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Using Artificial Intelligence to Develop Preparatory School Pupils' EFL Vocabulary Aspects

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المستخلص

تهدف الدراسة الحالية إلى تنمية انماط المفردات باللغة الإنجليزية كلغة أجنبية لدي تلاميذ الصف الثاني الاعدادي باستخدام الذكاء الاصطناعي . اعتمدت الدراسة تصميمًا شبه تجريبي شمل ستين تلميذًا من الصف الثاني الإعدادي، قُسِّموا إلى مجموعتين تجريبية وضابطة. و تم التدريس للمجموعة التجريبية باستخدام الذكاء الاصطناعي لتحسين جوانب مفردات اللغة الإنجليزية كلغة أجنبية لديهم، بينما تلقت المجموعة الضابطة تعليمًا تقليديًا. أُجريت اختبارات قبلية وبعدية لقياس النتائج المتعلقة بإتقان المفردات وفهم الكتابة. أظهرت النتائج فرقًا ذا دلالة إحصائية لصالح المجموعة التجريبية، مما يشير إلى أن الذكاء الاصطناعي حسّن مهارات الكتابة لدى الطلاب بشكل فعال. على وجه التحديد، كان متوسط درجات المجموعة التجريبية في الاختبار البعدي أعلى بكثير من متوسط درجات المجموعة الضابطة، مما يعكس زيادة في إتقان المفردات وانخفاضًا في صعوبة الكتابة. يُبرز هذا البحث قدرة الذكاء الاصطناعي على تخصيص تجارب التعلم، مما يوفر للطلاب إمكانية الوصول على مدار الساعة طوال أيام الأسبوع إلى أدوات المفردات والتغذية الراجعة الفورية، مما يُسهّل التعلم والتحسين الفوري. ومع ذلك، يُدرك البحث أيضًا التحديات المرتبطة بدمج الذكاء الاصطناعي، بما في ذلك المخاطر المتعلقة بالانتحال وضرورة التدريب الكافي لكل من التلاميذ والمعلمين. ونظرًا لأوجه القصور الملحوظة في مهارات الكتابة باللغة الإنجليزية كلغة أجنبية بين تلاميذ المرحلة الإعدادية، تهدف هذه الدراسة إلى إثراء تصميم المناهج ومنهجيات التدريس من خلال الاستخدام الفعال لأدوات الذكاء الاصطناعي.

الكلمات المفتاحية: الذكاء الاصطناعي ، انماط مفردات اللغة الانجليزية كلغة اجنبية، تلاميذ المرحلة الاعدادية

ABSTRACT

This study aimed at developing 2nd preparatory school pupils' vocabulary aspects using artificial intelligence. The study adopted a quasi-experimental design involving 60 second-grade middle school pupils, divided into two groups: experimental and control. The experimental group was taught using artificial intelligence to improve aspects of English as a foreign language vocabulary, while the control group received traditional instruction. Pre- and post-tests were administered to measure outcomes related to vocabulary mastery and writing comprehension. The results showed a statistically significant difference in favor of the experimental group, indicating that artificial intelligence effectively improved students' writing skills. Specifically, the experimental group's mean post-test scores were significantly higher than those of the control group, reflecting increased vocabulary mastery and decreased writing difficulty. This research highlights the potential of AI to personalize learning experiences, providing students with 24/7 access to vocabulary tools and instant feedback, facilitating immediate learning and improvement. However, the research also recognizes the challenges associated with integrating AI, including the risks of plagiarism and the need for adequate training for both pupils and teachers. Given the perceived shortcomings in EFL writing skills among middle school pupils, this study aims to inform curriculum design and teaching methodologies through the effective use of AI tools.

