

# ***A Review on Mobile-assisted Chinese EFL Learners' Vocabulary Learning***

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**Abstract:** Mobile technology's advent and booming development have unlocked promising possibilities for EFL learners to learn vocabulary supported by mobile devices. Thus, mobile-assisted vocabulary learning has attracted researchers' attention and interest recently. This growing attention and interest have led to a demand for review studies. This research aims to examine research foci and major findings on mobile-assisted English vocabulary learning using a content analysis method based on combining literature. Most empirical research focused on exploring the effect of mobile applications on learners' English vocabulary learning via mixed methods, while only a few studies tried to examine factors influencing learners' performance of English vocabulary learning in a mobile context. Research confirmed the positive effect of mobile applications on learners' English vocabulary learning; however, research related to influencing factors reported mixed findings. Theory-oriented research mainly included theorising various modes of mobile-assisted English vocabulary learning and explaining the ideas of how to design user-friendly and efficient mobile vocabulary learning applications. Diverse modes were explained by researchers, such as to send messages, to build a multimodal English vocabulary database, to reasonably using portable devices and to build an online interactive community. Four types of applications are occupying a dominant position, which are online dictionary applications, vocabulary learning applications matching paper textbooks, and word memorizing applications. Research also implied that mobile English vocabulary applications tend to be easy to use, personalizing, and gamifying. This study also provides some implications for researchers, teachers, and learners.

**Keywords:** mobile-assisted, vocabulary learning, Chinese EFL learners.

## **1. Introduction**

The new wave of scientific and technological revolution is being led by internet technology, which profoundly impacts politics, the economy, education, and other fields worldwide. The adoption rate of mobile electronic devices is surging yearly, becoming a new carrier of learning materials. In 2000, the Stanford University Learning Lab established a mobile learning project centered around language learning. [1]. On April 13, 2018, the Ministry of Education of the People's Republic of China officially issued the Action Plan of Education Informatization 2.0, which emphasized that education informatization is not only the prerequisite, basic connotation and significant feature of education

modernization but also the core component of education modernization in 2035. Mobile learning is the key to promoting the informationization process in education.

Individuals acquire knowledge at any moment and in any location with the aid of hand-carried devices, which could be formal or informal [2]. The definition further emphasizes the great importance of portable devices to learning, namely, an indispensable medium or instrument. Numerous scholars in second language acquisition admitted the positive effectiveness of mobile-assisted language learning (MALL), particularly its being beneficial to English vocabulary learning. English as a foreign language learners (EFL learners) preferred to acquire vocabulary via diverse mobile ways for both convenience and efficiency. Specifically, MALL not only expands EFL learners' learning space but also satisfies their personal learning needs and styles. Besides, they are also provided abundant vocabulary learning materials under the context of MALL.

Taking advantage of these benefits and the popularity of mobile devices, MALL has been gaining the interest of numerous scholars in the area of second-language acquisition. The majority of academics concentrated on examining relevant theories, while others analyzed the effectiveness of mobile-assisted English vocabulary learning through empirical research. Meanwhile, a few experts with a background in computer and mobile technology devoted themselves to studying how to develop and optimize vocabulary learning applications. However, the absence of an overview in this field makes it difficult to systematically know the progress and limitations made in prior research. Research in the area of mobile learning in China were initiated relatively late compared to research abroad, which led to lacking a systematic review of the literature.

To fill in this gap, the present research aims to collect related literature to comb the state of current research concerned with mobile-assisted Chinese EFL learners' vocabulary learning and identify research limitations to direct research in the future from a theoretical and practical perspective. In particular, the research questions of this paper are centered on three aspects.

(1) What are the research foci related to mobile-assisted Chinese EFL learners' vocabulary learning?

(2) What are the major findings or results of research related to mobile-assisted Chinese EFL learners' vocabulary learning?

(3) What are the implications of this research for researchers, teachers and EFL learners?

Based on these research purposes, this article mainly uses the content analysis method to analyse literature so as to present a comprehensive and systematic review.

## **2. Review of Prior Research**

### **2.1. Empirical research on Mobile-assisted English Vocabulary Learning**

Various research projects were carried out to examine how mobile applications affect learners' vocabulary learning, using a mixed-methods approach that involved vocabulary tests, questionnaires, and interviews. Specifically, most of the research foci were acquirers' English vocabulary achievements with mobile applications and their attitudes towards mobile-assisted vocabulary learning. Only a few studies were conducted to investigate learners' acceptance of mobile applications, learning motivation in the mobile-assisted word learning context or factors influencing the outcome of mobile-assisted vocabulary learning from a behavioural or psychological perspective.

