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The Role of Technology in Second Language Acquisition (SLA): Vocabulary Learning via Mobile Phones

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Abstract

With the beginning of twenty-first century and the fast changes in the modern era, technology becomes an essential part of every field of learning. Hence, it has changed the way in which vocabulary is approached in SLA. One of the vital types of the new technologies used for learning purposes is mobile-assisted language learning (MALL), where reference is made to learning a language with the help of smartphones and mobile applications. This has been identified as a very successful means of improving vocabulary preservation, comprehension, and general language proficiency. This study dwells on the contribution of mobile phones to enhancing vocabulary development. The paper fathoms the theoretical frameworks for guiding the use of mobile applications in vocabulary acquisition and the actual empirical studies to demonstrate the effectiveness of mobile-based vocabulary acquisition. It is a secondary data analysis that presents an overview of what has been said in literature so far regarding mobile vocabulary learning. The study enumerates the strengths and challenges of learning this way, and concludes with recommendations for how educators can optimize their strategy of mobile-assisted learning.

I. INTRODUCTION

The development of technology has changed the face of age, especially in the educational field. Educational technology becomes a need for every academic institution, especially in the process of acquiring of a second language. Acquisition of a second language, most often referred to as SLA (Second Language Acquisition), involves the gain in grammatical competence, knowledge of pronunciation, and, above all, the vocabulary of the respective language. Vocabulary can be considered the axis around which other components of language revolve; not only because it forms the basis of all other linguistic competencies but also because it is crucial in terms of comprehension and expression skills (Nation, 2001).

During the last decade, mobile phones have become powerful tools in language acquisition, providing learners vast access to a wide range of digital material available at any moment. Mobile-assisted language learning (MALL) indicates the use of mobile phones as a flexible and autonomous way of

language acquisition (Kukulska-Hulme & Shield, 2008). Unlike traditional classroom-based vocabulary learning, which depends on imitation and memorization, MALL applies interactive learning strategies such as gamification, spaced repetition, and contextual learning. For example, spaced repetition optimizes long-term preservation by presenting words at the best intervals, while gamified elements such as rewards and challenges maintain learner engagement.

Furthermore, technological innovations such as artificial intelligence (AI) and augmented reality (AR) have further enhanced mobile vocabulary learning experiences. AI-based applications personalize learning by adjusting content to suit the learner's pace and level of skill providing targeted vocabulary exposure accordingly. On the other hand, AR-powered applications provide experiential learning environments wherein learners immerse themselves in new words under real-life contexts, making vocabulary learning more experiential and contextual (Godwin-Jones, 2017).

Though it has many benefits, there are other issues related to mobile vocabulary learning. That is to say, digital distractions, learning software integrity, and self-regulation can impact the effectiveness of mobile learning. Moreover, not all mobile applications contain quality learning content. Thus, learners and instructors need to be careful in selecting appropriate resources. Overcoming these challenges is essential to harnessing the full potential of mobile technology in learning languages.

This paper investigates the use of mobile phones in SLA learning of vocabulary through theoretical models, empirical research, and practical application. By reviewing the strengths and weaknesses of MALL, this study aims to give insight into how mobile technology can be employed to facilitate vocabulary learning, which in turn helps language learners become more skilled.

II. LITERATURE REVIEW

In an overview of the theoretical foundations of mobile-assisted language learning and word acquisition, pertinent empirical researches are duly examined to reveal the findings of previous studies concerned with the performance of mobile applications in vocabulary retention and language proficiency.

2.1 Theoretical Frameworks

Understanding the impact of mobile technology on vocabulary acquisition requires a solid theoretical foundation. The following theories provide insights into how mobile apps can support and enhance language learning.

Krashen's Input Hypothesis

Stephen Krashen's theory published in 1982 is pivotal for explaining how language learners acquire words. According to Krashen, language learning is best served by the presentation of "comprehensible input"—that is, a somewhat higher level than current competence but understandable. Apps on mobile devices are an excellent means of providing this input because a lot of them demonstrate words in usage using a multimedia presentation, allowing the learners to see and hear the words put to meaningful use. Duolingo, Babbel, and Memrise are just apps that expose learners to new words being applied in various contexts, including the meanings and uses of words in actual situations. By offering genuine and comprehensible input, mobile apps create an environment in which learning vocabulary takes place more organically and spontaneously (Krashen, 1982; Tharp & Gallimore, 1988).

Vygotsky's Sociocultural Theory

This theory presented in 1978 puts emphasis on the importance of social communication in cognitive development. In the case of mobile-assisted vocabulary learning, the theory argues that learners can foster their vocabulary learning through social communication. Many mobile applications have social aspects, such as peer evaluation, discussion forums, and collaborative work. These provide opportunities for interaction among learners. Social networking capabilities, such as those found on the HelloTalk and Tandem applications, allow learners to communicate with native speakers and classmates and therefore provide instances of real-time practice and feedback. The social element of mobile applications comes in correspondence with Vygotsky's vision, which recognizes the importance of learning in group settings and the proximal zone of development for language acquisition (Vygotsky, 1978; Pinter, 2017).

