Transforming Vocabulary Acquisition: The role of using AI Tools among adult second language learners in acquiring new vocabulary

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ABSTRACT

Over the past few years, the role of Artificial Intelligence (AI) in education has become undeniable particularly among college learners. This young generation integrates technology into their daily lives and relies heavily on technology-related tools. Consequently, restricting the use of technology in education would be counterproductive. This study evaluated the attitudes, beliefs, and perspectives of college students regarding the use of AI tools for learning new English vocabulary in the scope of second language learning. A structured survey was administered to college students to measure their perceptions of AI-assisted learning tools. The study analyzed four key dimensions: the impact of motivation and anxiety, the efficacy of personalization and feedback, the beliefs regarding learner autonomy, and the role of teachers. The findings revealed a positive attitude among students, who associated AI tools with increased motivation, reduced language anxiety, and enhanced autonomy. However, the outcomes also highlighted concerns regarding the accuracy of AI-generated content and the potential for over-reliance. These results provide empirical evidence supporting the pedagogical value of AI while underscoring the need for critical digital literacy.

Keywords: Artificial Intelligence (AI), vocabulary acquisition, foreign language learning (FLL).

الملخص

خلال السنوات القليلة الماضية، أصبح دور الذكاء الاصطناعي في التعليم واضحًا لا جدال فيه، لا سيما بين طلاب الجامعات. يدمج هذا الجيل الشاب التكنولوجيا في حياته اليومية ويعتمد اعتمادًا كبيرًا على الأدوات التكنولوجية. وبالتالي، فإن تقييد استخدام التكنولوجيا في التعليم سيكون له نتائج عكسية. قيّمت هذه الدراسة مواقف ومعتقدات ووجهات نظر طلاب الجامعات فيما يتعلق باستخدام أدوات الذكاء الاصطناعي لتعلم مفردات اللغة الإنجليزية الجديدة في سياق تعلم اللغة الثانية. تم توزيع استبيان على طلاب الجامعات لقياس تصوراتهم عن أدوات التعلم المدعومة بالذكاء الاصطناعي. حللت الدراسة أربعة أبعاد رئيسية: تأثير الدافعية والقلق، وفعالية التخصيص والتغذية الراجعة، والمعتقدات المتعلقة باستقلالية المتعلم،

ودور المعلمين. كشفت النتائج عن موقف إيجابي لدى الطلاب، الذين ربطوا أدوات الذكاء الاصطناعي بزيادة الدافعية، وتقليل القلق المرتبط بتعلم اللغة الثانية، وتعزيز الاستقلالية. ومع ذلك، أبرزت النتائج أيضًا مخاوف بشأن دقة المحتوى الذي يولده الذكاء الاصطناعي وإمكانية الاعتماد المفرط عليه. تقدم هذه النتائج أدلة تجريبية تدعم القيمة التربوية للذكاء الاصطناعي مع التأكيد على الحاجة إلى محو الأمية الرقمية.

الكلمات المفتاحية: الذكاء الاصطناعي AI، اكتساب المفردات، تعلم اللغات الأجنبية FLL

Introduction

The integration of Artificial Intelligence (AI) into our daily life has reached every aspect of our life including foreign language learning (FLL) which resulted in transforming from traditional pedagogical approaches to technology-based approaches. In recent years, the necessity of reconsidering how language skills, particularly vocabulary, are acquired emerged from the shift towards digital learning environments. Vocabulary acquisition is an essential element of language proficiency, serving as the building block for all language skills. While the technological capabilities of AI are well-documented, the human factor remains a pivotal area of inquiry. Students' attitudes and beliefs act as filters through which they engage with technology; positive perceptions can enhance engagement, while skepticism can hinder the learning process. This paper aims to evaluate the attitudes, beliefs, and perspectives of college students in Benghazi University towards AI-mediated vocabulary learning through a quantitative survey, contributing to the understanding of how AI is reshaping the student experience in higher education.

AI-Driven Personalization and Vocabulary Acquisition

One of the most significant contributions of AI to vocabulary learning is the ability to personalize instruction. Unlike traditional methods, AI-driven tools can adapt to individual learner needs, providing tailored vocabulary exercises and instant feedback. Jegede (2024) emphasizes that AI-driven tools play a crucial role in personalizing learning experiences and providing instant feedback, which is essential for correcting lexical errors and reinforcing new vocabulary. Similarly, Wei-Xun and Jia-Ying (2024) specifically examined AI-driven language learning apps and found a significant positive impact on vocabulary acquisition among English

learners. Their findings suggest that the adaptive nature of these applications allows for more efficient retention and recall of new lexical items compared to static learning methods.

