.

The Effectiveness Of Memrise As A Vocabulary Learning Tool: A Literature Review

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Abstract

This research examines the effectiveness of Memrise, a mobile vocabulary learning app, in enhancing vocabulary retention for language learners. In the context of digital advancements reshaping education, Memrise's gamified approach provides an engaging platform for vocabulary mastery. Drawing on cognitive theories, including Cognitive Load Theory and Spaced Repetition, the study analyzes how Memrise utilizes these principles to bolster vocabulary retention. Through a literature review of 20 sources, common themes, patterns, discrepancies, and future research suggestions are identified. Findings underscore Memrise's potential in vocabulary learning, with themes including mobile app preferences, gamification, motivation, autonomy, and technical considerations. While nuances exist, the overall consensus supports Memrise's positive impact on language education. The study underscores the need for further research to explore wider contexts, replication, and addressing technical aspects. Ultimately, Memrise demonstrates promise in improving vocabulary acquisition through its gamified interface, contributing to the evolving landscape of language education.

Keywords: *Memrise, vocabulary learning tool, effectiveness, spaced repetition*

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INTRODUCTION

The pace of technological advancement has been swift since computers were invented. Each technological leap paves the way for countless subsequent innovations, creating an exponential growth trajectory (McCain, 2023). Growing up amidst these rapid technological changes, Gen Z is inherently familiar with digital environments. From a young age, Gen Z has been immersed in various digital aspects of life, making them true digital natives. With continuous technological disruptions, the integration of Information Communication Technology (ICT) in education remains an ongoing topic of discussion. Pelet (2014) notes that recent digital and technological progress has led to changes in foreign language instruction, particularly in English as a Foreign Language (EFL) classrooms. Celik & Aytin (2014) find that incorporating modern technologies significantly enhances students' motivation and attitudes toward English language learning. Additionally, ICT broadens students' intercultural understanding and global awareness. Employing ICT in education has shown to develop students' verbal interaction skills, expand vocabulary, and enhance intercultural competence (Craig & Petten, 2007, as cited in Li et al., 2019).

In terms of vocabulary learning, digitalization brings transformative changes, enabling more effective and enjoyable vocabulary learning. Memrise, a popular language learning app, employs repetition to memorize foreign language words (Memrise Inc, 2019). The app provides various features that assist students

in understanding and memorizing new vocabulary, such as audio, images, and puzzle games. Additionally, the app facilitates students in creating their own vocabulary lists and setting flexible study schedules. As the increasing number of users of Memrise that exceeded 60 million users by 2021 (Curry, 2023), this research aims to evaluate the effectiveness of Memrise as a prominent vocabulary learning tool.

METHODS
Theoretical Framework

The effectiveness of vocabulary learning tools, such as Memrise, can be analyzed through the lens of several cognitive and educational theories. These theories shed light on the underlying cognitive processes that contribute to successful vocabulary acquisition and retention. The theoretical framework for this study draws upon the following theories:

1. **Cognitive Load Theory:** Sweller (1988) proposed the Cognitive Load Theory, which suggests that effective learning occurs when the cognitive load imposed on learners' working memory is optimized. By presenting vocabulary items in a structured and manageable manner, Memrise reduces extraneous cognitive load and enhances germane cognitive load, leading to improved vocabulary retention (Sweller, 1988).

2. **Spaced Repetition:** The Spaced Repetition theory (Cepeda et al., 2006) emphasizes the importance of timing in learning. Memrise utilizes spaced repetition algorithms to schedule review sessions at optimal intervals. This approach capitalizes on the psychological spacing effect, promoting the long-term retention of vocabulary items (Cepeda et al., 2006).

3. **Retrieval Practice:** Drawing from the Retrieval Practice theory (Roediger III & Karpicke, 2006), Memrise incorporates frequent recall exercises that require learners to actively retrieve vocabulary items from memory. This retrieval practice not only strengthens memory traces but also enhances the accessibility and durability of vocabulary knowledge (Roediger III & Karpicke, 2006).

4. **Connectionism:** The Connectionist theory (Rumelhart & McClelland, 1986) underscores the role of associations and connections among concepts in learning. Memrise's emphasis on creating associations through mnemonic devices and context-rich examples aligns with connectionist principles, fostering interconnected networks of vocabulary knowledge (Rumelhart & McClelland, 1986).

5. **Distributed Learning:** The Distributed Learning theory (Bjork & Bjork, 1992) emphasizes that learning is enhanced when study sessions are distributed over time. Memrise's spaced repetition system aligns with this theory by strategically distributing vocabulary review sessions, optimizing the benefits of distributed learning and mitigating the negative effects of cramming (Bjork & Bjork, 1992).

