in modern culture, and mobile-assisted vocabulary learning (MAVL) as a hot topic in MALL has attracted a large number of scholars. The study reviews some representative literatures during 2010-2023, including the impact of using mobile Short Message Service (SMS)/Multimedia Message Service (MMS) on Second Language (L2) word learning and the effectiveness of using mobile learning applications. Moreover, this study analyses the research methods used by previous researchers and summarises the results of the studies, finding that most of the experiments focused on vocabulary enhancement and retention, the effect on motivation, and learners' perceptions and satisfaction. The results of many studies show that MAVL as a learning approach is better than the traditional vocabulary learning approach. Also, researches on MAVL has many pedagogical impacts on teaching of second and foreign languages in the future. However, researches have also shown that MAVL has some drawbacks that will hopefully be addressed in the future.

**Keywords:** mobile-assisted language learning (MALL), mobile-assisted vocabulary learning (MAVL), mobile applications

## 1. Introduction

Due to the surge in mobile technology and the popularity of portable devices, researchers are shifting their attention more and more on the area of mobile-assisted language learning (MALL). Mobile learning has gained importance as a branch of study and practice due to the flexibility that these devices offer in multiple facets of life, including education [1].

Vocabulary learning is a crucial part of second language (L2) learning. According to McCarthy, even if a student has perfect grammar and pronunciation, he still can't communicate in any meaningful way in a second language if he doesn't have the vocabulary to convey a wide range of meanings [2]. However, learning new vocabulary in English is a protracted and difficult process [3]. If an English as a Foreign Language (EFL) or English as a Second Language (ESL) learner does not have effective vocabulary learning strategies and a strong motivation, vocabulary acquisition tends to be given up halfway. Therefore, it is important for EFL or ESL learners to find an effective vocabulary acquisition strategy. Numerous studies demonstrated the superiority of mobile-assisted

vocabulary learning over conventional techniques. This strategy greatly increased learners' motivation and led to better vocabulary learning outcomes.

In the sector of MALL, the number of review papers on vocabulary learning is very small at this stage, and this study can fill this gap. This study will review empirical researches on mobile-assisted vocabulary learning (MAVL) in two parts, including the development of MAVL and the effectiveness of MAVL, which have implications for the growth of MALL together with several pedagogical implications for second and foreign language teaching.

## **2. Empirical Researches on Mobile-assisted Vocabulary Learning**

### **2.1. The Development of Mobile-assisted Vocabulary Learning**

The development of research on MAVL is a process of constant updating and creativity. Over the past few decades, language researchers are becoming increasingly aware of MAVL's potential for L2 learning, and numerous MAVL studies have steadily increased throughout the last few decades. Empirical studies have all used quantitative, qualitative, or mixed methods to investigate varying educational levels of the learners, L2 proficiency, age, and different approaches to target word learning. The majority of studies have either assessed the success of vocabulary learning results after using mobile apps or investigated whether mobile vocabulary learning methods are preferable to conventional paper-based learning methods. In addition, some qualitative research have examined students' opinions of mobile-assisted vocabulary acquisition based on learners' questionnaires or interviews [4].

Earlier studies have mainly focused on the effects of using Mobile Phantom Cards and using Multimedia Message Service (MMS) and Mobile Short Message Service (SMS) sending and receiving methods on learning words from L2. For example, Wong and Looi conducted an experiment to explore the effectiveness of using SMS/ MMS for L2 word learning [5]. Nikoopour and Kazemi investigated the efficiency of mobile abstraction cards for L2 vocabulary learning in a different study [6]. In recent years, research on MAVL has focused on exploring the effects of using educational mobile applications.

### **2.2. The Effectiveness of Mobile-Assisted Vocabulary Learning**

#### **2.2.1. Vocabulary Enhancement and Retention**

Numerous research have demonstrated that conventional vocabulary acquisition techniques have fallen behind the times, and in the era of the prevalence of the Internet, mobile-assisted vocabulary learning is showing more and more of its advantages. For example, Lu, Ma, and Huang examined at how using mobile applications affected Chinese tertiary EFL students' vocabulary acquisition abilities [7]. The subjects of the study were 108 non-English majors [7]. By analyzing the quasi-experimental data, findings from the research revealed that the vocabulary learning rate of the control group (CG) increased by only 68.4%, while the vocabulary learning rate of the experimental group (EG) increased by 129.65% [7]. In addition, there was a clear distinction between the two groups' vocabulary acquisition results, illustrating that the app was productive in strengthening students' vocabulary learning [7]. In another study, Zakian, Xodabande, Valizadeh and Yousefvand examined at the ways the Digital Drawing Recognition Card application (i.e., NGSL builder) contributed, which is created for portable gadgets, in the learning of basic English vocabulary by EFL learners outside the classroom [8]. Participants in the experimental and control groups comprised 86 college students [8]. Along with a one semester of formal language instruction, the control group learned vocabulary items using originally traditional materials (i.e., word lists), while the experimental group inquired the same material outside the classroom using the mobile application [8]. The experiment measured

