International Journal of Instruction *July 2026 ● Vol.19, No.3*
e-ISSN: 1308-1470 ● www.e-iji.net *p-ISSN: 1694-609X*
pp. 281-296

Article submission code: 20250923174417
Received: 23/09/2025 Revision: 13/01/2026
Accepted: 20/01/2026 OnlineFirst: 03/04/2026

Investigating the Effectiveness of ChatGPT for Vocabulary Acquisition among University Students: A Pilot Study

Petra Polakova
Corresponding author, Department of Applied Linguistics, Faculty of Informatics and Management, University of Hradec Králové, Czech Republic, *petra.polakova.3@uhk.cz*

Petra Ivenz
Department of Applied Linguistics, Faculty of Informatics and Management, University of Hradec Králové, Czech Republic, *petra.ivenz@uhk.cz*

This study examines the effectiveness of ChatGPT as a tool for improving English vocabulary acquisition among university students. Employing a mixed-methods approach, the research investigates both quantitative and qualitative data from pre-tests, post-tests, and questionnaires. A total of 31 university students participated, with data collected on their vocabulary proficiency before and after using ChatGPT. The results showed a significant improvement in students' vocabulary scores. Additionally, students reported positive perceptions of ChatGPT's ability to support their learning. The findings suggest that ChatGPT has the potential to enhance vocabulary acquisition and offer a valuable resource for language learners. The study highlights the growing role of AI technologies in language education and their ability to provide personalized, immediate support for students' learning needs.

Keywords: vocabulary acquisition, ChatGPT, technology-enhanced learning, foreign language learning, educational technology

INTRODUCTION

In learning English as a foreign language, vocabulary acquisition can be considered the cornerstone for effective communication and comprehension. For reading, 8000–9000-word families are needed, and approximately 5000-7000 are needed for oral communication (Schmitt, 2008). For students learning English as a foreign language, building a vocabulary is one of the most essential steps in successfully acquiring the language. Traditional approaches, such as memorization, contextual reading, or repetition, have long dominated vocabulary acquisition (Nation, 2022). These methods often rely heavily on teachers and repetitive practice, and may not engage learners or even address different learning styles. However, even in recent years, when acquiring vocabulary is often achieved through new technologies, some researchers still study traditional approaches toward vocabulary learning and their effectiveness (Alwadei &

Citation: Polakova, P., & Ivenz, P. (2026). Investigating the effectiveness of ChatGPT for vocabulary acquisition among university students: A pilot study. *International Journal of Instruction*, *19*(3), 281-296.

Mohsen, 2023; Deuber & Berthele, 2024; Hill, 2022). The results of these studies indicate that the traditional methods are less effective than, for example, contextualized learning or learning through visuals. Still, the continual interest in traditional methods points to their accessibility, especially where technological resources are limited.

Despite the recognized importance of vocabulary knowledge and the growing availability of technological tools, many university students continue to struggle with effective vocabulary acquisition. This problem largely derives from the limitations of traditional instructional methods, which often fail to provide sufficient engagement, individualized feedback, and opportunities for autonomous learning. As a result, there is a further need to investigate innovative approaches that can better support learners' vocabulary development in higher education contexts.

Nowadays, learners have the opportunity to acquire vocabulary through the use of technology. Numerous studies have been conducted in this field examining the effectiveness of new technologies in learning languages. Some studies in gamification (Ghofur et al., 2023; Rojabi et al.; 2022, Yu, 2023 among others) mobile apps (Azi, 2023; Chen & Zhao, 2022; Dan, et. al, 2025; Dramani, et. al, 2025; Ebadi, Amini & Gheisari, 2023; Polakova & Klimova, 2022; Zakian et al., 2022; Xodabande, 2022) and AI (Leong et al., 2024; Wang et al., 2024; Wen et al., 2024; Zhang & Huang, 2024) showed that students can learn, remember and use the newly acquired vocabulary more effectively. The mentioned technologies often integrate adaptive feedback or personalized learning, which makes them attractive to modern learners. Furthermore, some of the mentioned research studies reported that students not only achieved better results when learning vocabulary through technology, but they also enjoyed it more (Azi, 2023; Polakova & Klimova, 2022). Additionally, Leong et al. (2024) reported a higher motivation to learn from students who were working with technology. On the other hand, it was reported by other recent research studies (Cancino & Viguera, 2024; Panmei & Waluyo, 2023; Sadeghi et al., 2022) that there were no major differences between the traditional approach toward vocabulary learning and vocabulary learning through technology.