Zhang chose 30 participants from each of two different universities respectively. These learners had passed college English band 4 and band 6. After analyzing data collected by distributing the questionnaire, the results indicated that the members who engaged in vocabulary learning by mobile applications had the strongest self-learning desire. Moreover, this group's performance on depth and breadth of vocabulary learning was better than the comparison group, which only used paper and pen to memorize words [3].

Zhan & Zhang compiled a questionnaire from two dimensions of software accessibility and software availability. The findings suggested that college students harboured the idea that the word lock screen APP was easy to operate and could improve the learning efficiency of vocabulary learning and arouse interest in vocabulary learning [4].

Bi took Leci (a vocabulary learning application) and QQ (a social media application) as mobile media and designed a set of operational frameworks for integrating formative evaluation into mobile vocabulary learning. The framework could be simply summarized as three stages: the goal-setting stage, the group member interaction stage, and the optimization stage. After the teaching experiment, the data revealed that this mode significantly improved acquirers' vocabulary test scores, increased the quantity of autonomous vocabulary learning and strengthened the learning motivation [5].

The participants of empirical studies are primarily college students, but only a few academics focused on adult undergraduate students, confirming the positive effect of vocabulary learning applications on students' memorizing words and achieving higher test scores [6].

The mobile application Shanbay assisted in exploring the effects of self-regulation and peer scaffolding on college students' out-of-class vocabulary learning, as discussed by Guo, Zhang, and Wu. The result showed that self-regulation positively affected learners' mobile word learning outcomes. Specifically, participants with a higher personal learning goal and a fixed time to learn performed better. What is more, those who were good at using strategies such as note-taking and summarizing also overachieved compared to others. A majority of students in the experimental group admitted that peer scaffolding acted as a reminder, while only a minority of them would be motivated to learn more words after peer sharing [7].

Han and Chen explored learners' acceptance levels towards mobile applications and various influencing factors by designing a six-dimension questionnaire (perceived autonomy, perceived competence, perceived relatedness, perceived usefulness, perceived ease of use, behavioral intention). Their research revealed that the participants generally regarded mobile word-learning applications as simple to operate and highly effective in motivating them. Meanwhile, structural equation modelling analysis was conducted to further explain the intricate casual relationship among each dimension of the survey questionnaire. According to the conclusion, perceptions of autonomy and competence had a significant impact on perceived usefulness and ease of use, which, along with perceived competence, positively influenced behavior intention [8].

## 2.2. Theory-oriented Research on Mobile-assisted English Vocabulary Learning

Mobile-assisted language learning has sparked academic interest in other research domains, not only in second language acquisition. For instance, in-service teachers are more interested in how to construct a feasible mobile-assisted English vocabulary learning mode while several application developers devoted themselves to designing efficient and personalized learning platforms.

In the context of the quick advancement of mobile technology, it is urgent for in-service teachers to consider how to constantly adjust the vocabulary teaching mode to promote students' English vocabulary learning.

Yang proposed four types of mobile English vocabulary learning modes based on Pavia's dual code theory, Baddeley's working memory theory and Nation's opinion towards vocabulary learning. The first one was message-based vocabulary learning mode, by which the teachers sent vocabulary learning material to students. However, students are not used to receiving messages because of the advanced technology nowadays. The second was to learn words via an online multimodal vocabulary database, which required teachers to collect abundant multimodal resources such as pictures, audio, and video. The third one was learning vocabulary by using portable devices, which emphasized learners' ability to self-regulate. Meanwhile, students could acquire words based on their personal

needs and plans. The forth one was to acquire words via mobile communication communities. Communication could occur between teachers and students or among students [9].

The medium of mobile-assisted English vocabulary learning has transformed from communication tools to specialized applications. In other words, specialised mobile applications create a learner-friendly environment and expand traditional class-based vocabulary learning into out-of-class space.

The growth of English vocabulary learning applications (APPs) has been fueled by the development of Internet technology and the rapid popularity of mobile devices. Specialized English vocabulary APPs can be mainly divided into three categories: digital dictionary APPs, vocabulary learning APPs matched with paper textbooks, and word recitation APPs. These apps not only featured micro-gamification, humanization, and personalization but also supplemented classroom teaching and immediacy.

Wang, Chen and Wang, Zheng explained how to design a mobile English vocabulary learning system suitable for college students from an intersectional perspective of mobile technology and English discipline.