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Cognitive Load Theory

John Sweller's 1988 Cognitive Load Theory dwells on certifying cognitive load in the process of learning. When it comes to vocabulary acquisition, mobile apps make sure that vocabulary is presented in a way that cognitive overload does not stand as a problem anymore. An example of this is that most mobile apps use spaced repetition algorithms where vocabulary is divided into subsets and spaced appropriately so that strengthening can occur and retention will be enhanced. This spaced learning strategy avoids cognitive overload for the learners and still exposes them to practice new words continuously in a manageable way (Sweller, 1988; Paas & van Merriënboer, 2003). Efficient placement of cognitive resources by these apps helps learners memorize vocabulary for the long term.

Multimedia Learning Theory

Mayer's Multimedia Learning Theory (2009) presumes that students would learn better if the information are presented in a double mode using verbal and visual media. Mobile apps utilize this principle by including text, audio, and graphics, which enhance the learning process. For vocabulary learning, this approach is greatly effective as the students are presented with multiple representations of words, hearing pronunciation, seeing spelling within sentences, and manipulating them through images or videos. The research has revealed that students exposed to multimedia in language learning programs have higher recall rates and healthier comprehension (Mayer, 2009; Moreno & Mayer, 2007).

Self-Determination Theory

Self-Determination Theory (Deci & Ryan, 1985) reveals the truth that students are more intrinsically motivated when they perceive autonomy, competence, and relatedness. Each of these plays a pivotal role in effective language acquisition, and mobile apps can easily support each of them. The majority of language-learning apps have adapted learning procedures, and learners can choose their learning sequence, set objectives, and proceed according to their preferences. Gamification elements such as levels, points, and badges provide a sense of competence and mastery; whereas social elements facilitate ties with peers. Autonomy facilitated through mobile applications encourages learners to be responsible for their learning, which leads to greater motivation and engagement (Deci & Ryan, 1985; Reeve, 2012).

2.2 Mobile-Assisted Language Learning (MALL) in SLA

MALL has marked a quantum leap in vocabulary learning for language learners. With immediate access to language resources and interactive practice options, the mobile phone forms a steadfast tool for SLA nowadays. Many distinguishing features of MALL become the driving force behind the massive success of MALL in the field of vocabulary learning. These features comprise instant access to resources, personalization, gamification, and interactive learning tools. Therefore, mobile phones become essential tools in SLA, particularly in enhancing the learning of vocabularies (Burston, 2014).

Gamification and Motivation

Gamification, the most thrilling feature of mobile apps, is relished by language apps such as Memrise and Duolingo. Challenges, points, levels, and rewards, which are typical of gameplay, are utilized in learner engagement. Accordingly, learning is no longer a chore and becomes more motivational. Motivation has been activated as learning becomes more like playing a game, not studying and dictating. As learning progresses through levels and as they get rewards, they are motivated by feelings of achievement and the desire to continue (Burston, 2015; Deterding et al., 2011).

Spaced Repetition

Spaced repetition is another powerful tool that mobile apps utilize to make vocabulary learning more enduring. Apps like Anki and Quizlet employ algorithms that repeat vocabulary words at progressively greater intervals, reminding people of words just before they are most likely to forget them. This approach influences the principle of the spacing effect, which is a psychological phenomenon that contends information is best retained when reviewed at spaced intervals. Research has consistently revealed that spaced repetition is an effective tool for long-term word preservation (Cepeda et al., 2006; Schmitt & Carter, 2020).

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Contextual Learning

Mobile apps provide contextual learning that is vital to learning how the words are being employed in genuine contexts. Compared to traditional methods of vocabulary building based on rote memorization, mobile apps simplify how learners see and implement vocabulary in a context. Language apps like Babbel and HelloTalk, for example, have dialogues, conversations, and scenarios where vocabulary can be utilized by learners. This contextualization of learning makes students more proficient in recognizing how words are used in different contexts, and this facilitates the use of new words in communication to a large extent (Nishida & Kuramoto, 2018; Chik, 2014).

Self-Directed Learning

Mobile apps support independent learning, allowing learners to be in control of their vocabulary acquisition. By being able to learn at their own pace, learners have the freedom to choose what to learn, when to learn, and how to learn. This autonomy is particularly convenient for adult learners with busy schedules who would wish to learn at their convenience. Studies indicate that self-directed learning promotes more engagement and motivation, which results in better language learning (Godwin-Jones, 2011; Kukulska-Hulme, 2008).

2.3 Empirical Studies on Mobile-Based Vocabulary Learning

More and more recent researches support the effectiveness of mobile applications in learning words. Different empirical studies have examined the impact of mobile learning on vocabulary learning, retention, and motivation of learners.

Students who use mobile applications to learn vocabulary outperform those who use more conventional study techniques in memorization tests, according to Stockwell (2013). Stockwell's study compared normal classroom settings with mobile-assisted language learning. The results show that vocabulary acquisition is more effective and interesting when done using mobile applications, particularly when those applications provide multimedia content and interactive features.

Wu (2015) investigated how mobile learning could affect language learners' anxiety and motivation. His research concluded that vocabulary learners who used smartphone apps to practice their language skills were more motivated and less anxious about it. According to the study's findings, language learners can practice alone in a less discouraging setting with mobile apps, which also lessens their worries about committing mistakes.