Since its release in November 2022, ChatGPT has become a global phenomenon that is also reflected in numerous research studies about foreign language acquisition with the help of ChatGPT. As this tool can simulate human-like dialogue, ChatGPT engages learners with immediate feedback, contextual examples, or tailored vocabulary exercises that show high promise in acquiring a foreign language (Karatas et al., 2024; Kohnke, Moorhouse & Zou, 2023; Sarwanti et al., 2024; Shaik et al., 2023). Its ability to provide learners with interactive conversations or personalized content makes learning more flexible and diverse. The use of ChatGPT represents a shift toward a digital learning culture. In this culture, interactive dialogue and personalized content complement traditional language instruction. This provides students with a more flexible and context-aware learning experience. On the other hand, despite the benefits of the use of ChatGPT in the learning process, users must be aware of its problems, such as inaccurate responses, plagiarism, outdated information, generic responses, etc. (Ahmad, Kaiser & Rahim, 2023; Meniado, 2024; Polakova, Ivenz & Klimova, 2024; Sarwanti et al., 2024). These limitations highlight the need for pedagogical supervision

and critical awareness on the part of students when integrating ChatGPT into language education. ChatGPT should not function as a completely autonomous educational tool, but should be used under guidance and based on pedagogical knowledge to ensure accuracy, relevance, and meaningful learning outcomes. ChatGPT already plays a role in vocabulary acquisition for learners of foreign languages. Several studies (Aldowsari & Aljebreen, 2024; Ngo, 2024; Yüzlü, 2024) indicate its effectiveness, but at the same time, recognize its problems (similar to the previously mentioned problems).

METHOD

This study adopts a mixed-methods exploratory design, combining both quantitative and qualitative approaches to investigate the effectiveness of ChatGPT as a tool for vocabulary acquisition among university students. The methodology ensures a comprehensive understanding of both measurable outcomes and subjective experiences of students to provide a holistic understanding of the learning process.

The study is structured as an exploratory, quasi-experimental intervention study, focusing on how structured interaction with ChatGPT contributes to vocabulary improvement. An exploratory intervention study is a research approach that investigates the effects of a specific intervention or treatment in a natural setting, aiming to explore and understand how it influences a particular outcome. In this study, the intervention involves structured interaction with ChatGPT to assess its impact on vocabulary acquisition. The intervention included exercises progressing from basic vocabulary recognition to more complex usage, including contextually rich sentences and phrasal expressions. The research relied on instructor-led evaluation for analyzing pre-tests and post-tests to measure progress, alongside content analysis of pre-questionnaires and post-questionnaires to explore students' subjective experiences and perceptions.

The quantitative approach involved conducting a pre-test at the beginning of the study to assess students' vocabulary knowledge and a post-test to measure their progress. As mentioned before, these tests were analyzed through instructor-led evaluation, where instructors assessed students' responses to determine the effectiveness of ChatGPT-driven exercises in the process of new vocabulary acquisition.

The qualitative phase included administering pre-questionnaires and post-questionnaires to gather insights into students' initial perceptions of ChatGPT and their reflections on its impact on their learning. These responses were analyzed using content analysis, identifying themes and patterns related to student engagement and the perceived benefits of the intervention.

This study aimed to address the following **research question**:

"Can structured interactions with ChatGPT improve vocabulary acquisition among university students?"

The **hypothesis** for the study is as follows:

"Students show significant improvement in vocabulary acquisition through structured ChatGPT exercises and guided analysis of their progress."

By adopting a mixed-methods exploratory design and integrating both quantitative and qualitative data, this research seeks to contribute valuable insights into the potential of AI-powered tools like ChatGPT to enhance vocabulary learning in an academic setting.

Research participants

In this study, 31 university students, aged between 19 and 25 years old, all engaged in learning English as a foreign language (EFL), formed the research participants. The investigation took place within the Professional English classes, which occur once a week, during the winter semester of 2024. The research participants were all students of the Applied Informatics and Economics and Management study programs and had been learning English for an average of 13 years. Despite the smaller sample size, this factor was not seen as a barrier to conducting the research, as this is just a pilot study aimed at exploring the potential of ChatGPT in the process of vocabulary acquisition. The main goal was to determine whether integrating ChatGPT into vocabulary acquisition practices could be effective and feasible.

The study was conducted by the article authors, who are also instructors for the Professional English classes, ensuring convenience within their teaching environment. In the continuation of this study, the researchers plan to create two groups of students for further investigation. The control group will utilize traditional methods of vocabulary learning, while the experimental group will work with ChatGPT for vocabulary acquisition. As in this pilot study, both groups will undergo pre-tests and post-tests to evaluate which approach produces better results in the process of vocabulary learning.

