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EXPLORING THE EFFECT OF CHATGPT AS AN EDUCATIONAL TOOL TO IMPROVE VOCABULARY ACQUISITION IN THE ENGLISH LANGUAGE

**EXPLORANDO EL EFECTO DEL CHATGPT COMO
HERRAMIENTA EDUCATIVA PARA MEJORAR LA
ADQUISICIÓN DE VOCABULARIO EN EL IDIOMA INGLÉS**

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Exploring the Effect of ChatGPT as an Educational Tool to Improve Vocabulary Acquisition in the English Language

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ABSTRACT

The present study aims to explore the effect of using ChatGPT as an educational tool to improve the acquisition of English vocabulary in first-year students of an educational institution in Lago Agrio. A mixed methodology was used with instruments such as pre-test, post-test and a questionnaire. The instruments were applied to 60 high school students who were divided into two groups: experimental group and control group. The control group received traditional teaching in the classroom while the experimental group received teaching using Chat GPT as the main instrument in the computer center. For 4 weeks, evaluations were carried out before and after the intervention to measure the effectiveness of Chat GPT in the acquisition of vocabulary in students. Statistical analysis, including paired t-tests, mean and standard deviation, revealed significant improvements in the experimental group, with an increase in scores from 7.52 to 8.83 in pre-test and post-test. Additionally, students' perception of the use of ChatGPT is, in general, positive and they consider that this tool has been very beneficial in motivating them to learn the language and use it appropriately for learning English. However, it is important to emphasize that the proper use of this tool requires that students have clear learning objectives.

Key words: chatgpt, english language learning, vocabulary, perceptions

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Explorando el Efecto del ChatGPT como Herramienta Educativa para Mejorar la Adquisición de Vocabulario en el Idioma Inglés

RESUMEN

El presente estudio tiene como objetivo explorar el efecto del uso de ChatGPT como herramienta educativa para mejorar la adquisición de vocabulario en inglés en estudiantes de primer año de una institución educativa de Lago Agrio. Se utilizó una metodología mixta con instrumentos como pre-test, post-test y un cuestionario. Los instrumentos fueron aplicados a 60 estudiantes de secundaria que fueron divididos en dos grupos: grupo experimental y grupo control. El grupo control recibió enseñanza tradicional en el aula mientras que el grupo experimental recibió enseñanza utilizando Chat GPT como instrumento principal en el centro de cómputo. Durante 4 semanas, se realizaron evaluaciones antes y después de la intervención para medir la efectividad de Chat GPT en la adquisición de vocabulario en los estudiantes. El análisis estadístico, incluyendo pruebas t pareadas, media y desviación estándar, reveló mejoras significativas en el grupo experimental, con un aumento de puntajes de 7.52 a 8.83 en pre-test y post-test. Adicionalmente, la percepción de los estudiantes sobre el uso de ChatGPT es, en general, positiva y consideran que esta herramienta ha sido muy beneficiosa para motivarlos a aprender el idioma y usarlo adecuadamente para el aprendizaje del inglés. Sin embargo, es importante destacar que el uso adecuado de esta herramienta requiere que los estudiantes tengan claros los objetivos de aprendizaje.

Palabras clave: chatgpt, vocabulario, idioma inglés, percepciones

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INTRODUCTION

Vocabulary learning is an important process in language learning because it influences the progress of the study and influences communication skills. Therefore, mastering English is crucial to effective communication (Carter & McCarthy, 2014). Along the same lines, Wei (2021) mentions that since a word goes through several stages before moving on to the active part of the vocabulary, methods for strengthening passive words must be developed to assist teachers in their practice. In the digital age, the integration of innovative technologies in the classroom has opened up new opportunities to enrich the teaching-learning process that has facilitated the introduction of digital tools, materials, devices, systems, and strategies to achieve the desired learning objectives. In this context, ChatGPT (generative pre-trained transformer), an artificial intelligence model developed by OpenAI, is a promising tool for students to improve their English vocabulary because it can generate ideas, personalized exercises, error correction, and so on. (Ho, 2024). Thus, this study explores the effect of using ChatGPT as an educational tool to improve first-year students' English vocabulary acquisition.

