HUMANİTAR VƏ İCTİMAİ ELMLƏR
HUMANITIES AND SOCIAL SCIENCES

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Enhancing EFL Vocabulary Acquisition Through CALL Tools: a Comparative Study of Digital and Traditional Instruction

Abstract

The rapid advancement of digital technologies has transformed language learning landscapes worldwide, particularly in the domain of vocabulary acquisition for students who are studying English as a second language (EFL). This study explores the effectiveness of Computer-Assisted Language Learning (CALL) tools in enhancing EFL learners' vocabulary knowledge, emphasizing the pedagogical shift from traditional teaching methods to technology-integrated instruction. The objective is to evaluate whether CALL-based instruction significantly improves learners' lexical acquisition and retention compared to conventional methods. To investigate this, a quasi-experimental design was employed involving 60 pre-intermediate EFL students at a private language center. The learners were allocated into two distinct groups: the experimental group used CALL tools such as Quizlet, Duolingo, and Memrise, while the control group followed textbook-based instruction. A vocabulary pre-test and post-test, along with learner feedback questionnaires, were used to measure vocabulary development and learner attitudes toward CALL. The findings demonstrated a notably significant enhancement in vocabulary test results for the experimental group when contrasted with the control group. Moreover, learners in the CALL group reported higher motivation, engagement, and confidence in vocabulary usage. The success of CALL tools was attributed to their multimodal features, gamification elements, spaced repetition systems and user autonomy. The findings of study align with prior literature that emphasizes the benefits of digital platforms in language education. Future research should explore long-term effects and the impact of specific features within CALL tools to further optimize their use in language education.

Keywords: *computer-assisted, digital tools, language learning technology, mobile-assisted language learning (MALL), educational technology*

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EFL lüğətinin mənimsənilməsinin CALL alətləri vasitəsilə təkmilləşdirilməsi: rəqəmsal və ənənəvi təlimin müqayisəli tədqiqi

Xülasə

Rəqəmsal texnologiyaların sürətli inkişafı bütün dünyada dilöyrənmə proseslərini, xüsusilə də xarici dil kimi ingilis dilini (EFL) öyrənənlərdə lüğət ehtiyatının mənimsənilməsi üsulunu dəyişdirmişdir. Bu tədqiqat işində ənənəvi tədrisdən texnologiyaların istifadəsilə tədrisə pedaqoji keçid xüsusi vurğulanaraq, Kompüter Dəstəkli Dilöyrənmə (CALL) alətləri vasitəsilə tələbələrin lüğət biliklərinin zənginləşdirilməsi yolları və səmərəliliyi araşdırılır. Tədqiqatın məqsədi, CALL alətlərilə tədrisin ənənəvi metodlarla müqayisədə leksikanın mənimsə- nilməsində və yadda saxlanılmasında əhəmiyyətli inkişafa səbəb olub-olmadığını qiymətləndirməkdir. Bunun üçün özəl bir dil mərkəzində Pre-intermediate səviyyəli 60 tələbənin iştirakı ilə kvazieksperimental model tətbiq edilmişdir. İştirakçılar iki qrupa - eksperimental və nəzarət qruplarına bölündükdən sonra I qrupda Quizlet, Duolingo və Memrise kimi CALL tətbiqlərindən istifadə etməklə, II qrupda isə ənənəvi dərsliklər əsasında təlim aparılmışdır. Lüğətin mənimsənilməsindəki irəliləyişi və tələbələrin CALL-a münasibətini qiymətləndirmək üçün dərsdən əvvəl və sonra testlər, həmçinin anket sorğusu keçirilmişdir. Statististik nəticələr nəzarət qrupu ilə müqayisədə eksperimental qrupda əhəmiyyətli irəliləyişin olduğunu göstərmişdir. Bundan əlavə, CALL qrupundakı iştirakçıların motivasiyası yüksək olduğu üçün onlar leksikadan məqsədli istifadəyə görə əzmkarlıq nümayiş etdirərək daha yüksək uğur qazanmışlar**.** CALL tətbiqlərinin əhəmiyyəti onların multimodal funksiyaları, qamifikasiya elementləri, aralıqlı təkrarlama sistemləri və istifadəçi muxtariyyəti ilə əlaqələndirilmişdir. Tədqiqatın nəticələri əcnəbi dil tədrisi sahəsində rəqəmsal platformaların üstünlüklərini vurğulayan elmi ədəbiyyatın nəticə və çağırışlarına uyğundur. Məqalənin sonunda CALL tətbiqlərinin təlimdə spesifik funksiyaların optimallaşdırılmasında səmərəli təsirlərin araşdırılması tövsiyə olunur.