Research tool

The primary tool utilized in this study was ChatGPT, an advanced AI-driven language model designed to engage in human-like conversations. In this study, students used ChatGPT as a conversational partner to improve their vocabulary. The tool was used in various ways, including providing instant feedback, generating example sentences, offering definitions and synonyms, and explaining vocabulary in different contexts. By interacting with ChatGPT, students were able to receive personalized, immediate feedback and gain a deeper understanding of word usage, meaning, and contextual application. The dynamic and interactive nature of ChatGPT allowed students to engage actively with the target vocabulary, making it a central element of the research methodology.

Research procedures

The research took place during the winter semester of 2024, from October to December. The aim of the study was to evaluate the impact of the conversations with ChatGPT on students' vocabulary acquisition. The research followed a structured, multi-step methodology including pre-test, pre-questionnaire, interactive exercises, post-test, and post-questionnaire. Students participated in weekly sessions designed to integrate

ChatGPT into their learning process while focusing on specific vocabulary-building tasks.

The first session started with a pre-test, including a matching exercise, filling in the gaps exercise, and sentence translation, to assess students' familiarity with 30 selected words. This test served as a starting point to evaluate the effectiveness of the ChatGPT-driven interventions. After the pre-test, students completed the questionnaire containing eight multiple-choice questions. The purpose of the questionnaire was to measure students' recognition of the target vocabulary and their perceptions of ChatGPT's utility in the process of foreign language learning. Subsequently, students were given 10 minutes to read an article titled "In awe: Researchers were impressed by the latest ChatGPT 01 model" (Jones, 2024). After reading, they completed a series of exercises related to the text. These preliminary activities provided students with exposure to the target vocabulary in context and prepared them for subsequent weekly exercises involving ChatGPT.

Each week, students engaged in a different vocabulary-building exercise, using ChatGPT as a learning tool. These exercises were designed to gradually improve their understanding and use of the target words through personalized feedback, example sentence generation, instant response, and contextual explanation. Description of these exercises is provided below.

Personalized feedback: Students were tasked with creating sentences using 10 target words from the introductory reading text. They then engaged with ChatGPT, requesting feedback on the use of these words. ChatGPT identified errors and provided suggestions for improvement, allowing students to improve their understanding of the vocabulary.

Example sentences: The research participants prompted ChatGPT to generate example sentences for 10 other words. After reviewing the AI-generated examples, students were supposed to evaluate the clarity of meaning conveyed in each sentence.

Instant responses: Students explored the meaning and synonyms of 10 additional target words by asking ChatGPT for instant definitions and synonyms. They recorded ChatGPT responses and compared them with their prior knowledge to check or deepen their understanding.

Contextual explanation: In this final exercise, students prompted ChatGPT to provide contextual explanations for the target words. They explored how each word could be used in different scenarios, such as academic versus everyday contexts. This exercise deepened their comprehension of nuanced vocabulary usage. Throughout the four weeks, students were asked to submit screenshots of their interaction with ChatGPT to their instructors for review.

At the end of the research period, the research participants completed a post-test identical to the pre-test. This allowed researchers to compare the results and assess whether the ChatGPT-based exercises had contributed to measurable improvements in vocabulary acquisition. Additionally, students completed a post-questionnaire, providing insights into their experience with ChatGPT and its perceived impact on their learning process.

FINDINGS

The results of this research study are divided into two groups. The first group analyzes pre-test and pre-questionnaire results. In the second group, the post-test and post-questionnaire are evaluated.

Pre-test and post-test results

The pre-test and post-test contained the same three exercises. In the first exercise, students had to match the chosen vocabulary with its meaning. The task of the second exercise was to choose the correct word and place it into a sentence (taken from the original article). In the last exercise, students were asked to translate sentences from the original article into the Czech language. For better illustration, Table 1 was created to show the results of the tests.

Table 1
Pre-test and post-test overall scores

Score	Percentage of students (pre-test)	Percentage of students (post-test)
0-10	0%	3%
11-15	19%	3%
16-20	26%	13%
21-25	48%	19%
26-30	7%	62%

Table 1 shows that there were no students who scored less than 10 points on the pre-test. 19% students scored between 11-15 points, and 26% students had points in the interval of 16-20 points. The majority of students, 48%, scored between the points 21-25 and 7% of students scored highly, between 26-30 points, pointing to the fact that they were familiar with the vocabulary. In the post-test, one student did not score 10 points, which made up 3% and similarly, 3% of students got between 11-15 points. 13% of students scored between 16-20 points, and 19% got between 21-25 points. In the post-test, most students, 62%, scored between 26-30 points. Table 1 shows that, generally, in the post-test, students were able to score more points in the exercises. However, there was one student who scored between 0-10 points. In contrast to the pre-test, no students scored that low.