This study arose from the need to understand how integrating the digital tool ChatGPT impacts the vocabulary acquisition process of first-year high school students with an A2.2 level. Therefore, this study is important because it compares traditional teaching to technological teaching, with ChatGPT serving as the main digital tool. In this regard, Cahyono and Widiati (2015) point out that traditional EFL teaching is characterized by teachers being the source of knowledge and students being the receivers. However, this concept has changed and students are now the protagonists of their learning while teachers have adopted roles that facilitate learning both inside and outside of the classroom by incorporating technology to achieve learning objectives. Additionally, this study compares pre-test and post-test assessments, allowing us to know the impact of using ChatGPT on vocabulary improvement, the difference between the previous and subsequent scores after using the tool, and students' perceptions of its use. Therefore, this work has evaluated the effectiveness of ChatGPT as an educational resource for better understanding the dynamics of language learning in an increasingly digitalized environment. The findings will provide valuable information on how ChatGPT improves vocabulary acquisition and will guide teachers in the implementation of technologies that optimize vocabulary learning in English.



In order to understand the current panorama of ChatGPT as a technological tool to improve vocabulary in EFL classrooms, it is necessary to review the existing literature on this topic. Accordingly, the following issues are explored in the following lines: EFL vocabulary, chatbots in foreign language education, and ChatGPT in specific foreign language teaching scenarios.

VOCABULARY

According to Susanto (2017) state that vocabulary is one of the language elements required for mastery and is defined as a set of words in a specific language. For Elyas & Alfaki (2014) mention that teaching vocabulary is the selection and presentation of "lexis" or words to students to allow students to understand individual, unknown words, expressions, and phrases that are used by speakers of that language in order to use them successfully for communicative purposes. Thus, a good command of vocabulary favors the mastery of each of the linguistic skills, both receptive (listening and reading) and productive (speaking and writing).

Furthermore, vocabulary can be classified into different categories, such as active vocabulary, which are the words that a person uses regularly, and passive vocabulary, which are the words that a person recognizes and understands but does not use frequently (Carter & McCarthy, 2014). In this regard, Nurutdinova et al. (2020) mention that active vocabulary is the words that are easily used and clearly understood by an individual when speaking and writing and are called "productive," while passive vocabulary is made up of the words that an individual recognizes when reading or listening, but rarely uses when speaking and writing and is known as "receptive" or "recognition" vocabulary. Thus, vocabulary acquisition and development are essential in language learning since a wide and varied vocabulary contributes to better understanding and expression of the language.

Chatbots in foreign language education

Chatbots are the most advanced technological tools that can be beneficial in language learning since they can be used inside and outside of class to help students develop their speaking, reading, writing, and listening skills, among other language-related abilities (Gayed et al., 2022). In this regard, Ashfaque et al. (2020) point out that one of the advantages of chatbots in EFL learning is their ability to simulate human-like oral and written conversations through human-computer interaction. In this way, interaction with



chatbots allows educational content to be adapted to the individual needs of each student, through which students learn at their own pace by receiving resources that are specific to their learning styles and levels. In the educational field, artificial intelligence (AI)-based systems provide personalized teaching based on students' abilities, interests, and learning styles as their systems employ algorithms to assess student data and recommend personalized learning paths (Santos & Boticario, 2012). In addition, some research has found that students' motivation, creativity, self-confidence, and interest in learning have increased after using AI chatbots. However, the use of chatbots is not only beneficial; it is also necessary to remember that their use must be consistent with the learning objectives and under the supervision of the instructor, as improper use can cause students to become distracted or misinterpret the information provided (Jiang, 2022).

Chat gpt in specific foreign language teaching scenarios

According to Klimova et al. (2024) ChatGPT is one of the most advanced AI-powered available today and is characterized by imitating human interaction and providing resources that motivate and creatively support EFL learning. Among its functions in language learning include interpreting the meaning of a word based on context and meaning, detecting and clarifying grammatical errors, writing texts of various genres, developing questionnaires, model sentences, and translation (Kohnke et al., 2023). In this way, ChatGPT is a versatile tool that can create collaborative learning environments, acting as a virtual instructor to provide immediate feedback on detected vocabulary, grammar, and pronunciation errors (García et al., 2021).