6. **Transfer of Learning:** Perkins and Salomon (1989) proposed the Transfer of Learning theory, suggesting that knowledge acquired in one context can be applied to new contexts. As learners engage with vocabulary items across various exercises and contexts within Memrise, they develop flexible and transferable vocabulary skills, allowing them to apply the acquired vocabulary in real-world situations (Perkins & Salomon, 1989).

By integrating these cognitive and educational theories, this study aims to provide a comprehensive understanding of how Memrise, as a vocabulary learning tool, capitalizes on these principles to enhance vocabulary retention

Source Selection

The sources for this literature review were chosen based on their relevance to the research topic and their contribution to understanding the subject matter. A total of 20 sources were selected for their alignment with the themes and trends identified in the literature.

Reading and Understanding

Each selected source underwent a thorough reading to extract key points such as common themes, patterns, trends, and discrepancies in findings. Notes were taken to facilitate the organization and synthesis of information from the sources.

Identification of Themes

Common themes, patterns, trends, and discrepancies in findings emerging from the literature were identified through in-depth analysis of the selected sources. These themes provided the foundational structure for organizing the literature review.

Preliminary Outline

An initial outline was developed to structure the literature review according to the identified themes. The outline included sections such as Introduction, Theoretical Framework, Methodology, Result and Discussion, and Conclusion.

Categorization of Sources

The 20 selected sources were categorized into thematic groups based on the common themes identified. This categorization aided in presenting the information in a coherent and structured manner.

Synthesis and Analysis

Within each thematic category, the information from the sources was synthesized and analyzed. Findings and limitations of each study were discussed. Connections and contrasts between studies were highlighted to present a comprehensive view of the research landscape.

Integration of Sources

The literature review integrated findings from different sources to create a unified narrative. Rather than summarizing each source individually, the focus was on synthesizing and connecting the information to construct a coherent conclusion.

Critical Perspective and Gap Identification

A critical perspective on the existing research was provided by discussing conflicting findings, limitations, and areas where further research is needed. Gaps in the literature were identified to position the present study within the broader context.

RESULTS & DISCUSSION
Common Themes and Patterns:
Vital Role of Vocabulary Mastery

One recurring theme that resonates across multiple sources is the vital role of vocabulary mastery in effective language learning and communication skills. This emphasis underscores the significance of building a strong lexical foundation to facilitate comprehensive language comprehension and communication

(Fadhilawati, 2016; Aminatun & Oktaviani, 2019b; Taebenu & Katemba, 2021; Nuralisah & Kareviati, 2020; Zuniati et al., 2023).

The emphasis on vocabulary mastery's role in effective language learning and communication skills aligns with Cognitive Load Theory. Memrise optimizes cognitive load by presenting vocabulary in a structured manner, promoting comprehensive language comprehension and communication (Sweller, 1988).

Mobile-Assisted Language Learning (MALL)

The emergence of Mobile-Assisted Language Learning (MALL) as a prevalent concept underscores the increasing utilization of mobile technology in language education. Studies consistently highlight the integration of mobile learning apps like Memrise have revolutionized language learning by integrating technology into pedagogical practices. The convenience and ubiquity of mobile devices align with the learning habits of today's students, making MALL an effective avenue for language learning. (Karjo & Andreani, 2018; Zohoorian et al., 2022; Karanfil & Özet, 2021; Nurani et al., 2023; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Quyen, 2022; Nhu & Quyen, 2021; Zeynab & Mohsen, 2020).

Preference for Mobile Learning Apps

The preference for mobile learning apps, including Memrise, among students further substantiates the appeal of this mode of learning. The convenience, interactivity, and alignment with the daily use of technology underscore the positive attitudes that learners exhibit towards these applications (Karjo & Andreani, 2018; Zohoorian et al., 2022; Karanfil & Özet, 2021; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Quyen, 2022; Nhu & Quyen, 2021).

The positive attitudes and preference for mobile learning apps, including Memrise, can be linked to the principles of Connectionism. Memrise's use of mnemonic devices and context-rich examples fosters connections among vocabulary concepts, aligning with connectionist principles of learning through associations (Rumelhart & McClelland, 1986).

Effectiveness of Memrise in Vocabulary Mastery

The effectiveness of Memrise in enhancing vocabulary mastery stands as a cornerstone theme. Multiple studies align in suggesting that utilizing Memrise contributes to improved vocabulary retention among students, showcasing the app's potential to bolster language skills (Karjo & Andreani, 2018; Zohoorian et al., 2022; Karanfil & Özet, 2021; Nurani et al., 2023; Affandi & Syafi'i, 2018; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Quyen, 2022; Nhu & Quyen, 2021; Zeynab & Mohsen, 2020; Fadhilawati, 2016; Luczak, 2017; Aminatun & Oktaviani, 2019a; Fathi et al., 2019; Nuralisah & Kareviati, 2020; Zuniati et al., 2023; Abarghoui & Taki, 2018; Rohim et al., 2022). This effectiveness can be attributed to its well-designed pedagogical strategies and engaging features.