The whole group of students scored 69% on the pre-test. Compared to the post-test, students visibly got better, as their overall score was 86%. This result points to the fact that ChatGPT's intervention was successful, and students got more familiar with the vocabulary. In the pre-test, the best score, 93%, was achieved by one student. In the post-test, the best score, 100%, was achieved by 8 students. The worst score in the pre-test was achieved by one student as they scored 40%. On the other hand, there was a student who only got 30% from the post-test, which was not expected.

Pre-questionnaire results

Pre-questionnaire contained eight questions. The first four questions were related to the new vocabulary students encountered when working on the pre-test. The last four

questions dealt with the experiences of the students with ChatGPT when acquiring new vocabulary. Tables 2-7 below show the results of the pre-questionnaire.

Table 2
Unfamiliarity and recognition of the chosen vocabulary

	0-5 words	6-10 words	11-15 words	16+ words
Unfamiliarity	21	4	3	3
Recognition	13	16	2	0

Table 2 shows the number of students who were unfamiliar with the chosen vocabulary. The majority of students, 21, indicated that they were not familiar with 0-5 words. On the other hand, three of the students were unfamiliar with more than 16 words. These varying results point to considerable differences between the overall scores of students in the pre-tests.

The second question shown in Table 2 concerns recognition of the chosen vocabulary. Students were asked how many words they recognized, but were unsure of their meaning or usage. As Table 2 shows, 29 students usually recognized up to 10 words even though they were not confident in their meaning or usage.

Table 3
Levels of difficulty of the chosen vocabulary

Level of difficulty	Number of students
Very easy	1
Easy	7
Neutral	12
Difficult	11
Very difficult	0

Table 3 was created to show students' perceptions of the chosen vocabulary regarding its levels of difficulty. As the table shows, many students (11) found the vocabulary difficult. Furthermore, students were asked whether they had been exposed to the words before in reading, writing, etc. While only two students stated that they had not encountered them before, 21 students came across them occasionally, and eight students frequently. These responses correspond to the results of the questions before dealing with the recognition, which points to students' truthful, honest, and therefore reliable answers.

Table 4
Familiarity, confidence, features, usage, and effectiveness of ChatGPT

Category	Level	Number of students
Familiarity	Very familiar	1
	Somewhat familiar	14
	Not very familiar	7
	Not at all familiar	9
Confidence	Very confident	5
	Somewhat confident	18
	Not very confident	8
	Not at all confident	0
Preferred features	Personalized feedback	3
	Example sentences	13
	Instant responses	6
	Contextual explanations	9
Usage and effectiveness	Yes, very effective	5
	Yes, somewhat effective	5
	No, but interested	16
	No, not interested	5

In the second part of the questionnaire, questions were related to the use of ChatGPT as a tool for language learning. Students were asked how familiar they were with using ChatGPT for language learning and vocabulary acquisition. Table 4 shows that 15 students are at least somewhat familiar, and 16 students are not familiar or not at all familiar with the usability of ChatGPT as a tool for language learning. The results of question number six, which dealt with students' confidence in ChatGPT's ability to improve their vocabulary, revealed that students have high expectations from ChatGPT, as 23 students marked that they were very confident or somewhat confident that ChatGPT would improve their vocabulary. In question seven, students were asked to indicate the most useful feature of ChatGPT regarding vocabulary acquisition. A lower number of students indicated that personalized feedback and instant responses could help them with vocabulary acquisition. Most students thought that example sentences and contextual explanations would be helpful. For example, sentences in the pre-test exercise two were taken from the article, but in the exercise, they were used out of context, which could point to the lower scores of some students in this exercise. In the last question, the researchers were interested in whether students used ChatGPT for language learning and vocabulary acquisition and whether they found it effective. Five students used ChatGPT and found it very effective, the same number of students used it and found it somewhat effective, 16 students did not use it in this way, but they would be interested, and five students did not use it and were not interested.

Post-questionnaire results

The post-questionnaire contained eight questions which all regarded ChatGPT's role in vocabulary acquisition. In the first seven questions, students could choose from four answers. In the last question, an open-ended question was used, so that students could write their own thoughts about ChatGPT's support in vocabulary learning. Students

assessed ChatGPT according to their work and the experience that they gained during the semester. Table 5 shows the results.