participants' vocabulary knowledge three times (pre-test, post-test, and delayed post-test) and illustrated that the experimental group outperformed the control group and that the utilization of mobile apps considerably assisted in the advancement of vocabulary knowledge [8].

Effective retrieval and long-term retention of lexical elements can often be achieved in two ways [9]. The first is multimodal presentation, which delivers word information in multiple media formats [9]. It is presupposed that both verbal and visual means are used to acquire word knowledge [9]. When learners acquire word knowledge through multiple media forms, both neural channels are activated, and memory is improved [9]. Second, spaced repetition is a type of programming that delivers a sequence of vocabulary presentations or exercises at predetermined intervals [9]. According to Lu, Ma, and Huang, in their experiment, it was found that the students' mean CG vocabulary learning scores decreased from 242.20 on the posttest to 174.65 on the delayed posttest, a decrease of 67.55 (27.89%) [7]. A significant difference was found by paired sample test ( $p = 0.000 < 0.05$ ) [7]. This implies that CG students' recollection of the target terms decreased significantly [7]. On the other hand, the mean score of EG students decreased from 339.08 in the posttest to 305.18 in the delayed posttest, which is a decrease of 33.90 points (11.11%) [7]. The delayed posttest mean scores did not significantly differ from each other and the mean scores of the posttest by the paired samples test ( $p=0.247>0.05$ ), proved that the EG students remembered the target terms more firmly [7]. This experiment shows that the application is effective in preventing the loss of quick memory for words in EG students [7]. This may add to the confirmation that mobile-assisted vocabulary learning is more conducive to vocabulary retention. However, in another study, the situation was different. Wang, Hwang, Yin, and Ma argue that in the study, independent tests were conducted on pre-test, post-test and delayed tests respectively [10]. The results showed that the differences in vocabulary pre-test and post-test scores between the two groups were statistically noteworthy, but the differences in the delayed test were not statistically significant [10]. MAVL is significantly effective in improving initial vocabulary acquisition, yet this disadvantage can still be compensated for later by traditional methods such as rote memorization [10]. It is quite obvious that when closed-ended questions are used in testing, these questions only require students to recall rather than produce [10]. For instance, the students may differ in their capacity to use a word precisely and meaningfully in a sentence when able to offer the word's correct meaning [10]. Such variations tend to be harder to detect by tests of acceptability, which may contribute to the failure to detect statistically significant results [10]. This demonstrates that mobile-assisted vocabulary learning also has some drawbacks and may not produce the desired results if not used in the right context.

### 2.2.2. Promotion of Motivation

Motivation is very powerful, and sometimes it can exert a force that exceeds an individual's ability. Motivation is also essential in English vocabulary acquisition. The stronger a person's drive, the more likely they are to focus all their efforts on learning new vocabulary. In an age where mobile devices are all over the place, their ability to motivate humans and thus facilitate vocabulary learning is a concern for many researchers.

In an experiment, Wang, Hwang, Yin, and Ma used the contribution-oriented, self-directed mobile learning ecology (CSDMLE) paradigm to create small-group vocabulary learning exercises that were both student-directed and motivating [10]. Through a mixed-methods design, 55 new students at a Chinese university were administered a survey and vocabulary test and post-interviews [10]. Despite the absence of a statistically significant interaction between treatment and motivation time according to a two-way mixed ANOVA,  $F(1,51) = 0.51$ ,  $p > .05$ ,  $\text{partial } \eta^2 = 0.01$  [10]. In terms of pre-test or post-test motivation in a second language, there was not a statistically significant distinction between the two groups, to put it another way [10]. However, the treatment group was highly favourable to this learning method and had a strong desire to continue using it [10]. For instance, students

mentioned that if a word was unfamiliar, they would often guess the meaning before using a dictionary because “it’s more fun ..... If you guess correctly, you gain more confidence [10].”