Given ChatGPT's ability to simulate real-life EFL scenarios, learners can create and engage in oral and written dialogues with AI in a safe and trustworthy environment that allows students to learn at their own pace, without judgement, while also becoming familiar with the target language's vocabulary and grammatical structures (Barrot, 2023). For example, Aldowsari and Aljebreen (2024) conducted quasi-experimental research to determine the impact of using a ChatGPT-based application in improving vocabulary learning among high school students and found that students in the experimental group who received instruction through ChatGPT had significantly better vocabulary than those in the control group who received traditional instruction.

Along the same lines, Algraini (2024) investigated Saudi EFL learners' perceptions of the effect of using ChatGPT on their vocabulary enrichment; the results revealed that ChatGPT enabled students to learn



adequately through precise definitions, explanations, and examples based on context, causing students to enrich their vocabulary and interact in real-time. Consequently, the present study aligns with the trend towards personalization of learning by showing how ChatGPT can be used for specific learning objectives, in this case, improving vocabulary and adapting to the individual needs of students. This is an important advance compared to more homogeneous approaches that ignore individual differences in learning. Regarding the context, this research was conducted in a contemporary educational context that is constantly evolving due to the integration of technology with the teaching-learning process.

Throughout history, traditional EFL teaching has increasingly lost its teacher focus, and instead, more communicative methods have emerged that focus on the student and include technological tools in the classroom. Thus, conducting this research with ChatGPT as the primary teaching tool represents a significant step forward in this evolution because it creates opportunities and personalizes language learning. Additionally, evaluating the impact of ChatGPT on students' academic performance enables us to better understand students' perceptions and experiences when using this tool in their educational process.

METHODOLOGY

The methodology used in this study was mixed with qualitative and quantitative approaches combined in the investigation to provide a comprehensive understanding of the object of study. Through the qualitative approach, information was obtained from interviews regarding the students' perceptions and experiences of using ChatGPT. In contrast, with the quantitative approach, numerical data was obtained from standardized tests that measured the vocabulary acquired by the students before and after the intervention with ChatGPT. In addition, a quasi-experimental design was applied, through which the inclusion of multiple data collection methods was allowed and also allowed the evaluation of the effect of ChatGPT on vocabulary acquisition by comparing groups that used the tool to those that did not, but without random assignment of participants to control and experimental groups. On the other hand, the nature of the study was exploratory, with the hypothesis and research questions posed at the beginning of this study being answered. Similarly, this type of research allowed for the collection of qualitative and quantitative data, resulting in a more complete understanding of the impact of ChatGPT on vocabulary learning.

The current study was conducted in accordance with the ethical guidelines for working with minor students and with the parents' consent and approval of the administration of the educational institution.



Consequently, the participants of this study were 60 first-year bachillerato students from parallel A and B, all 15 years old, from an educational institution. These students had been receiving English as an academic subject since basic education. This institution has a computer room where the implementation of ChatGPT was carried out for four weeks. Each class consisted of approximately 30 students. The participants were divided into two groups: an experimental group and a control group. The 30 students of parallel A who formed the experimental group received three hours per week of English instruction in computer room using ChatGPT as the main tool focusing on developing and improving student performance vocabulary. On the other hand, the 30 students in parallel B served as the control group, receiving traditional instruction in a regular classroom without technological aids.

The instruments applied to both groups were pre-test and post-test which were designed to assess vocabulary acquisition and retention. The pretest was administered at the beginning of the study to establish a baseline. In contrast, the posttest was administered four weeks after the intervention to measure the effects of ChatGPT on vocabulary acquisition in the experimental group while in the control group the pre-test is carried out in order to compare data. The tests contained reading comprehension, grammar, vocabulary, and writing activities with multiple choice questions, completion, and short oral responses. This measured the students' receptive and productive vocabulary before and after the intervention. In addition, in the experimental group, a survey with a Likert scale was administered to determine the impact of ChatGPT on vocabulary acquisition, performance, and student perception.