Table 5
Student perception of the effectiveness of ChatGPT for vocabulary acquisition

Category	Response option	Number of students
Vocabulary improvement	Significantly improved	2
	Improved	7
	Slightly improved	19
	No improvement	3
Effectiveness in learning	Very effective	10
	Somewhat effective	18
	Not very effective	2
	Not at all effective	1
Help with vocabulary usage	Yes, very much	7
	Yes, somewhat	17
	Not much	5
	Not at all	2
Most helpful feature	Personalized feedback	4
	Example sentences	15
	Instant responses	4
	Contextual explanations	8
Increased confidence	Yes, a lot	2
	Yes, somewhat	18
	No, not really	9
	No, not at all	2
Satisfaction with ChatGPT	Very satisfied	4
	Satisfied	20
	Neutral	7
	Dissatisfied	0
Future preference for ChatGPT	Yes, definitely	7
	Yes, but occasionally	22
	No, prefer other methods	2
	Not sure yet	0

In the first question, students indicated how much their vocabulary has improved since using ChatGPT in this study. Table 5 indicates that two students thought ChatGPT significantly improved their vocabulary, seven stated that it had improved, 19 said that their vocabulary slightly improved, and three revealed that there was no improvement.

In the second question, students evaluated ChatGPT's effectiveness in helping them understand and learning of the new vocabulary. It is shown that the majority of students (28) stated that they found ChatGPT very effective or somewhat effective. Two students reported that they found ChatGPT to be not very effective, and one found it not effective at all.

In the third question, students indicated whether ChatGPT helped them to use new vocabulary in context. Seven students stated that ChatGPT helped them to use new vocabulary in context very much, 17 said that it somewhat helped them, five revealed that it did not help them much, and two stated that it did not help them at all.

The fourth question concerned the most helpful feature of ChatGPT for learning new words. Four students said that the most helpful feature for them is the personalized feedback ChatGPT provides. The feature example sentences were chosen by 15 students. Students also appreciated instant responses, as four of them chose it and eight chose contextual explanations. In comparison to the pre-questionnaire, the results are almost identical; however, after actually working with ChatGPT during the semester, more students (the number rose from 13 to 15) chose example sentences as the most helpful feature.

In the fifth question, students reported whether using ChatGPT increased their confidence in using new vocabulary in English. The results show that most of them found ChatGPT somewhat helpful: two students reported that their confidence increased a lot, and 18 students reported that it increased a little. However, a considerable proportion of students did not find ChatGPT helpful in this respect: 9 students reported that their confidence had not increased, and 2 students reported that it had not increased at all.

The sixth question dealt with the satisfaction of ChatGPT as a tool for vocabulary acquisition. No students indicated that they were dissatisfied with it, the majority (20) choosing the option satisfied. Four students indicated that they were very satisfied, and seven students felt neutral.

In the seventh question, students stated whether they would like to use ChatGPT for vocabulary learning in the future. Seven students indicated that they would definitely like to use ChatGPT, 22 said that they would like to use it occasionally, and two expressed that they would prefer using other methods. No students stated that they were not sure yet about the future use of ChatGPT for vocabulary learning.

In the last question, not included in Table 5, students shared their ideas on how ChatGPT could improve its support for vocabulary learning. While most students left this question blank or stated they had no suggestions, some provided valuable feedback. Common suggestions included improving accuracy, eliminating hallucinations, being more precise, offering better and more varied examples, tailoring responses to the user's language level, tracking individual progress, providing human-like interactions, and including phonetic transcriptions. Additionally, one student suggested that ChatGPT could offer pronunciation for words, and another mentioned that engaging in spoken interactions with ChatGPT would be more beneficial than chatting with it.

In summary, the post-questionnaire results highlight that students generally found ChatGPT to be an effective and supportive tool for vocabulary acquisition, with many reporting improvements in vocabulary, contextual usage, and confidence. While most students expressed satisfaction with ChatGPT and indicated a willingness to use it for future learning, the feedback also underscored areas for improvement, such as enhancing accuracy, providing tailored examples, and incorporating pronunciation features.

DISCUSSION

The pilot study explores the effectiveness of ChatGPT in improving students' English vocabulary acquisition. Results indicate that ChatGPT effectively enhances vocabulary acquisition while complementing traditional methods. Context-sensitive feedback allowed students to understand which words fit appropriately in specific sentences or discourse situations. At the same time, there is still room for improvement.

The comparison of pre-test and post-test results suggests a positive trend in vocabulary acquisition. The data showed that most students improved their scores in all three exercises: matching vocabulary with the meaning, sentence completion, and translation tasks after using ChatGPT. This improvement is especially mirrored in the increased number of students (8) who achieved full scores (30 points) in the post-test. As previously mentioned, the overall scores of the pre-test and post-test were 69% and 86%, respectively. This reflects ChatGPT's potential to strengthen vocabulary through repeated exposure and contextual application (Li, 2024; Weerasinghe et al., 2022; Xiao & Zhi, 2023, among others). On the other hand, the results indicate the need for personalized support or even different strategies for vocabulary acquisition, as one student scored below 10 points in the post-test.