Gamified Nature of Memrise

The gamified nature of Memrise, facilitated through spaced repetition, flashcards, and various game-like elements, emerges as a prominent pattern. These functionalities align with effective learning techniques, making Memrise an engaging and productive learning tool that consistently motivate learners, leading to heightened engagement and enjoyment. The gamified approach contributes

significantly to the app's effectiveness in fostering improved learning outcomes (Karjo & Andreani, 2018; Zohoorian et al., 2022; Karanfil & Özet, 2021; Nurani et al., 2023; Affandi & Syafi'i, 2018; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Quyen, 2022; Nhu & Quyen, 2021; Zeynab & Mohsen, 2020; Aminatun & Oktaviani, 2019b; Fathi et al., 2019; Nuralisah & Kareviati, 2020; Zuniati et al., 2023; Abarghoui & Taki, 2018; Rohim et al., 2022).

The gamified nature of Memrise, facilitated through spaced repetition, flashcards, and game-like elements, resonates with the principles of Retrieval Practice and Connectionism. Gamification promotes active retrieval and connections among vocabulary items, enhancing memory and transferable skills (Roediger III & Karpicke, 2006; Rumelhart & McClelland, 1986). Memrise's spaced repetition algorithms align with the Spaced Repetition theory that emphasizes the importance of timing in learning, enhancing vocabulary retention through optimal timing and active retrieval (Cepeda et al., 2006; Roediger III & Karpicke, 2006). Memrise's spaced repetition also reflects the principles of Distributed Learning, which advocate for spacing out learning sessions, enhancing learning benefits through optimal distribution (Bjork & Bjork, 1992).

Elements of gamification, including points, leaderboards, and rewards, are identified as motivational factors that amplify students' engagement and motivation. The gamified approach taps into students' intrinsic motivation, making learning engaging and enjoyable (Karjo & Andreani, 2018; Zohoorian et al., 2022; Karanfil & Özet, 2021; Nurani et al., 2023; Affandi & Syafi'i, 2018; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Quyen, 2022; Nhu & Quyen, 2021; Zeynab & Mohsen, 2020; Aminatun & Oktaviani, 2019b; Fathi et al., 2019; Nuralisah & Kareviati, 2020; Zuniati et al., 2023; Abarghoui & Taki, 2018; Rohim et al., 2022). The point system, game-like interface, and interactive elements within Memrise consistently motivate students to engage with the application, thereby enhancing vocabulary learning. This motivational factor is repeatedly affirmed by Aminatun & Oktaviani (2019b), Fathi et al. (2019), Nuralisah & Kareviati (2020), and Zuniati et al. (2023).

Motivational Factors and Positive Attitudes

The positive student attitudes towards Memrise and similar apps resonate strongly throughout the analyzed sources. Learners tend to respond favorably to the engaging features, finding them beneficial for vocabulary learning. This positivity reflects the alignment of these apps with students' preferences and daily technological interaction, affirming the app's role in enhancing the language learning experience. (Fadhilawati, 2016; Luczak, 2017; Aminatun & Oktaviani, 2019b; Fathi et al., 2019; Taebenu & Katemba, 2021; Nuralisah & Kareviati, 2020; Zuniati et al., 2023; Karjo & Andreani, 2018; Zohoorian et al., 2022; Karanfil & Özet, 2021; Nurani et al., 2023; Affandi & Syafi'i, 2018; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Quyen, 2022; Nhu & Quyen, 2021; Zeynab & Mohsen, 2020).

The motivational factors stemming from gamification and the positive student attitudes towards Memrise are closely linked to the principles of Transfer of Learning. Learners' positive experiences with Memrise lead to transferable vocabulary skills that can be applied in real-world contexts (Perkins & Salomon, 1989).

Learner Autonomy

Furthermore, learner autonomy surfaces as a consistent benefit of using Memrise. The app supports self-regulated learning and enables students to engage autonomously, fostering a sense of control and independence in their language learning journey (Karjo & Andreani, 2018; Zohoorian et al., 2022; Karanfil & Özet, 2021; Nurani et al., 2023; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Quyen, 2022; Nhu & Quyen, 2021; Zeynab & Mohsen, 2020; Aminatun & Oktaviani, 2019b; Fathi et al., 2019; Nuralisah & Kareviati, 2020).

The principle of learner autonomy, as facilitated by Memrise, intersects with the insights of Cognitive Load Theory (CLT). The enhancement of learner autonomy facilitated by Memrise complements the principles of Cognitive Load Theory. Enabling autonomous learning can optimizes cognitive load, granting learners control over their learning process (Sweller, 1988).