Data was collected over twelve sessions, each lasting 45 minutes. The pretest and posttest were given to both groups of students in sessions 1 and 12, while the activities set up for both the control and experimental groups were carried out in sessions 2 through 11. The pretest, administered in the classrooms with the main teacher, was the first instrument used to assess both groups' existing knowledge of the target vocabulary. From the second to the tenth session, the experimental group received classes in the computer center through ChatGPT, where students worked in pairs on computers with Internet access. Each lesson lasted 45 minutes and included activities in Chat GPT, such as writing paragraphs, completing vocabulary quizzes, creating sentences, themed vocabulary lists, and reading comprehension activities. Following each activity, students were required to write down the new vocabulary they had learned in their notebooks and receive feedback from the teacher.



On the other hand, the control group did vocabulary exercises, repetition exercises, and visual exercises using flash cards. Then, in session 12, the post-test, which had the same format as the pre-test, was used to evaluate the students' performance after they had received vocabulary-focused instruction. These tests were scored out of 10 using an evaluation rubric. Both results were compared and allowed to determine whether there was a significant improvement in vocabulary. As a final step, the Likert scale was applied to the experimental group in which the students evaluated the usefulness of the ChatGPT tool in improving their vocabulary. This survey consisted of 15 questions divided into three sections with the following parameters: strongly agree, agree, neutral, disagree, and strongly disagree. The first section included five statements to determine the impact of using ChatGPT on vocabulary improvement. Similarly, the second section focused on understanding the distinction between pre-test and post-test punctuation, while the third section focused on students' attitudes towards this digital tool. Data analysis was performed using Excel, and the results were interpreted using descriptive statistics (mean standard deviation) to determine the intervention's effectiveness. Paired t-tests were used to compare vocabulary acquisition between the experimental and control groups.

RESULTS AND DISCUSSIONS

The main objective of this study is to determine the impact of using ChatGPT on English vocabulary improvement of freshmen English learners. This requires comparing the results of the pre-test and post-test administered to the control and experimental groups. Thus, the table 1 shows the results of the pre-test and post-test of the experimental group indicate that using ChatGPT to improve vocabulary was highly effective. The table shows that before the intervention, the students of the experimental group averaged 7.52 and then 8.83, while the control group averaged 7.81 in the pre-test and 7.81 in the post-test. These results mean that the students of the experimental group improved their vocabulary significantly more than the control group as a result of the implementation of ChatGPT.

Regarding the standard deviation data, it can be seen that the average pre-test deviation for the experimental group is 0.79, while the post-test deviation is 0.59. This means that in the pre-test, the grades out of 10 were more dispersed since the students' performance was more variable. Along the same lines, the standard deviation of the post-test indicates that the data were grouped closer to the mean, demonstrating a positive effect and that the students achieved a more uniform performance. On the other hand, the standard deviation



of the control group has remained constant, which shows that there were no significant results when compared to the mean.

To sum up, table 1 demonstrates that the implementation of ChatGPT has a beneficial effect on vocabulary acquisition. Consequently, the results in Figure 1 serve as confirmation of these data. The first section of the survey using to measure the impact of ChatGPT on vocabulary improvement included five items, each of which was scored on a 5-point Likert scale, with higher scores indicating a better outcome. Thus, before the intervention, regarding the aspect Understanding English vocabulary, it was found that students had moderate levels of comprehension (M= 3.61), in the second aspect corresponding to Confident using new English words (M= 3.33), Vocabulary gained for specific purposes (ESP) (M= 3.51), Grammatical check and vocabulary context (M= 3.16) and Self-study of English vocabulary. (3.36). As can be seen, all these values reflect that students had a moderate to limited knowledge of English vocabulary and considered that ChatGPT could have a beneficial effect, though not conclusively. However, after implementing ChatGPT, a substantial increase in knowledge and perception about this tool was observed. Thus, in the post-survey, in the first aspect, an increase is reflected in Understanding English vocabulary (M= 4.24), Confident using new English words (M=4.21), Vocabulary gained for specific purposes (M=4.18), Grammatical check and vocabulary context (M=4.54), and Self-study of English vocabulary (M=4.68). This change suggests that participants felt more convinced that ChatGPT contributed positively to their vocabulary learning after using or interacting with the tool for a while.