This personalization extends to reading contexts, where vocabulary is often acquired incidentally. Sudin and Swanto (2024) highlighted that AI-generated personalized reading texts can enhance reading comprehension and motivation. By reading materials to the learner's proficiency level, AI ensures that students encounter vocabulary in contexts that are neither too easy nor too difficult, facilitating optimal learning conditions. Furthermore, Li and Xu (2020) compare AI-driven language apps with traditional methods, noting that the interactive and adaptive features of apps significantly improve engagement with lexical content

Affective Factors: Motivation, Anxiety, and Enjoyment

The success of vocabulary learning is heavily influenced by affective variables such as motivation and anxiety. Recent literature suggests that AI tools can positively alter these factors. Syifauddin and Yuliansyah (2023) found that the use of AI significantly affects students' motivation and reduces anxiety in learning English. This reduction in anxiety is critical for vocabulary acquisition, as the fear of making errors often hinders students from practicing and using new words. Azamatova, Bekeyeva, Zhaxylikova, Sarbassova, and Ilyassova (2023) also confirmed the role of using AI tools to enhance learning motivation. They conducted an expermentail research study to measure the impact of using AI tools in leaning a second language comparing by traditional teaching approaches. They found out that there was a positive impact on both students' motivation and achievement. Duisenova and Zhorabekova (2024) studied the impact of using games and AI in increasing motivation among second language learners which approved the role of gaming and AI in improving motivation.

Moreover, the concept of "hedonic motivation"—the pleasure derived from using a tool—has been linked to AI usage. Qu and Wu (2024) investigated Chat GPT as a Computer-Assisted Language Learning (CALL) tool and found that hedonic motivation is a key driver in its adoption, making the often tedious task of memorizing vocabulary more enjoyable. He (2024) further supports this by noting that AI tools can enhance EFL learners' motivation to write and their enjoyment of the process, which invaria-

bly includes the selection and application of appropriate vocabulary. Moybeka, Syariatin, Tatipang, Mushthoza, Dewi, and Tineh (2023) also confirm the positive implications of AI on EFL students' motivation, arguing that the interactive nature of AI tools fosters a more engaging learning environment.

Zhang, Nie, and Liu (2025) highlighted the mediating role of AI learning in reducing classroom anxiety and enhancing willingness to communicate. This is crucial for adult learners who may feel vulnerable making mistakes in front of their peers. Furthermore, it has been approved that hedonic motivation is a significant condition for adopting AI tools such as ChatGPT (Qu & Wu, 2024).

Autonomy and Self-Regulated Learning

Adult learners often require a high degree of autonomy due to their busy schedules and specific learning goals. AI tools are increasingly viewed as equipments to help learners' autonomy, a critical trait for vocabulary expansion which requires consistent self-study. Tahir and Tahir (2023) and Ali, Sirag, and, Ali (2024) investigated AI-driven advancements in ESL learner autonomy, specifically looking at student attitudes toward virtual assistants. Their research suggests that these tools empower students to take charge of their vocabulary learning without constant teacher supervision. This autonomy is supported by the availability of AI tools anytime and anywhere, allowing for frequent practice. Wei (2023) adds to this discourse by demonstrating that AI in language instruction significantly impacts self-regulated learning, enabling students to manage their vocabulary acquisition more effectively. This aligns with the findings of Liang and Reiss (2025), who identified perceived autonomy as a serial mediator between student attitudes and learning engagement. However, Wahyudin (2024) and Namoun, Ibrahim, Mustafa, Alrehaili, Tufail, Shuja, Bilal, and Alanazi (2024) noticed that while AI promotes autonomy, challenges regarding the accuracy of AI outputs and potential over-reliance remain valid concerns.

Pedagogical Shifts and Teacher Perspectives

While the benefits for students are evident, the integration of AI into vocabulary learning requires a shift in pedagogical strategies. Khatimah

(2023) discussed digital pedagogical innovations, suggesting that AI necessitates new teaching methodologies that blend traditional instruction with digital intelligence. However, Fahreni. Ali, and Daud (2024) pointed out that teachers' perspectives on the use of AI vary, highlighting the need for educators to adapt to these new tools to maximize their efficacy in the classroom.

The role of teachers remains pivotal in guiding students to use AI responsibly. Huang, Wang and Zhang (2024) found a correlation between perceived teachers' enthusiasm and students' acceptance of generative AI, suggesting that teacher attitude significantly influences how students utilize these tools for learning. Al-Kresheh (2024) further provides a systematic review of the pros and cons, arguing that while AI offers unparalleled access to linguistic resources, it must be implemented judiciously to avoid over-reliance.