Keywords: Artificial Intelligence, EFL vocabulary aspects, preparatory school pupils

Introduction

Language is very important in human life. It is the primary source of communication where people express their feelings, thoughts, problems, needs, and share and connect with others around the world. Many consider English to be the universal language, the language of modernization and civilization. Due to the dominance of English in many different fields, individuals devote a lot of time and effort to teaching and learning English. There are four skills that should be mastered by the students. Writing is one of such skills that has its own characteristics. It is the most difficult skill to be learned. That is why it should receive its due attention .

Communication is one of the most critical aspects of human interaction. English has been widely adopted as the official language in most countries and is often regarded as the lingua franca (Antonello, 2022; Bierbaumer, 2021). Researchers have extensively worked on the broad fields of ESL and Foreign (EFL) vocabulary over the years, and the research efforts are now focusing on incorporating modern tools in vocabulary learning (Hao et al., 2021; Li, 2023). The emergence of Computer Assisted Language Learning (CALL) and Mobile Assisted Language Learning (MALL) has led to significant technological advancements in the field of second language (L2) acquisition. These developments have not only transformed traditional educational practices but have also paved the way for more personalized, interactive, and engaging learning experiences. In this context, it would not be a far-fetched assumption to suggest that Artificial Intelligence in Language Learning (AILL) is rapidly emerging as a distinct and promising field within L2 education. The integration of AI technologies in language and vocabulary learning offers vast potential to enhance conventional teaching methods by providing intelligent feedback, adaptive learning paths, and real-time assessment. Moreover, AI tools such as chatbots, speech recognition software, and personalized recommendation systems are making language learning more accessible and effective for a diverse range of learners, regardless of their location or background. As such, AILL represents a dynamic shift toward a more innovative and data-driven approach to mastering new languages (Alharbi & Khalil, 2023; Kovalenko & Baranivska, 2024). This approach can provide personalized learning experiences tailored to each student's strengths and weaknesses, reducing the complexity of teaching multiple students. The 24/7 availability of AI-powered vocabulary learning tools can also facilitate flexible learning schedules, especially beneficial for adult learners with other commitments. AI can also be used to prepare students for tests and assessments, offering immediate, personalized feedback. This immediate feedback can enhance the learning experience for vocabulary learners, allowing them to correct their mistakes and learn in real-time. Further research is needed to fully explore this potential.

AI tools have numerous benefits, but they also have challenges, such as the need for more human interaction (De la Vall & Araya, 2023; Mughal et al., 2021). AI can simulate conversations but cannot fully replicate human nuances, limiting the development of conversational skills and cultural understanding. The advantages and drawbacks of AI usage

depend on the user. The use of AI in vocabulary learning has received mixed reviews from students and teachers, with teachers expressing concerns about plagiarism and unethical practices (Abd-Elaal et al., 2019; Mohammadkarimi, 2023). Students have been found copying assignments from AI tools, leading to a negative image of AI tools (Basha, 2024; Younas et al., 2023). Teachers have urged students to use AI ethically, while the greatest challenge in AI-powered vocabulary learning programs is the execution of proper training for students and teachers. Program designers need special training programs or seminars to introduce AI features and their methodology. However, before implementing these strategies, it is crucial to gauge students' and teachers' initial perceptions and attitudes towards AI. This study aims to explore these perceptions, beliefs, and attitudes, which could help program designers effectively implement AI-powered vocabulary learning programs.

AI can be described as an automated device that can behave of human intelligence processes such as learning, reasoning, and self-correction (Almasri, 2024; Popenici & Kerr, 2017). One of the most important goals for AI is to design automated devices that can analyze the environment and do a task as humans do. New writing applications potentially offer flexible and time-saving additions while writing that are integrated to provide features in one integrated application (Guo et al., 2022; Koltovskaia, 2020). AI educational applications such as Chatbots and Duolingo are great applications in learning, they allow learners to communicate with online applications through text or speech, as they bring dialogue to teaching and provide learners with a natural learning style. They provide the productive and personalized engagement required by language learning. In a related study, both (Kim, 2024; Kim et al., 2022) state that pupils' writing performance can be improved through interactions with Smartbots such as ChatGPT. Observing the writing process and providing valuable productive feedback to pupils is very time-consuming and labor-intensive and may be done in a subjective manner. (Rahman et al., 2022; Wang et al., 2013) assert that computer-based applications are increasingly being used as alternative styles to traditional writing such as the use of automated writing assessment, automated article recording, and automated written corrective comments. The new writing tools, powered by artificial intelligence that are available in mobile devices, are promising tools to help pupils learn and develop writing that is difficult to learn from traditional training.