According to Polakova and Klimova, questionnaires, minutes and virtual focus groups were used to check for increased student motivation [11]. According to the questionnaire responses, 71% of students were inspired to use mobile apps for their educational process [11]. Learning was thought to be more enjoyable and less demanding (100%) [11]. This information was further supported by the minutes, where several students stated that they felt more motivated because of their improved academic performance, which was supported by additional assessments [11]. The focus group data showed that the assessments stated above were viewed as an extrinsic motive for students to use mobile apps [11]. Nevertheless, students did not perceive this motivation negatively [11]. Meanwhile, the intrinsic motivation of mobile app users was to improve their language skills [11]. Looking at the results of the various methods, these show that mobile apps have a motivational effect on students [11]. This suggests that mobile-assisted vocabulary learning offers today’s students an exceptional way to learn vocabulary. Students do not have to stick to traditional methods of vocabulary learning, such as the “rote learning” method used by many students, which can greatly reduce students’ interest in acquiring English vocabulary. Instead of wasting time on endless video games, mobile apps can be a great way to support vocabulary learning, as students are fascinated by electronic devices and apps. This may greatly improve the efficiency of students’ English vocabulary learning, which may lead to excellent vocabulary acquisition results, thus promoting their vocabulary learning motivation.

According to Chen, Peng, Yang and Cong, in order to increase learning effectiveness and users’ interest in learning, more interactive learning activities must be developed, thus ensuring the effectiveness of the English Vocabulary App’s learning content [12]. This suggests that if more interactive activities are added to mobile-assisted vocabulary learning, users’ learning motivation may be improved. For example, adding games, films, songs, etc. to mobile-assisted vocabulary learning, may lead to a significant increase in user interest in mobile-assisted vocabulary learning. This is also a good guideline for companies designing English vocabulary learning apps, which need to pay attention to and accept feedback from users in order to improve their apps and increase their motivation to learn.

### **2.2.3. Learners’ Perceptions and Satisfaction**

Wang, Hwang, Yin, and Ma argue that when the subjects were posed the question if they were inclined to maintain learning in this manner, 92.3% of the EG participants gave positive answers [10]. And when the subjects were asked to compare their method with traditional learning methods by answering less, neutral, or more, EGs found our method more satisfying (80.8%), simpler to utilize (80.8%), easier to remember (69.2%), more adaptable (65.4) %), more fascinating (65.4%), and greater efficiency (53.8%) [10]. In addition, students who found the MAVL more fascinating were most likely to have better levels of overall satisfaction, among other things [10]. Also four out of six interviewees considered MAVL as a more flexible and personalised way of learning [10]. This shows that most of the experimental subjects are highly satisfied with MAVL as a learning method and most of them are willing to continue using this learning method. In another experiment, according to Lu, Ma, and Huang, the outcomes were determined by the students’ questionnaire replies and descriptive analysis [7]. 36 students (72%) viewed using the app favorably [7]. 42 students (84%) believed that employing the app for acquiring vocabulary was straightforward [7]. Moreover, 37 respondents (74%) stated that the app simplified learning new words [7]. In addition, the app was beneficial for learning and remembering language for 31 students (62%) [7]. Finally, 40 students (80%) claimed they planned to use the vocabulary-learning app on their phone in the future [7]. This shows that most of the students had a positive attitude towards MAVL and decided to keep applying the mobile programme for studying vocabulary.

However, Li and Hafner argue that some of the subjects indicated in the interviews that they would not use MAVL for vocabulary learning anymore [13]. They felt that they lacked self-discipline and that it would be difficult to continue learning in this way without supervision [13]. This shows that MAVL is not applicable to every second or foreign language learner. It may not lead to good learning outcomes if the learners themselves have poor self-control.

### 3. Conclusions

The review of studies with regard to MALL reveals that there has been a continuous process of iteration and development, with studies from around 2010 focusing on the effects of using mobile SMS/ MMS sending and receiving methods on L2 word learning, and more recent studies focusing on the effectiveness of using m-learning apps. Most of the experimental results show that MAVL is more effective than traditional learning methods in promoting learners' vocabulary enhancement and retention, and in promoting L2 vocabulary learning motivation. It is generally evident from the studies that most EFL/ESL learners have a positive attitude towards MAVL as a learning approach. However, MAVL also has some drawbacks. Some experiments have shown that if it is not used in the right context, it may not produce the desired results. If learners lack self-discipline and supervision, they may not achieve the desired learning outcomes. So MAVL as a way of learning won't work for everyone.

Today's research on MAVL has many pedagogical implications for second and foreign language teaching. Educational leaders should support schools to integrate mobility assistance with English vocabulary learning to encourage students to learn English independently. In addition, educational technology designers should collect and adopt students' suggestions to design applications that will meet the needs of majority of students.

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