Methodology

Research Design

This study adopted a quantitative research design to evaluate the attitudes, beliefs, and perspectives of adult second language learners towards acquiring new vocabulary. A survey was conducted to 57 college students at Benghazi University who were enrolled in fourth and fifth semesters in the English department.

Participants

The target population consisted of adult learners currently enrolled in an English department and they are classified as second language learners. Most of them were enrolled in the fourth and fifth semesters. More than 90% of the participants' age ranged from 19 to 24, while the rest age group ranged from 25 to 30 (M = 21.14). Roughly, 90% of the participants were female students. The students' proficiency level in English was not determined since they were already enrolled in the faculty of languages; therefore, it was pre-assumed that they were at the intermediate level.

Instrumentation

Data was collected using a structured questionnaire adapted from constructs identified in the literature (e.g., Wei, 2023; Syifauddin & Yuliansyah, 2023; Tahir & Tahir, 2023). The instrument utilizes a 5-point Likert

scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The survey is divided into five sections :

1. Demographic Profile: Age and gender.
2. Motivation and Anxiety: Measuring the extent to which AI tools influence drive and reduce learning stress.
3. Efficacy and Personalization: Assessing beliefs about the accuracy, speed, and tailored nature of AI feedback.
4. Learner Autonomy: Evaluating perceptions of independence and self-regulation when using AI tools.
5. Teacher perspectives :

Data Analysis and results

Descriptive Statistics of the Dimensions

Table 1 summarizes the descriptive statistics for the four dimensions measured. The results indicated a positive attitude toward AI integration in vocabulary learning, with overall mean scores ranging from 4.10 to 4.45. The high mean scores in the Motivation and Anxiety dimension (M = 4.45) suggest that students expressed strong agreement that AI tools make learning enjoyable and help maintain interest over time.

Dimension	N	M	SD	Interpretation
Motivation and anxiety	57	4.45	0.62	High agreement
Efficacy and personalization	57	4.05	0.94	High agreement
Learner autonomy	57	4.10	0.85	High agreement
Teacher perspectives	57	4.20	0.78	High agreement

Table 1. Descriptive statistics of the survey dimensions.

This aligns with the findings of Ahmed, Ghafoor, Liliuara, and Qurrota'Akyuningrum (2025) and Syifauddin and Yuliansyah (2023), who highlighted the positive correlation between AI usage and reduced language anxiety. The private, non-judgmental nature of AI interaction allows students to experiment with new vocabulary without the fear of making mistakes in front of their peers which associated with classroom participation. The high score on maintaining interest (Item 5) further supports the concept of "hedonic motivation" (Qu & Wu, 2024), suggesting that the interactive nature of AI tools makes the often tedious task of vocabulary memorization more engaging.

Items 7–12 measured the perceived technical utility of AI tools. The mean score for this dimension was moderately high (M = 4.05), though slightly lower than the motivation dimension. Students acknowledged the adaptive nature of AI. Participants agreed that AI tools help them memorize vocabulary faster. However, this dimension showed slightly more variance than others, suggesting that while efficiency is recognized, it is not uniformly experienced by all students.

Items 13–17 assessed beliefs about independence and self-regulation. Students generally perceived AI tools as facilitators of independence (M = 4.10). The highest-scoring item in this dimension was Item 17 ("AI tools encourage me to explore new vocabulary topics on my own initiative," M = 4.30). However, Item 16 ("I rely heavily on AI tools... which makes me feel dependent") received a neutral-to-positive mean (M = 3.55), with a higher standard deviation (SD = 1.32). This suggests that while students value the independence AI affords, a significant portion of the sample acknowledges a potential risk of over-reliance on the technology.

Items 18–20 evaluated students' perceptions of their teachers' attitudes. The dimension mean was M = 4.20. A striking finding was observed in Item 20: "I prefer using AI tools without my teacher's knowledge to avoid potential criticism." This item recorded a high mean, indicating strong agreement among students. Conversely, students were less convinced that teachers fully support these tools or trust students to use them ethically.

The reliability coefficient of the scale was calculated using Cronbach's Alpha. The analysis revealed that the scale has a high consistency among all items which indicated that the survey items reliably measured the intended constructs (α = .90). For inferential statistics Pearson correlation was employed to examine the relationships between the four dimensions (motivation and anxiety, personalization, Autonomy, and teacher perspectives).

A principle component analysis (PCA) was conducted on the questionnaire items with orthogonal rotation (varimax) to estimate the underlying factors that explain the participants' responds. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .80, and all KMO values foe each item was > .50, which is above the acceptable limit of .5 (Field, 2009). Bartlett's test of sphericity x^2 (190) = 732.678, p < .000, indicated that correlation between items were good for PCA. The initial

solution produced four factors with eigenvalues greater than 1 (eigenvalues = 8.47, 2.05, 1.60, and 1.30). these factors accounted for 67% of the total variance. Table 2 showed the eigenvalue for each factor with the percentage of variance explained by each one. Also, Figure 1 represented the scree plot of the factors loading which indicated that data were explained by four factors.