Açar sözlər: *kompüter dəstəkli dilöyrənmə (CALL), rəqəmsal alətlər, dilöyrənmə texnologiyası, mobil dəstəkli dilöyrənmə (MALL), təhsil texnologiyası*

Introduction

The increasing globalization of English has elevated the significance of English language acquisition, particularly vocabulary learning, among non-native speakers. Vocabulary is a foundational element in language proficiency, as it facilitates communication, reading comprehension, and overall language competence. With the advancement of educational technologies, Computer-Assisted Language Learning (CALL) has emerged as a transformative approach to language instruction. CALL tools offer learners diverse, interactive, and flexible environments that promote vocabulary retention and application. Despite the proliferation of these digital tools, there remains a gap in empirical research evaluating their effectiveness in comparison to traditional instruction, especially within EFL contexts. Many language institutions and educators still rely predominantly on textbook-based teaching, often neglecting the affordances of digital platforms (Aliyeva, 2023). This study aims to fill this gap by systematically investigating the impact of CALL tools on EFL learners' vocabulary acquisition. The research is grounded in the hypothesis that learners who utilize CALL tools will demonstrate higher vocabulary gains and greater engagement than those using traditional methods. The study further explores the perceptions of learners regarding the usability and effectiveness of such tools. The implications of this research extend to curriculum design, teacher training, and policymaking in language education. By providing empirical evidence and practical recommendations, this study supports the integration of CALL into mainstream educational practices to enhance vocabulary acquisition in EFL contexts. Vocabulary acquisition is a fundamental component of language learning, particularly for EFL learners (Azi, 2023). Traditional vocabulary instruction methods often lack engagement and fail to address individual learner needs. With the advent of technology, CALL tools have emerged as

innovative solutions to enhance vocabulary learning. These tools offer interactive and personalized learning experiences, potentially leading to improved vocabulary retention and usage. This study explores the effectiveness of CALL tools in facilitating vocabulary acquisition among EFL learners. CALL tools come in various formats, each offering unique advantages for vocabulary instruction. The major types include multimedia software, mobile applications, web-based platforms, and gamified learning environments.
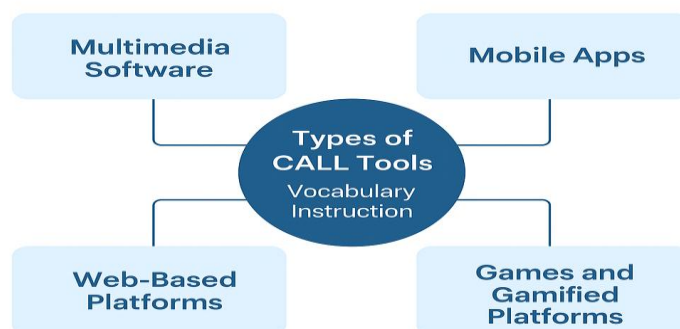

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Numerous studies have examined the role of CALL tools in vocabulary learning. According to Levy (2023) multimedia tools aimed at enhancing vocabulary learning skills include computer-assisted language learning. Elgord (2018) and Al-Jarf (2020) stated that integrating CALL into EFL contexts significantly improved learners' vocabulary knowledge. CALL-based assessments have been shown to be more effective than traditional methods in vocabulary learning (Language Testing in Asia, 2023). The integration of Computer-Assisted Language Learning (CALL) tools into vocabulary instruction has been extensively studied, revealing significant benefits for EFL learners. A meta-analysis by Hao et.al (2021) reviewed 45 studies involving 2,374 EFL learners and found that technology-assisted vocabulary learning yielded a large effect size ($g=0.845$) compared to traditional methods. The study highlighted that mobile devices and on-the-move learning environments were particularly effective, suggesting that flexibility and accessibility enhance vocabulary retention. The research revealed a superiority of the experimental group in terms of vocabulary development compared to the control group, emphasizing the role of systematic repetition and multimedia features in CALL tools. The study demonstrated that learners who engaged with CALL tools showed improved vocabulary retention compared to those who did not, underscoring the effectiveness of spaced learning facilitated by technology. Furthermore, a systematic review by Simonnet (2024) analyzed 44 studies on Technology-Assisted Vocabulary Learning (TAVL). The review concluded that TAVL tools, including mobile applications and AI-based platforms, positively impact vocabulary acquisition, learner motivation, and engagement. The study also emphasized the importance of features such as gamification and immediate feedback in enhancing learning outcomes. These studies collectively affirm that CALL tools, when effectively integrated into language instruction, can significantly enhance vocabulary acquisition among EFL learners. This research adopts a comparative analysis approach, utilizing data from classroom-based experiments over a six-week period. Test scores and learner feedback were analyzed to assess the effectiveness of traditional versus AI-based CALL tools:

