Digital-assisted english vocabulary acquisition: cognitive and metacognitive strategy use among university students in uzbekistan

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Abstract. The growing integration of digital technologies into language education has transformed the way university students learn English vocabulary. This study examines the use of cognitive and metacognitive strategies in digital-assisted vocabulary acquisition among university students in Uzbekistan. Data were collected through a questionnaire administered to 80 undergraduate students from three higher education institutions. The findings reveal that online dictionaries, AI-based tools, and vocabulary-learning applications are widely used for vocabulary development. The results also indicate that repetition, contextual guessing, and note-taking are the most common cognitive strategies, while planning, monitoring, and self-evaluation are frequently employed metacognitive strategies. The study concludes that digital tools can significantly enhance vocabulary learning when combined with effective strategic behavior.

Keywords: digital learning, vocabulary acquisition, cognitive strategies, metacognitive strategies, EFL learners, university students, Uzbekistan.

Introduction. Vocabulary knowledge plays a fundamental role in second language acquisition. Learners with a rich vocabulary are generally more successful in reading, writing, speaking, and listening activities. Therefore, vocabulary development remains one of the primary goals of English language teaching [1].

Recent advances in digital technology have created new opportunities for vocabulary learning. Mobile applications, online dictionaries, digital flashcards, and artificial intelligence-based tools provide learners with immediate access to language resources and personalized learning experiences. In Uzbekistan, the increasing emphasis on English language proficiency and digital literacy has encouraged university students to use technological tools for independent language learning.

However, access to technology alone does not guarantee successful vocabulary acquisition. Learners must employ effective learning strategies to process, retain, and use new lexical items. Among the most important strategies are cognitive and metacognitive strategies. Cognitive strategies involve direct interaction with learning materials, while metacognitive strategies help learners plan, monitor, and evaluate their learning activities [2].

This study investigates how university students in Uzbekistan use digital technologies for English vocabulary acquisition and explores the cognitive and metacognitive strategies associated with digital learning environments.

Literature Review. Vocabulary acquisition is an active process that requires repeated exposure, meaningful interaction, and strategic learning. According to Nation, effective vocabulary learning involves understanding word meaning, pronunciation, usage, and contextual application [3].

Digital technologies have expanded opportunities for vocabulary learning by providing flexible and interactive learning environments. Research has shown that digital tools increase learner engagement and facilitate independent learning [4]. Applications such as Quizlet, Duolingo, and AI-powered language platforms offer features including spaced repetition, multimedia support, and instant feedback, which can improve vocabulary retention.

Cognitive strategies are essential for processing vocabulary information. These strategies include repetition, note-taking, translation, association, and contextual guessing [2]. Through these activities, learners actively engage with vocabulary items and strengthen memory retention.

Metacognitive strategies, on the other hand, focus on self-regulation. O'Malley and Chamot define metacognitive strategies as planning, monitoring, and evaluating learning processes [5]. Students

who employ these strategies effectively are more likely to become autonomous learners and achieve better language-learning outcomes.

Methodology. This study adopted a quantitative descriptive research design. Data were collected through a questionnaire distributed to 80 undergraduate students from three universities in Uzbekistan. Participants were selected through convenience sampling and represented different academic disciplines. The questionnaire consisted of three sections: demographic information, use of digital vocabulary-learning tools, and use of cognitive and metacognitive learning strategies. The collected data were analyzed using descriptive statistics, including frequencies and percentages.

Results. The findings revealed that students frequently used various digital tools for vocabulary learning.

Table 1. Most Frequently Used Digital Tools

Tool	Percentage
Online Dictionaries	91%
AI-Based Tools (ChatGPT, etc.)	76%
Quizlet	68%
YouTube Educational Videos	65%
Duolingo	52%

Online dictionaries were the most commonly used resource, followed by AI-powered tools. This finding demonstrates the increasing role of technology in supporting vocabulary development.

The analysis of cognitive strategy use showed that repetition was the most frequently employed strategy.

Table 2. Cognitive Strategy Use

Strategy	Percentage
Repetition	85%
Contextual Guessing	79%
Translation	76%
Note-Taking	72%
Association	68%

Students reported reviewing vocabulary through flashcards, mobile applications, and online exercises. Contextual guessing was also widely used, suggesting that learners often infer word meanings from digital texts and videos.

The findings regarding metacognitive strategies are presented below:

Table 3. Metacognitive Strategy Use

Strategy	Percentage
Monitoring Progress	82%
Goal Setting	74%
Self-Evaluation	71%
Planning Study Sessions	69%

Monitoring learning progress emerged as the most common metacognitive strategy. Many students reported using application statistics and achievement records to evaluate their vocabulary growth.

Discussion. The results indicate that digital technologies have become important tools for vocabulary acquisition among university students in Uzbekistan. The widespread use of online

dictionaries and AI-based platforms demonstrates that learners increasingly prefer accessible and interactive learning resources.

The findings also confirm the importance of cognitive strategies in vocabulary learning. Repetition, contextual guessing, and note-taking were among the most frequently used strategies. These results support previous research suggesting that active engagement with vocabulary items improves retention and comprehension [3].

Furthermore, metacognitive strategies played a significant role in digital learning environments. Students who monitored their progress, established learning goals, and evaluated outcomes appeared more capable of managing their vocabulary-learning activities. These findings are consistent with studies emphasizing the relationship between self-regulation and successful language learning [5].

Digital tools also contribute to learner autonomy by allowing students to study independently outside the classroom. However, technology should not be viewed as a replacement for effective learning strategies. Rather, the success of digital vocabulary acquisition depends on how learners utilize available resources.

Conclusion. This study explored digital-assisted English vocabulary acquisition and the use of cognitive and metacognitive strategies among university students in Uzbekistan. The findings revealed that online dictionaries, AI-based tools, and vocabulary-learning applications are widely used for vocabulary development. The results demonstrated that repetition, contextual guessing, and note-taking are the most common cognitive strategies, while monitoring progress, goal setting, and self-evaluation are the most frequently employed metacognitive strategies.

The study concludes that digital technologies can enhance vocabulary acquisition when learners apply appropriate cognitive and metacognitive strategies. Therefore, English language instructors should encourage both technology use and strategy training to improve vocabulary-learning outcomes among university students.

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