Sung et al. (2015) conducted a meta-analytical study of 36 articles about mobile-assisted language acquisition. They found out that mobile learning enhanced learners' vocabulary and overall proficiency in a language. The study emphasized that interactive features, such as tests, flashcards, and multimedia, are critical to improving learning outcomes.

Lin and Lin (2022) elaborated on the usage of social networking applications for learning vocabulary. It was found that students made significant progress in vocabulary learning through interactive debate and cooperative learning activities in mobile language-learning groups. As the research shows, social engagement is the key to learning vocabulary and mobile applications with social elements can enhance the learning process (Lin & Lin, 2022).

Tseng et al. (2023) had an experimental study on the learning of vocabulary through the application of Augmented Reality (AR) technology. The study found that students who used AR-based vocabulary exercises could remember vocabulary words more effectively than those who used paper-based flashcards. According to Tseng et al. (2023), the results of the study showed that AR applications provide context-based learning experiences that can help improve vocabulary learning.

III. METHODS

The study has adopted a qualitative approach of dwelling on literature of what has been concluded in previous studies. It is a secondary data analysis on the subject of mobile-assisted vocabulary learning. A thorough literature review is carried out to evaluate the efficacy of mobile technology in SLA, based on theoretical and empirical studies. The study tackles the findings of peer-reviewed articles, conference papers, and case studies of mobile learning applications and their effects on vocabulary learning.

To guarantee research authenticity, various studies have been selected according to particular inclusion

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criteria. These studies have been supposed to be connected with SLA and MALL. They have to provide empirical evidence of mobile technology's effectiveness as well. Nonetheless, they should be published within the last twenty years. Hence, the research reviews the recent studies in the field, and the findings are authentic and up-to-date. The research is a thematic analysis of main findings according to various themes like gamification, spaced repetition, self-directed learning, and the role of AI and AR in vocabulary acquisition. So, the study seeks to check different sources to provide an encompassing understanding of MAVL and its implications for learners and educators.

IV. FINDINGS

A deep analysis of formerly cited studies reveals the transformative effects of mobile-based technology on vocabulary acquisition in SLA. The findings can be listed as follows:

1. Enhanced Retention Through Spaced Repetition: Mobile apps, like Quizlet and Anki, apply spaced repetition algorithms to enhance vocabulary learning at the best intervals, which promotes long-term retention. Accordingly, learners who used spaced repetition apps retained vocabulary more effectively than those who used traditional study methods (Cepeda et al., 2006; Schmitt & Carter, 2020).
2. Increased Motivation Through Gamification: Elements of gamification, such as point systems, leader-boards and achievement badges, increase motivation and engagement. Research suggests that gamification gives a sense of achievement to students that makes them spend more time practicing vocabulary (Burston, 2015; Deterding et al., 2011).
3. Personalized Learning with AI is about AI-driven apps that adapt vocabulary exercises to the learner's proficiency level, provide personalized feedback, and increase or decrease the complexity of the task according to the learner's proficiency level. This way, the learners only focus on the words they struggle with, which ensures the best learning results (Godwin-Jones, 2017).
4. **Contextual and Social Learning:** Applications like Babbel and HelloTalk offer real-world situations. Here learners can use vocabulary in authentic contexts. The applications' social networking features allow learners to interact with native speakers and peers. Learners can reinforce vocabulary acquisition through communication. (Lin & Lin, 2022).
5. **Challenges of Mobile Learning:** Notwithstanding the benefits mobile vocabulary learning can bring, it has certain challenges, such as digital distractions, fluctuating app quality, and the need for self-regulation. In addition, some students might find it difficult to maintain attention due to non-educational content available on mobile devices (Stockwell, 2013).

V. CONCLUSION AND RECOMMENDATIONS

Nowadays, mobile technology is transforming vocabulary acquisition in SLA. It provides students with flexible, interactive, and personalized vocabulary learning experiences. Learners use mobile applications to access resources, practice vocabulary in context, and learn vocabulary using techniques like gamification and spaced repetition to promote learning preservation. Yet, despite the benefits of mobile in SLA, learners can get distracted and over-rely on technology. To get the utmost effectiveness of mobile-assisted vocabulary learning, teachers and trainers of SLA should incorporate mobile apps into their teaching strategies to ensure that they are used in a balanced way to support traditional methods of SLA.

To maximize mobile learning's potential, an educator needs to:

- Encourage students to set realistic goals and monitor their progress using mobile apps is a good idea.

- Integrate face-to-face interactions with mobile learning to enhance social learning.

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- Foster collaborative learning through social media apps.

That is to say, the teacher or trainer should suggest a combination of applications that utilize the exercises in vocabulary development and practical training based on real- life situations and encourage reflection on learning experiences to foster critical thinking in the students of SLA.

With the rapid advance of educational technology, mobile-assisted language learning has a bright future. The use of mobile devices for educational purposes is becoming increasingly popular, and the same trend is expected to presist. Thus, this study is a basis for future studies to be conducted to assist mobile applications in SLA.

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