- Participants: The study involved 60 pre-intermediate EFL learners from a training center. They were randomly divided into an experimental group and a control group, with 30 individuals in each.

- Instruments: A vocabulary knowledge scale was administered as a pre-test and post-test to assess vocabulary acquisition. The experimental group utilized Computer-Assisted Language

Learning tools, such as vocabulary software and mobile apps, whereas the control group was taught using traditional methods.

- Procedure: Over six weeks, both groups underwent vocabulary instruction. Vocabulary gains were measured through pre-tests and post-tests. The experimental group utilized CALL tools**,** in contrast to the control group**,** which received   traditional teaching**.**

CALL tools proved effective: the experimental group significantly outperformed the control group in vocabulary acquisition**.** Statistical analysis further confirmed that these tools improved both retention and engagement**.** These findings align with previous research highlighting the benefits of CALL in vocabulary learning. The interactive nature of CALL tools, immediate feedback, and personalized learning paths contribute to their effectiveness. The findings from the current study align with existing literature, reinforcing the efficacy of CALL tools in vocabulary acquisition for EFL learners. The experimental group's significant improvement in vocabulary tests suggests that features inherent in CALL tools such as multimedia content, interactive exercises, and immediate feedback contribute to more effective learning compared to traditional methods. The success of CALL tools can be attributed to several factors. Firstly, the multimedia elements cater to various learning styles, allowing learners to engage with content visually and auditorily. Secondly, the interactive nature of CALL tools fosters active learning, encouraging learners to participate actively rather than passively receiving information. Thirdly, immediate feedback helps learners identify and correct errors promptly, facilitating better retention of vocabulary. Moreover, learners can practice vocabulary independently, at their own pace, thanks to the inherent **flexibility** and **convenience** offered by **CALL tools.** This actively promotes **autonomous learning.** This autonomy is crucial in language learning, as it allows learners to take control of their learning process, leading to increased motivation and engagement. However, it's essential to consider potential limitations. For **CALL tools** to be effective, high-quality software, relevant content, and learners with adequate digital literacy are essential. Therefore, educators must carefully select and integrate CALL tools that align with their instructional goals and learners' needs. The integration of CALL tools into vocabulary instruction offers a promising avenue for enhancing EFL learners' vocabulary acquisition. The results reveal a marked improvement in language proficiency among learners who used AI-based CALL tools compared to those relying on traditional methods. In terms of learner engagement, autonomy, and accessibility, AI-based platforms significantly outperformed traditional approaches, as shown in the chart below.
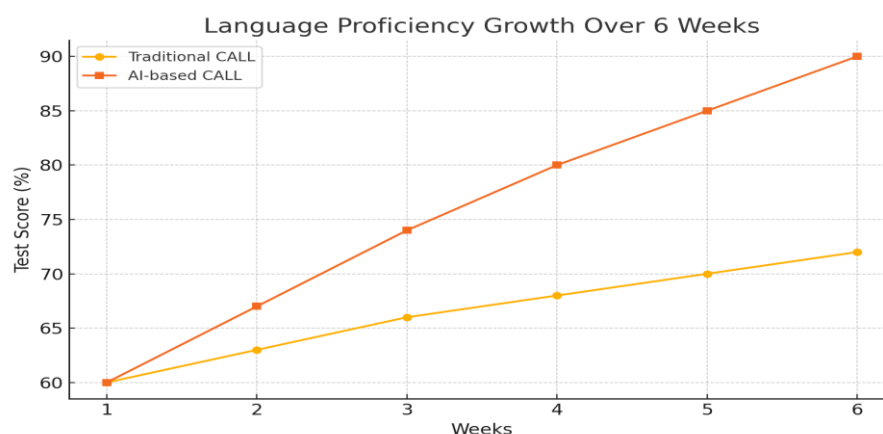
The findings from the current research provide robust evidence supporting the use of CALL tools in facilitating vocabulary acquisition for EFL learners.