Figure 2 shows the results of the survey administered to students to determine how their scores improved after using ChatGPT. Thus, in all aspects it is observed that the students did not believe that their performance would improve before participating in the activities with ChatGPT. However, the results after the test indicate that the students improved their performance and consider ChatGPT to be a very beneficial educational tool. This could also be verified with the pre-test and post-test table analyzed previously.

Regarding the average in the previous results, it was evident that in the improvement test (M = 2.84), Performance in English vocabulary (M = 2.51), Vocabulary activities (M = 2.92), creativity using vocabulary correctly (M = 2.86) and improvement in inferring meanings (M = 3.20). Then, in the subsequent survey, a notable improvement was evident in all aspects. For example, in improvement test (M = 4.32), Performance in English vocabulary (M = 4.14), Vocabulary activities (M = 4.23), creativity using



vocabulary correctly ($M = 4.48$), and improvement in inferring meanings ($M = 4.09$). This increase reflects that the scores improved as a result of the GPT chat activities that increased their linguistic, creative, and inferring meanings skills.

The third section of the survey in figure 3 is focused on knowing the student's perception of the use of ChatGPT in the acquisition of English vocabulary. In the first aspect: Ease of use ($M=2.87$), Motivation to learn English ($M=2.70$), Variety of resources of Chat GPT (2.35), enjoyment of lesson ($M=2.96$), and recommend the use of Chat GPT ($M=3.17$). These results indicate that students initially perceived ChatGPT as useless. However, in the post-survey, it is observed how the positive perception increases: Ease of use ($M=4.62$), Motivation to learn English ($M=4.43$), Variety of resources of Chat GPT (4.18), enjoyment of lesson ($M=4.44$) and recommend the use of ChatGPT ($M=4.28$). This increase in the average reflects that students have greater familiarity with the tool due to its ease of use and the tools it has, which have motivated students to learn English. Thus, students have found effective ways to integrate ChatGPT into their academic activities.

Table 1. Pre test and post test results

Test	Mean score (experimental group)	Mean score (Control group)	Standard deviation (experimental group)	Standard deviation (Control group)
Pre test	7.52	7.20	0.79	0.53
Post test	8.83	7.81	0.59	0.53

Figure 1. Results of the first section of the survey applied to the experimental group.

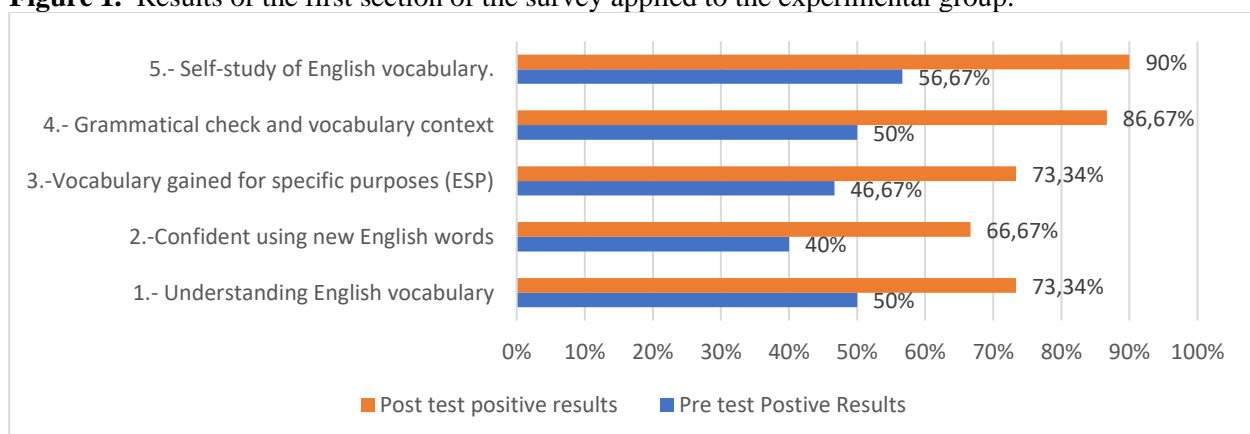


Figure 2. Results of the second section of the survey applied to the experimental group.