The data collected from pre-questionnaires and post-questionnaires showed interesting results as well. The pre-questionnaire revealed that students' familiarity with ChatGPT used as a language acquisition tool differs. More than half of the students (16) were unfamiliar with the fact that ChatGPT could be used for language acquisition. This does not mean that students were unfamiliar with ChatGPT because, usually, research studies (Assad, 2024; Valova, Mladenova & Kanev, 2024) confirm that most students are generally familiar with ChatGPT and its features. At the same time, the post-questionnaire feedback showed increased recognition of ChatGPT's features. Especially, students indicated contextual explanations and example sentences as key features in their vocabulary acquisition. This outcome highlights the importance of implementing user-friendly tools that provide real-life examples for learners and provide a place for personalized learning (Altarawneh, 2023; Bettayeb et al., 2024; Daha & Altelwany, 2025).

There are, however, some challenges and limitations to this study. It was evident from the tests and questionnaires that some exercises (especially the sentence completion and translation exercises) provided uneven effectiveness in vocabulary learning. This did not change even after the intervention in using ChatGPT to improve students' vocabulary (Cancino & Viguera, 2024; Panmei & Waluyo, 2023; Sadeghi et al., 2022). Some students still scored low points in these exercises, which points to the fact that such exercises should be implemented more in the lessons. Furthermore, many students indicated that they lacked confidence in using new vocabulary on an everyday basis. These two challenges may go hand in hand, as many students could not use the vocabulary in real-life (written) examples and therefore, would not have the confidence to use it in everyday life. Moreover, students' suggestions for improving ChatGPT- such as reducing hallucination or being more accurate- provide insights into the tool's improvement (even though it has been significantly improved compared to the previous

versions). These problems were encountered in many conducted research studies (Ahmad, Kaiser & Rahim, 2023; Altarawneh, 2023; Assad, 2024; Bettayeb et al., 2024; Meniado, 2024; Polakova, Ivenz & Klimova, 2024; Sarwanti et al., 2024; Valova, Mladenova & Kanev, 2024).

CONCLUSION

The findings of this study provide valuable insights into the effectiveness of ChatGPT as a tool for enhancing English vocabulary acquisition among students. The results demonstrate a positive trend in students' vocabulary skills, as evidenced by improvements in their performance across various exercises in both pre-tests and post-tests. Notably, the increased number of students achieving full scores in the post-test highlights the potential of ChatGPT to facilitate learning through repeated exposure. The integration of ChatGPT into vocabulary learning shows promise in improving students' understanding and use of new vocabulary.

Furthermore, the pre-test and post-test questionnaire results illustrate the growing recognition of ChatGPT's value as a language learning tool. While some students were initially unfamiliar with ChatGPT, their feedback after using the tool reflects its positive impact on their vocabulary acquisition. Features such as contextual explanations, example sentences, instant response, and personalized feedback were especially appreciated by students, reinforcing the importance of these features in enhancing language learning. Although many students expressed increased confidence in using new vocabulary, some challenges remain, particularly in students' ability to apply vocabulary in real-life contexts.

This study contributes to the ongoing exploration of AI tools in language education, supporting the idea that ChatGPT can be a valuable resource for vocabulary learning. However, it also emphasizes the need for further improvement of the tool, especially in reducing errors and providing more precise, context-specific examples. Students' suggestions for improvement offer insights into the areas where ChatGPT could become even more effective. At the same time, it complements rather than replaces traditional instruction, with each method offering unique advantages and limitations.

While the study shows promising results, some limitations must be considered. The sample size and the relatively short duration of the study may affect the generalizability of the findings. Future research should explore long-term effects and consider a more diverse and bigger participant group to better understand the broader implications of AI in vocabulary acquisition. Moreover, it should explore the historical, cultural and communicative contexts in which students apply vocabulary learned via AI tools. Additionally, further studies could focus on the balance between AI-driven learning and traditional methods, integrating phonetic and prosodic features, ensuring that technology complements human instruction.

In conclusion, this study underscores the potential of ChatGPT as an innovative tool for supporting vocabulary acquisition in the process of foreign language learning. With further enhancement and careful integration into language curricula, ChatGPT holds the

potential to play a key role in modern educational practices, empowering students to improve their vocabulary and language proficiency in an increasingly digital world.

