

VOCABULARY-BUILDING TECHNOLOGIES IN TEACHING FOREIGN LANGUAGES: A MIXED-METHODS APPROACH

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Abstract

Building a vocabulary base is a fundamental component of learning any foreign language. In recent times technology has introduced several innovative ways to enhance this process. This study observes the effectiveness of vocabulary-building technologies, such as mobile applications, spaced repetition systems, artificial intelligence (AI), and virtual reality (VR), in foreign language acquisition. With a mixed-methods approach, we conducted a survey of 150 language learners and interviewed 10 foreign language instructors. Results show that technology-based learning noticeably improves vocabulary retention, engagement, and accessibility. However, there are still challenges such as over-reliance on technology and the need for contextual learning. These outcomes suggest that while technology can offer a number of benefits, its integration with traditional learning methods should be balanced.

Keywords: Language acquisition, vocabulary learning, vocabulary retention, traditional learning methods, mobile applications, spaced repetition systems, artificial intelligence, mixed-methods approach, electronical devices, contextual learning.

Introduction

Vocabulary acquisition is crucial part in language-learning process. It helps to improve communication, comprehension, and fluency skills for any foreign language learning. Traditional vocabulary learning methods, such as rote memorization, word lists, and textbook exercises, often fail to engage learners effectively (Nation, 2001). During past few years, digital technology has changed the way of vocabulary learning through interactive and adaptive learning experiences.

A language learner has a wide range of choices in terms of vocabulary-building technologies. For example, they include mobile applications (Duolingo, Memrise), spaced repetition systems (Anki, Quizlet), AI-driven platforms (chatbots, adaptive learning tools), and immersive environments (VR language simulations). These digital tools help us improve vocabulary retention abilities, provide productive personalized learning experiences, and increase learner motivation.

Despite the mass use of technology in language education, there is still limited empirical research on its effectiveness in vocabulary acquisition. Additionally, concerns exist regarding over-dependence on digital devices and their ability to provide meaningful contextual learning experiences.

This study aims to:

1. Assess the effectiveness of vocabulary-building technologies in improving retention and engagement.
2. Identify possible problems and limitations associated with these technologies.
3. Explore best practices for integrating technology with traditional learning methods.

Research Questions

1. How do vocabulary-building technologies make an impact on language learners' retention and engagement?
2. What challenges do learners and educators face across when using these technologies?
3. How can technology be effectively integrated with traditional language-learning approaches?

Methods

This study applied a mixed-methods approach, combining quantitative and qualitative data collection. A survey was conducted among a number of language learners to make clear their experiences with vocabulary-building technologies. In turn, semi-structured interviews were held with language instructors to gain deeper understanding.

- Survey: 150 foreign language learners (aged 18–45) from different proficiency levels and nationalities.
- Interviews: 10 foreign language instructors with experience applying technology into their teaching.

Data Collection

- Survey: A questionnaire was shared online among the language learners which contains Likert-scale questions on vocabulary retention, engagement, perceived effectiveness, and challenges.
- Interviews: detailed interviews with language instructors focused on their experiences, challenges, and strategies for using technology in learning vocabulary.



Data Analysis

- Quantitative data from the survey were analyzed using descriptive statistics (mean, standard deviation, percentage distributions).
- Qualitative data from interviews were analyzed thematically to identify recurring patterns and insights.

Results

Survey results indicated that 76% of learners found technology-enhanced vocabulary learning more effective than traditional methods. Spaced repetition apps, such as Anki, Quizlet, took the highest rate in improving retention, with 85% of users reporting increased word recall over time.

Instructors also noted that technological opportunities helped students strengthen their vocabulary through spaced review and contextual examples. However, they emphasized that learners must actively use the vocabulary in real and original contexts to fully acquire and make use of it.

Gamified apps – Duolingo, Memrise – significantly increased a learner's engagement, showing 68% of respondents that reports higher motivation compared to traditional textbook exercises. Features such as streaks, leaderboards, and rewards were highlighted as key motivators for many learners.

On the other hand, some instructors noticed a possible negative aspect and warned of “superficial learning,” where learners engage primarily for rewards rather than superficial understanding. They suggested that gamification should be accompanied with productive tasks like writing or speaking exercises.

Challenges and Limitations

Despite their benefits, vocabulary-building technologies pose several challenges:

Challenge	Survey response (%)	Instructor comments
Over-reliance on technology	60%	Learners often neglect non-digital methods.
Lack of contextual learning	54%	Apps focus on isolated words rather than real-life usage
Limited pronunciation feedback	47%	AI tools still struggle with accurate speech recognition
Digital fatigue	39%	Excessive screen time reduces long-term motivation

Instructors recommended a mixed approach that combines technological advances with traditional methods:

1. Use SRS for better retention – integrate spaced repetition tools with classroom discussions.
2. Apply learned words in everyday context – encourage learners to use digital vocabulary in writing or speaking activities.
3. Balance screen and offline learning process – combine app-based learning with face-to-face practice.

4. Leverage AI for adaptive learning – use AI tools to tailor vocabulary exercises to individual needs.

Discussion

Our findings from the survey align with previous studies (Schmitt, 2019; Peters, 2021), which highlight the effectiveness of spaced repetition and gamification in vocabulary learning. However, our research also emphasizes some features like the risk of over-reliance on technology and the need for contextualized learning, which raised by Larsen-Freeman (2020). Educators should carefully integrate technology into their curriculum. Because it should complement, not replace traditional teaching considering the risks mentioned above. Additionally, app developers should enhance AI-driven contextual learning and pronunciation feedback to improve effectiveness, especially in terms of speech recognition. This study had a small sample extent and focused primarily on self-reported data. So future researches should include experimental studies comparing vocabulary retention rates among language learners using different new technologies. Additionally, investigating the long-term impact of technology-based vocabulary learning could provide us with deeper insights.

Conclusion

Vocabulary-building technologies play a substantial role in foreign language learning process, enhancing word retention, engagement, and accessibility. However, challenges such as over-reliance on digital tools, lack of contextual learning, and prolonged screen time problems must also be considered. A balanced learning approach in education of languages incorporating both technology and traditional methods, can be key to optimizing vocabulary acquisition.

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