Artificial Intelligence for Learning-Teaching

During the Covid-19 pandemic, English teaching methods included the use of AI online, which helped improve vocabulary aspects (Al-Khawaldeh et al., 2023; Huei et al., 2021; Suwarto et al., 2023) AI was used to check grammatical errors and provide explanations to students (Ahmad et al., 2024; Kaharuddin, 2021). As a machine that mimics human actions, AI can replace lecturers in learning tasks. Students learned English grammar, spell words, match words, and create sentences through AI. Mistakes were detected and corrected as feedback. However, mastery of English grammar is crucial for text writing and language learning (Badroeni et al., 2020; Kuswanty et al., 2023). AI provided correction of grammar, diction, and sentence construction through feedback-motivated learning activities. Students re-read and

improved their writing, practicing independent learning. Technology advancement in online learning increased students' writing skills. Additionally, grammar correction led to the use of meaningful and informative words, improving communication skills. Therefore, it is essential to follow exact patterns and procedures in communication to avoid mistakes (Wang, 2011; Yulianti et al., 2022).

Technological improvements have created new demands and problems for students and instructors alike. Even if we haven't even discussed how Internet and communication technology (ICT) is changing our classrooms, we still need to be ready for the next step in AI (Alhalangy & AbdAlgane, 2023; Sumakul et al., 2022). The fundamental goal of AI is to virtually carry out and assist human actions. The use of this idea in a classroom setting can help both educators and learners during the teaching and learning process (Chen et al., 2020; Pedro et al., 2019).

For this reason, Junaidi (2020) conducted a quasi-experimental study to evaluate the efficacy of AI applications in EFL classrooms. In this research, the Lyra Virtual Assistant (LVA) was used. This program is an intelligent personal assistant that responds to queries from users on a variety of subjects, offers suggestions, and manages the user's device using natural language. The goal was to enhance the speaking abilities of seventh graders, whose English proficiency was considered weak. This grade has a rule allowing students to bring cell phones into the classrooms. A sample of 33 and 32 students, respectively, from the experimental and control groups, participated in the study. Each group has equal English-speaking skills. Both the pre-test and the post-test utilized an oral test. The content from the syllabus used for the pre-test involved students speaking with inappropriate tone and pronunciation. Following that, the experimental and control groups began receiving information from the researchers. The control group's vocabulary pronunciation and selected instructional materials were employed by the researchers. While teaching the experimental group the same material, the students practiced their pronunciation using the Lyra Virtual Assistant app. Over the course of four weeks, there were two forty-minute sessions. They then administered a posttest. The experimental group outperformed the control group in speaking instruction utilizing the Lyra Virtual Assistant, according to the data. Lyra therefore aids pupils in speaking English more effectively (Cantos et al., 2023; Kuddus, 2022)

Ma (2021) study focus on a collegiate English immersive context teaching method that used machine learning and virtual reality (VR) technology. 34 university freshman studying economics participated in the study; 33 were in class 1 and 33 were in class 2. Class 2 served as a control group with conventional teaching methods, whereas Class 1 was an experimental class that used VR technology and constructivism for one semester. At the conclusion of the semester, both classes took the identical English test. According to the findings, the experimental class outperformed the control group in speaking and listening, and their writing scores were marginally higher. This suggests that VR immersion might enhance overall performance.