REFERENCES

Ahmad, Z., Kaiser, W., & Rahim, S. (2023). Hallucinations in ChatGPT: An unreliable tool for learning. *Rupkatha Journal on Interdisciplinary Studies in Humanities, 15*(4). https://doi.org/10.21659/rupkatha.v15n4.17

Aldowsari, B. I., & Aljebreen, S. G. (2024). The Impact of using a ChatGPT-based application to enhance Saudi students' EFL vocabulary learning. *International Journal of Language and Literary Studies, 6*(4), 380-397. http://doi.org/10.36892/ijlls.v6i4.1955

Altarawneh, A. (2023). ChatGPT impact on student educational performance: A conceptual analysis. *EAI Endorsed Transactions on e-Learning, 9*. https://doi.org/10.4108/eetel.4574

Alwadei, A. M., & Mohsen, M. A. (2023). Investigation of the use of infographics to aid second language vocabulary learning. *Humanities & Social Sciences Communications, 10*(1), 1-11. DOI10.1057/s41599-023-01569-2

Assad, A. (2024). Exploring the use of ChatGPT among media students in Egypt: Opportunities and challenges. *Online Journal of Communication and Media Technologies, 14*(2), e202424. https://doi.org/10.30935/ojcmt/14416

Azi, Y. (2023). Use of mobile apps for enhanced vocabulary acquisition: A comparative study among Saudi EFL students. *Arab World English Journal (AWEJ), 14*(4), 94-110. https://dx.doi.org/10.24093/awej/vol14no4.6

Bettayeb, A. M. et al. (2024). Exploring the impact of ChatGPT: conversational AI in education. *Frontiers Education, 9*: 1379796. https://doi.org/10.3389/feduc.2024.1379796

Cancino, M., & Viguera, C. (2024). The impact of a gamified approach on vocabulary learning and vocabulary self-efficacy: evidence from a chilean primary EFL school. *Revisita de Linguistica y Lenguas Aplicadas, 9*, 33-43. https://doi.org/10.4995/rlyla.2024.19932

Chen, Y., & Zhao, S. (2022). Understanding Chinese EFL Learners' Acceptance of Gamified Vocabulary Learning Apps: An Integration of Self-Determination Theory and Technology Acceptance Model. *Sustainability, 14*(8), 11288. https://doi.org/10.3390/su141811288

Daha E. S., & Altelwany, A. A. (2025). Exploring the impact of using - ChatGPT in light of goal orientations and academic self-efficacy. *International Journal of Instruction, 18*(2), 167-184. https://doi.org/10.29333/iji.2025.18210a

Dan, C., Ismail, L., Razali, A. B., & Dandan, L. (2025). A meta-analysis of the existing studies on effects of mobile learning on vocabulary acquisition. *International Journal of Instruction, 18*(3), 765-784. https://doi.org/10.29333/iji.2025.18340a

Deuber, F., & Bethele, R. (2024). Vocabulary card learning: Testing multilingual translations and increased semantic processing. *Language Teaching Research, 0*(0), 1-30. https://doi.org/10.1177/13621688241254311

Dramani, B. A., Arthur, Y. D., Obeng, B. A., & Bannor, A. G. (2025). Investigating the determinants of preservice teachers' intentions to accept commercial video games for teaching-learning. *International Journal of Instruction, 18*(3), 159-176. https://doi.org/10.29333/iji.2025.1839a

Edabi, S., Amini, Z., & Gheisari, N. (2023). On the relationship between mobile-based extramural activities and vocabulary development of EFL learners: a mixed-method study. *Smart Learning Environment, 10*(1), 10:33. https://doi.org/10.1186/s40561-023-00252-y

Ghofur, A. et al. (2023). Students' perceptions and motivation towards teaching Arabic vocabulary through gamification. *Ijaz Arabi Journal Of Arabic Learning, 6*(3), 682-694. DOI10.18860/ijazarabi.v6i3.18642

Hill, A. C. (2022). The Effectiveness of Mnemonic Devices for ESL Vocabulary Retention. *English Language Teaching, 15*(4), 6-15. 10.5539/elt.v15n4p6

Jones, N. (01 October 2024). 'In awe': scientists impressed by latest ChatGPT model o1. https://www.nature.com/articles/d41586-024-03169-9

Karatas, F. et al. (2024). Incorporating AI in foreign language education: An investigation into ChatGPT's effect on foreign language learners. *Education and Information Technologies, 29*(14), 19343-19366. https://doi.org/10.1007/s10639-024-12574-6

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for Language Teaching and Learning. *RELC Journal, 54*(2), 537-550. https://doi.org/10.1177/00336882231162868

Leong, J. et al. (2024). Putting things into context: generative ai-enabled context personalization for vocabulary learning improves learning motivation. *CHI '24: Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems, 677*, 1-15. https://doi.org/10.1145/3613904.3642393

Li, Y. (2024). Usability of ChatGPT in second language acquisition: Capabilities, effectiveness, applications, challenges, and solutions. *Studies in Applied Linguistics & TESOL at Teachers College, 24*(1), 24-37. https://doi.org/10.52214/salt.v24i1.12864

Meniado, J.C. (2023). The Impact of ChatGPT on English language teaching, learning, and assessment: A rapid review of literature. *Arab World English Journal, 14*(4), 3-18. https://dx.doi.org/10.24093/awej/vol14no4.1

Nation, I.S.P. (2022). *Learning Vocabulary in Another Language*. Cambridge University Press.