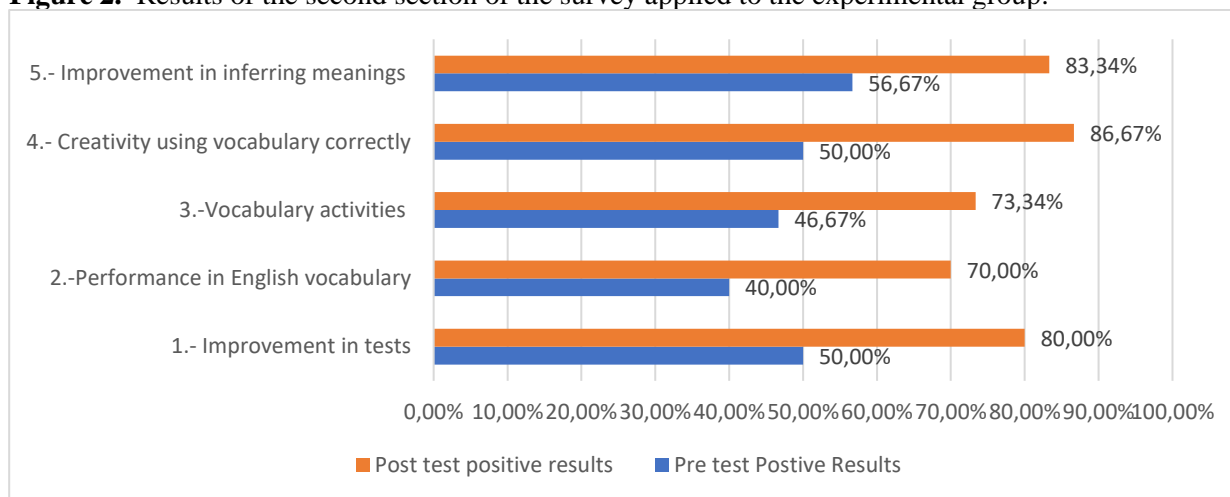
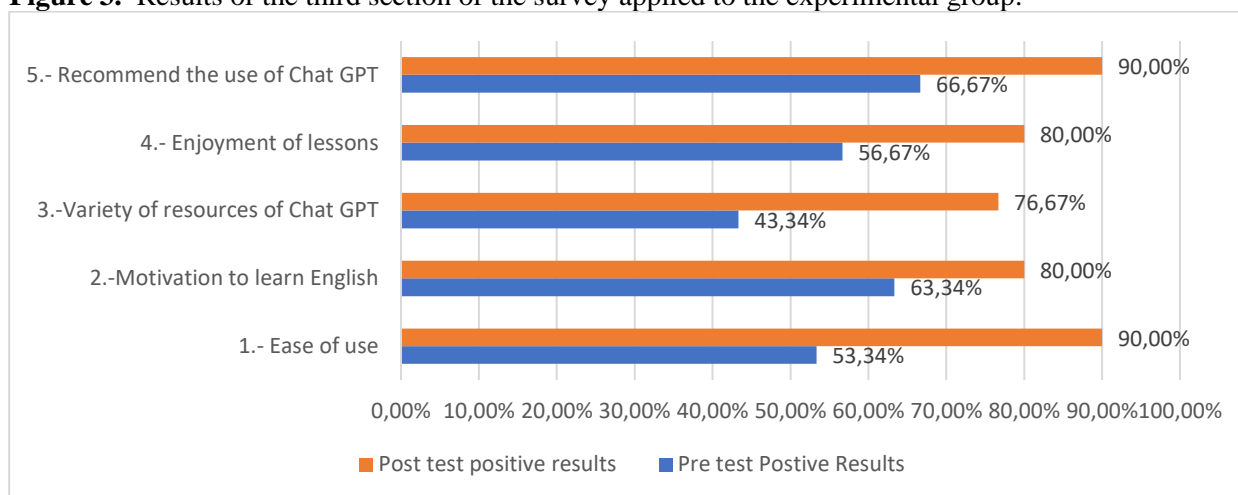


Figure 3. Results of the third section of the survey applied to the experimental group.