Component	Eigenvalue	% variance	Cumulative %
Factor 1	8.47	42. 348	42.348
Factor 2	2.046	10.231	52.579
Factor 3	1.594	7.972	60.551
Factor 4	1.290	6.450	67.001

Table 2. factors explaining in the data

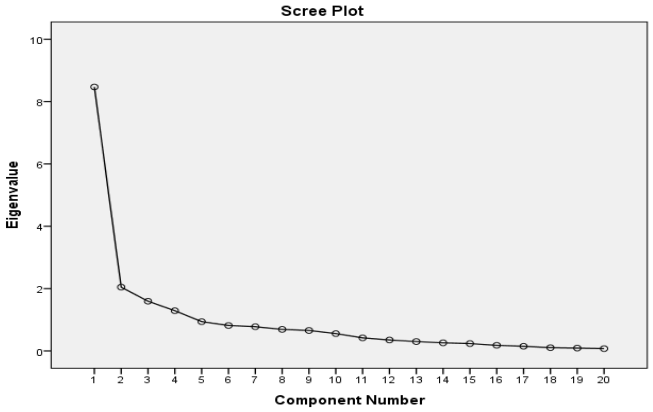


Figure 1. scree plot of factor loading

Discussion

The results revealed positive attitudes toward AI tools for vocabulary acquisition. Regarding motivation and anxiety, adult learners reported lower anxiety levels when using AI tools compared to traditional classroom interactions. This supports the findings of AlTwijri and Alghizzi (2024), suggesting that the private nature of AI interaction allows adults to take risks with new vocabulary without social fear. In terms of efficacy and personalization, high scores are anticipated regarding the perceived utility of instant feedback. Adult learners, who often value efficiency, are likely

to appreciate the ability of AI to provide immediate definitions and contextual examples, as highlighted by Jegede (2024) and Wei-Xun and Jia-Ying (2024). The data also revealed a complex relationship with learner autonomy. While students feel empowered to learn independently, the neutral score on dependency points to a critical challenge in AI-mediated education. This "autonomy paradox"—where tools designed to foster independence simultaneously foster reliance—is a growing concern in the literature (Wahyudin, 2024). Students are aware that while AI makes learning easier, it may risk weakening their ability to recall vocabulary without digital assistance. However, the most provocative finding relates to the Teacher Perspectives dimension. The high agreement with preferring to use AI without the teacher's knowledge suggests a disconnect between institutional pedagogy and student practice. Students appear to view AI as a personal assistive tool rather than a formal educational resource sanctioned by the classroom hierarchy. This finding aligns with Dau (2025), who noted that traditional methods are often viewed as separate from the digital tools students prefer to use privately. This indicates a need for educators to bridge the gap by integrating AI openly into the curriculum, thereby validating the students' preferred learning methods and alleviating the fear of criticism.

Challenges and Future Directions

Despite the positive outlook, challenges remain. Namoun, Ibrahim, Mustafa, Alrehaili, Tufail, Shuja, Bilal, and Alanazi (2024) conducted an umbrella review identifying various challenges associated with generative AI in education, including technical issues and the potential for surface-level learning. Furthermore, while Yoshii (2006) explored L1 and L2 glosses in earlier digital contexts, the modern challenge lies in ensuring that AI-translated or generated vocabulary is contextually accurate, as noted by Ali and Abdulhaleem (2024) in their analysis of lexico-grammatical patterns.

The literature demonstrates that AI tools have a profound and largely positive impact on learning new vocabulary in English. By offering personalized learning pathways (Jegede, 2024; Wei-Xun & Jia-Ying, 2024), enhancing motivation and enjoyment (Qu & Wu, 2024; He, 2024), and fostering learner autonomy (Tahir & Tahir, 2023), AI has become an indispensable component of modern EFL education. However, successful implementation requires addressing challenges related to teacher training and

learner dependency. Future research should continue to explore the long-term retention of vocabulary acquired through AI tools and the specific mechanisms by which AI facilitates deep lexical processing. The findings demonstrate that college students hold overwhelmingly positive attitudes toward AI tools for vocabulary acquisition, primarily driven by the reduction of anxiety and the increase in motivation. However, students approach these tools with a degree of critical skepticism regarding their efficacy for long-term retention and a preference for using them independently of teacher oversight. Future research should focus on developing pedagogical models that integrate this "hidden" AI usage into formal curricula to ensure that the convenience of AI translates into sustainable vocabulary acquisition.

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