Improved Vocabulary Achievement and Retention

Most importantlty, participants exhibit improved vocabulary achievement and retention through the use of Memrise across studies (Karjo & Andreani, 2018; Zohoorian et al., 2022; Karanfil & Özet, 2021; Nurani et al., 2023; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Nhu & Quyen, 2021; Zeynab & Mohsen, 2020; Fadhilawati, 2016; Luczak, 2017; Aminatun & Oktaviani, 2019a; Fathi et al., 2019; Nuralisah & Kareviati, 2020; Zuniati et al., 2023; Abarghoui & Taki, 2018; Rohim et al., 2022).

Discrepancies and Nuances:

Technical Limitations

While the overall consensus supports the efficacy of Memrise, certain discrepancies and nuances emerge. Technical limitations, such as time consumption, technical glitches, and recognition issues with synonyms, have been reported in various studies. These challenges highlight the need for app developers to address these concerns to ensure a seamless learning experience (Luczak, 2017; Taebenu & Katemba, 2021; Aminatun & Oktaviani, 2019a).

Usage Frequency

The frequency of app usage displays variation due to factors like internet quality and personal motivation, underlining the need for a comprehensive understanding of learners' behaviors in the digital realm (Aminatun & Oktaviani, 2019b; Taebenu & Katemba, 2021; Nuralisah & Kareviati, 2020).

Attitudes and Usage

Student attitudes and usage of Memrise exhibit some nuances. Although most students exhibit positive attitudes, a subset of learners expresses concerns regarding app complexity, suitability, and dependency on internet connectivity. This indicates that while positive attitudes dominate, individual preferences and contexts play a role in shaping perceptions (Karjo & Andreani, 2018; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Quyen, 2022).

Impact on Autonomy

Divergence is also noted in the impact of Memrise on learner autonomy. While some studies report an increase in learner autonomy, others find limited impact in this aspect. This suggests that the degree of autonomy enhancement may vary based on learner profiles and other contextual factors (Karjo & Andreani,

2018; Zohoorian et al., 2022; Fadhilawati, Rachmawati, et al., 2022; Fadhilawati, Ulum, et al., 2022; Quyen, 2022; Zeynab & Mohsen, 2020).

Student Preferences

While most students derive enjoyment from Memrise, a few encounter challenges in using the application effectively or have preferences for specific language aspects like grammar. Luczak (2017), Aminatun & Oktaviani (2019b), and Aminatun & Oktaviani (2019a) address these nuances.

Gender Differences

Gender differences in vocabulary enhancement through Memrise are highlighted in one study, revealing a significant variation in improvement rates between genders. Notably, one study indicates significant gender differences in vocabulary enhancement through Memrise, with females exhibiting higher improvements than males. This observation is highlighted by Taebenu & Katemba (2021). This observation underscores the potential influence of gender-related factors on language learning outcomes.

Long-Term Vocabulary Acquisition

The effectiveness of Memrise in facilitating long-term vocabulary retention introduces an area of potential discrepancy. While some studies accentuate the benefits of spaced repetition for memory improvement, others advocate for further research to ascertain the sustained impact on long-term vocabulary retention. Karjo & Andreani (2018), Zeynab & Mohsen (2020), and Fadhilawati, Ulum, et al. (2022) delve into this area of potential discrepancy.

Suggestions for Future Research on Memrise Usage for Vocabulary Learning

Researchers posit valuable suggestions for future research to expand the understanding of Memrise's impact:

1. **Broader Contexts:** The need to explore the effectiveness of Memrise in broader contexts or through comparison with other online applications is emphasized, aiming to identify its unique advantages (Fadhilawati, 2016). This approach can provide a more comprehensive understanding of the app's role.

2. **Replication and Extension:** The replication and extension of existing studies are recommended, employing larger and more diverse participant groups to validate findings. Furthermore, researchers suggest exploring Memrise's potential in improving other language skills beyond vocabulary (Fadhilawati, 2016; Fathi et al., 2019).

3. **Technical Improvement:** Addressing technical limitations, connectivity issues, and factors influencing usage frequency when integrating Memrise into language teaching is advised. These considerations ensure a more effective and seamless learning experience (Luczak, 2017; Taebenu & Katemba, 2021; Aminatun & Oktaviani, 2019a).

CONCLUSION

In conclusion, the analysis of key themes, patterns, discrepancies, and future research suggestions surrounding Memrise showcases the app's potential to revolutionize language learning. The gamified approach, emphasis on vocabulary mastery, and positive student attitudes highlight Memrise's promise in enhancing language skills and fostering autonomous learning. While some nuances and challenges exist, the overall consensus remains positive, underscoring the

transformative impact of technology on language education. Further research and development in the realm of MALL apps like Memrise hold immense promise for the future of language learning.

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