Ngo, K. T. (2024). The use of ChatGPT for vocabulary acquisition: A literature review. *International Journal of AI in Language Education, 1*(2). https://doi.org/10.54855/ijaile.24121

Panmei, B., & Waluyo, B. (2023). The pedagogical use of gamification in English Vocabulary Training and Learning in Higher Education. *Education Sciences, 13*(1), 24. https://doi.org/10.3390/educsci13010024

Poláková, P., Ivenz, P. & Klímová, B. (2024). Examining the reliability of ChatGPT as an assessment tool compared to human evaluators. *Procedia Computer Science, 246*, 2332-2341. https://doi.org/10.1016/j.procs.2024.09.543

Polakova, P., & Klimova, B. (2022). Vocabulary mobile learning application in blended English language learning. *Frontiers in Psychology, 13*:869055. https://doi.org/10.3389/fpsyg.2022.869055

Rojabi, A.R. et al. (2022). Kahoot, is it fun or unfun? Gamifying vocabulary learning to boost exam scores, engagement, and motivation. *Frontiers in Education, 7*:939884, 1-11. https://doi.org/10.3389/feduc.2022.939884

Sadeghi, K. et al. (2022). The effects of implementing gamified instruction on vocabulary gain and motivation among language learners. *Heliyon, 8*(11), e11811. https://doi.org/10.1016/j.heliyon.2022.e11811

Sarwanti, S. et al. (2024). Are they literate on ChatGPT? university language students' perceptions, benefits and challenges in higher education learning. *Online Learning, 28*(3), 105-130. https://doi.org/10.24059/olj.v28i3.4599

Schmitt, N. (2008). Instructed second language vocabulary learning. *Language Teaching Research, 12*(3), 329-263. https://doi.org/10.1177/1362168808089921

Shaikh, S. et al. (2023). Assessing the usability of ChatGPT for formal English language learning. *European Journal of Investigation in Health Psychology and Education, 13*(9), 1937-1960. https://doi.org/10.3390/ejihpe13090140

Valova, I., Mladenova, T., & Kanev, G. (2024). Students' perception of ChatGPT usage in education. *(IJACSA) International Journal of Advanced Computer Science and Applications, 15*(1), 466-473. http://dx.doi.org/10.14569/IJACSA.2024.0150143

Wang, Y. et al. (2024). Empirical assessment of AI-powered tools for vocabulary acquisition in EFL instruction. *IEEE ACCESS, 12*, 131892-131905. 10.1109/ACCESS.2024.3446657

Weerasinge, M. et al. (2022). VocabulARy: Learning vocabulary in AR supported by keyword visualisations. *IEEE Transactions on Visualization and Computer Graphics, 28*(11), 3748-3758. 10.1109/TVCG.2022.3203116

Wen, Y. et al. (2024). AI-powered vocabulary learning for lower primary school students. *British Journal of Educational Technology*. https://doi.org/10.1111/bjet.13537

Xiao, Y., & Zhi, Y. (2023). An exploratory study of EFL learners' use of ChatGPT for language learning tasks: Experience and perceptions. *Languages, 8*(3), 212. https://doi.org/10.3390/languages8030212

Xodabande, I. et al. (2022). Teaching academic words with digital flashcards: Investigating the effectiveness of mobile-assisted vocabulary learning for university

Students. *Frontiers in Psychology, 13*:893821. https://doi.org/10.3389/fpsyg.2022.893821

Yu, Z. G. (2023). Learning outcomes, motivation, and satisfaction in gamified English vocabulary learning. *SAGE OPEN, 13*(2), 1-14. https://doi.org/10.1177/21582440231158332

Yüzlü, M. Y., (2024). The impact of ChatGPT on vocabulary learning in L3 German class. *Journal of Higher Education and Science, 14*(2), 339-348. https://doi.org/10.5961/highereducsci.1417301

Zakian, M. et al. (2022). Out-of-the-classroom learning of English vocabulary by EFL learners: investigating the effectiveness of mobile assisted learning with digital flashcards. *Asian-Pacific Journal of Second and Foreign Language Education, 7*(1), 7:16. https://doi.org/10.1186/s40862-022-00143-8

Zhang, Z., & Huang, X. (2024). The impact of chatbots based on large language models on second language vocabulary acquisition. *Heliyon, 10*(3). https://doi.org/10.1016/j.heliyon.2024.e25370