Wang et al. analyzed the features and status of college students' mobile learning through questionnaires and interviews. Based on collected data, the researchers depicted the mobile intelligent system of college students' English vocabulary learning from function and process. In addition, the authors also highlighted the rules and logic of some core functions of the system, such as the rules for managing learning resources, the principles of setting learning objectives, and the strategies for recommending learning materials [10].

Chen, Wang and Zheng deemed that mobile micro-learning theory conformed to the traits of English vocabulary learning. Therefore, they interpreted the design philosophy of a mobile English vocabulary learning system. Besides, all the above scholars emphasized the significance of the system pushing word review tasks to learners. Differently, Chen and Wang noticed the shortcomings of the existing word learning softwares, namely the lack of the function of driving and reminding students to study. In addition, these softwares are designed to mainly satisfy learners' need for time-intensive memorizing words [11] [12]. Chen and Wang proposed both offline and online models, thereby transforming passive learning into active learning, with the aim of encouraging learners to promptly identify and bridge their knowledge gaps. While Zheng's design released review alerts during the period of use.

Remword was a mobile application that integrated the function of searching words and vocabulary learning. On the one hand, this APP helped learners to memorize vocabulary through audio and pictures. On the other hand, it also provided registers two buttons, "No review" and "Add new word to E-notebook," on the user interface to choose independently. As a result, this APP generated a personalized word list [13]. This point fully reflects the "personalization" of the vocabulary mobile learning system proposed by Wang et al. Second language learners could learn vocabulary in a more economical, scientific and efficient way with the aid of this application, which fully met the students' need for "self-oriented learning".

Fewer scholars noticed that high-frequency word review notifications have a negative impact on individuals, so word lock screen APPs were developed.

The majority of experts who committed to the development of mobile-assisted English vocabulary learning systems had professional computer background knowledge, as reflected in the information gathered from writers in the above theses. This conclusion further showed that the construction of a mobile learning system for English vocabulary required academics with multidisciplinary backgrounds or the cooperation of specialists from various research fields. With only knowledge of English, researchers would face enormous challenges in their studies.

### 3. Conclusion

Four aspects of research focus in the area of mobile-assisted English vocabulary learning are mainly derived from literature. Briefly speaking, they are the effect of mobile-assisted applications, the factors influencing English vocabulary learning in a mobile context, ideas about how to design mobile-assisted English vocabulary applications and the construction of mobile-assisted English vocabulary learning mode. The first one is to explore the effect of applying mobile technology to word study. Although participants are varied, a growing body of empirical research has confirmed the positive effect of using mobile technology on learners' English vocabulary learning results. Typically, researchers adopted pre-test and post-test designs to draw conclusions through quantitative and qualitative methods.

As research progressed, some researchers began to recognize the process of mobile-assisted English vocabulary learning. Thus, the focus turns to investigating factors influencing the outcome of mobile-assisted English vocabulary learning. For example, some research showed that students with stronger self-regulation skills had superior vocabulary learning results in a mobile context compared to those with weaker skills. However, the effectiveness of peer sharing of English vocabulary learning in a mobile context was subjective. The third one is about how to create efficient mobile-assisted English vocabulary learning modes. Diverse measures were proposed by researchers, such as sending messages, building a multimodal English vocabulary database, reasonably using portable devices and building an online interaction community.

The forth one is how to design user-friendly mobile platforms or applications to assist and facilitate learners' English vocabulary learning. Generally speaking, online dictionary APPs, vocabulary learning APPs matching with paper textbooks and word memorizing APPs are occupying a dominant position. However, the idea of developing vocabulary learning applications has been upgraded. Future vocabulary learning applications will own easy to use, personalization, and gamification traits.

The findings of this study have implications for researchers, teachers, and students.

Mobile-assisted vocabulary learning has been extensively studied with positive effects, but few studies have focused on the process of vocabulary learning in the mobile context. It is worthwhile for researchers to further explore factors influencing the acceptance of mobile technology.

Mobile vocabulary learning applications can be developed as more personalized and easy to use with the collaboration of experts in the field of second language acquisition and computers. Both teachers and students have to adapt themselves to mobile contexts.

Teachers should pay more attention to implementing specific modes of mobile-assisted English vocabulary learning rather than only lingering on a theoretical level.

Because of the expansion of the learning space, more self-learning opportunities are available to students. Therefore, students are expected to enhance their self-regulation abilities.

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