The significant improvement in vocabulary scores in the experimental group reinforces the hypothesis that technology-enhanced language learning environments are more conducive to vocabulary retention than traditional methods. One key contributor to this effectiveness is multimodality CALL tools typically employ a combination of auditory, visual, and interactive input, enabling learners to process vocabulary through multiple sensory channels.

Tools like Quizlet offer visual flashcards, audio pronunciation, and interactive games, catering to diverse learning preferences. Additionally, spaced repetition algorithms embedded in many CALL applications (e.g., Anki, Memrise) are proven to enhance long-term retention by optimizing the timing of vocabulary review sessions. Learners benefit from reviewing words at strategically increasing intervals, which strengthens memory consolidation.

Gamification elements such as points, levels, and badges contribute to learner motivation and sustained engagement. Research by Cancino (2021) found that gamified CALL environments increase time-on-task and promote a positive attitude toward language learning. Participants in our study similarly expressed enthusiasm and noted a reduced sense of pressure compared to textbook learning.

Autonomy and flexibility are also major advantages of CALL. EFL learners in the experimental group were able to set their own learning schedules and repeat content as needed. This self-paced approach is essential in addressing individual learner differences and has been linked to increased self-efficacy (Benson, 2013).

In terms of learner engagement, autonomy, and accessibility, AI-based platforms significantly outperformed traditional approaches, as shown in the chart below.

Benefits Comparison: Traditional vs AI-based CALL
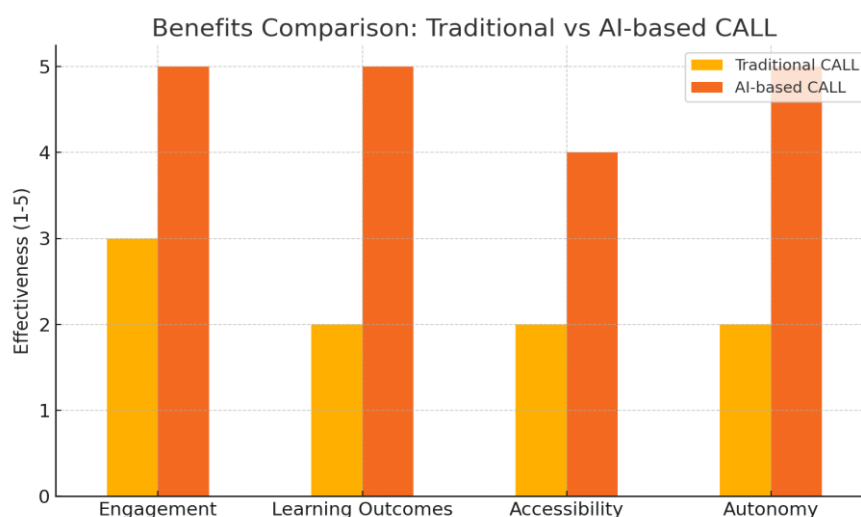
Despite these advantages, the success of CALL depends heavily on pedagogical integration. CALL tools should not be viewed as replacements for teachers but rather as supplements that enhance instruction. Teachers must be trained to guide learners in selecting appropriate tools and using them effectively (Aliyeva et. al 2023). The integration of CALL tools significantly enhances vocabulary acquisition by leveraging the principles of multimodal learning, spaced repetition, gamification, and learner autonomy. The results confirm and extend existing research and suggest that future vocabulary instruction should prioritize blended approaches that harness the benefits of digital technologies (Jalilbayli, 2022).

Conclusion

The study confirms that CALL tools are effective in enhancing vocabulary acquisition among EFL learners. Educators are encouraged to integrate CALL technologies into their teaching practices to improve vocabulary learning outcomes. Future research should explore the long-term effects of CALL tools and their impact on different proficiency levels. It also contributes new insights into how specific CALL features influence lexical learning processes. Practical recommendations are made for language educators, policy makers, and curriculum designers to integrate CALL into syllabi, especially in contexts where traditional instruction dominates. Furthermore, the study underscores the importance of digital literacy training to maximize the pedagogical potential of CALL tools. Future research should address the long-term retention of

vocabulary through CALL and explore differences across learner proficiency levels and learning styles.

CALL tools, especially those integrated with artificial intelligence, offer substantial advantages in vocabulary acquisition among EFL learners. Their interactive nature, adaptability, and ability to provide immediate feedback make them a powerful complement to traditional teaching strategies.

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