CONCLUSIONS

Research on the impact of using ChatGPT on improving first-year students' English vocabulary has shown encouraging and significant results. First, it was discovered that activities involving ChatGPT positively impacted vocabulary acquisition, as students improved their understanding, creativity, and retention of new words and learned how to use this tool effectively to learn vocabulary and become familiar with the target language. In addition, post-test scores indicate a notable improvement compared to previous scores, confirming that guided teaching with ChatGPT helps students improve their performance and acquire vocabulary based on their needs and relevant contexts. Consequently, students' perception of the use of ChatGPT is, in general, positive and they consider that this tool has been very beneficial in motivating them to learn the language and use it appropriately for learning English. However, it is important to emphasize that the proper use of this tool requires that students have a clear learning objective and are encouraged to use it to learn English in general outside of class.

REFERENCES

- 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. <https://doi.org/10.36892/ijlls.v6i4.1955>
- Algraini, F. N. (2024). Saudi female EFL learners' perceptions of the impact of ChatGPT on vocabulary improvement. *Theory and Practice in Language Studies*, 14(8), 2563-2573. <https://doi.org/10.17507/tpls.1408.29>
- Ashfaque, M. W., Tharewal, S., Iqbal, S., & Kayte, C. N. (2020). A review on techniques, characteristics and approaches of an intelligent tutoring chatbot system. *2020 International Conference on Smart Innovations in Design, Environment, Management, Planning and Computing (ICSIDEMPC)*, 1(1), 258-262. <https://doi.org/10.1109/icsidempc49020.2020.9299583>
- Cahyono, B. Y., & Widiati, U. (2015). The teaching of efl vocabulary in the Indonesian context: The state of the art. *TEFLIN Journal - A publication on the teaching and learning of English*, 19(1), 1. <https://doi.org/10.15639/teflinjournal.v19i1/1-17>
- Carter, R., & McCarthy, M. (2014). *Vocabulary and language teaching*. Routledge.
- Elyas, T., & Alfaki, I. (2014). Teaching vocabulary: The relationship between techniques of teaching and strategies of learning new vocabulary items. *English Language Teaching*, 7(10). <https://doi.org/10.5539/elt.v7n10p40>
- Gayed, J. M., Carlon, M. K., Oriola, A. M., & Cross, J. S. (2022). Exploring an AI-based writing assistant's impact on English language learners. *Computers and Education: Artificial Intelligence*, 3, 100055. <https://doi.org/10.1016/j.caeai.2022.100055>
- Ho, P. X. (2024). Using ChatGPT in English language learning: A study on I.T. Students' attitudes, habits, and perceptions. *International Journal of TESOL & Education*, 4(1), 55-68. <https://doi.org/10.54855/ijte.24414>
- Jiang, R. (2022). How does artificial intelligence empower EFL teaching and learning nowadays? A review on artificial intelligence in the EFL context. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1049401>



Klimova, B., Pikhart, M., & Al-Obaydi, L. H. (2024). Exploring the potential of ChatGPT for foreign language education at the university level. *Frontiers in Psychology, 15*.

<https://doi.org/10.3389/fpsyg.2024.1269319>

Nurutdinova, A., Episheva, K., Shaidullina, A., & Khusainova, R. (2020). Active Vocabulary Methods Aimed “Passive Vocabulary” Strengthening Methods. *Russian Linguistic Bulletin, 2*(22), 64-69.

<https://doi.org/10.18454/RULB.2020.22.2.8>

Santos, O. C., & Boticario, J. G. (2012). Educational recommender systems and technologies. *Computers in Human Behavior, 66*(1), 742-745.

<https://doi.org/10.4018/978-1-61350-489-5>

Susanto, A. (2017). The teaching of vocabulary: A perspective. *Jurnal KATA, 1*(2), 182.

<https://doi.org/10.22216/jk.v1i2.2136>

Wei, L. (2021). Teaching academic vocabulary to English language learners (ELLs). *Theory and Practice in Language Studies, 11*(12), 1507-1514.

<https://doi.org/10.17507/tpls.1112.01>