Vo and Nguyen (2021) conducted an experimental investigation using Grammarly as a proofreader in English writing classes at a college of economic and social relations. The study involved 17 students in an experimental group and 20 in a control group, covering the same subject. After three months, students were required to submit a brief essay on the assigned topic in 45 minutes. In this study, the students in the experimental group were instructed to use the free version of Grammarly as a supplementary tool to proofread and revise their written manuscripts prior to submission. In contrast, the control group submitted their assignments without the assistance of any automated proofreading software. The analysis of the results revealed a significant improvement in the writing performance of those students who incorporated Grammarly into their drafting process, compared to those who did not use the tool. This improvement can largely be attributed to Grammarly's real-time feedback mechanism, which provides immediate corrective suggestions as soon as the writing task is completed. Such timely and context-sensitive feedback appears to be more effective than traditional teacher-based correction, particularly because it reaches learners at a moment when their cognitive engagement with the content is still high, and their awareness of writing goals and ideas remains fresh.

Moreover, Grammarly offers more than simple grammatical corrections; it delivers contextual suggestions, vocabulary enhancements, and clarity improvements that allow students to notice and reflect on patterns in their writing errors. This promotes a deeper understanding of language mechanics and helps learners avoid repeating similar mistakes in future assignments. Over time, the repeated use of the tool can foster increased learner autonomy and self-regulation, encouraging students to engage more critically with their own writing and internalize corrective feedback through practice.

Nevertheless, despite the observable benefits of integrating AI-driven tools like Grammarly into language learning environments, the role of human instructors remains indispensable. While Grammarly excels in surface-level corrections such as grammar, spelling, and sentence structure it lacks the ability to accurately assess higher-order aspects of writing, including content development, logical flow, coherence, and rhetorical effectiveness. Teachers play a crucial role in providing holistic, nuanced feedback that addresses these more complex dimensions of academic writing, which cannot yet be effectively replicated by current AI technologies. Therefore, a balanced approach that combines the strengths of AI tools with the pedagogical insight of instructors appears to be the most effective strategy for supporting L2 writing development

Integrating AI into language and vocabulary learning has great potential to transform conventional teaching regimes positively, which still needs to be explored by future research (Alharbi & Khalil, 2023; Shaheen et al., 2024) For instance, learners' individualized training and personalized experience are often complex tasks for teachers in the classroom setting, where they have to cater to the needs of multiple students. As a solution, AI-powered LL programs could offer personalized learning experiences to each student, specially curated to

their strengths and weaknesses (Davda et al., 2018) This could be further complemented by the 24/7 availability of AI-powered vocabulary learning tools, which allows for flexible learning schedules and is particularly beneficial for adult learners with other commitments (Alharbi & Khalil, 2023). Similarly, students can employ AI to prepare for their tests and assessments since it could provide the opportunity for immediate, personalized feedback (Kim et al., 2022). The immediacy of feedback from AI tools could also enhance the learning experience for vocabulary learners, which can correct their mistakes and help them learn in real time.

Despite the countless benefits, the use of AI tools happens to have several challenges as well. One of those challenges is the need for more human interaction. While AI can simulate conversations, it has yet to fully replicate the nuances of human interaction, which can limit the development of conversational skills and cultural understanding (Davda et al., 2018). Further, like any other tool, the advantages and drawbacks of its usage depend upon the user. In that regard, the use of AI in vocabulary learning has generally obtained mixed reviews from students and teachers. According to the teachers, the most common worrisome implication of AI falls in the domain of plagiarism and unethical practices (Ogwueleka, 2025). Students have been found copying entire assignments from AI tools like ChatGPT, and this has resulted in a bad image of AI tools in the minds of many teachers who need to be more technologically educated (Allam et al., 2023; Whalen & Mouza, 2023). Consequently, they have no choice but to make significant changes in the assessment methods so that the students can avoid getting an unfair advantage through AI tools. On the other hand, many teachers have identified the potential of AI as a vocabulary learning assistant; therefore, they have urged students to employ AI in their work ethically. The greatest challenge in AI-powered LL programs is the execution of proper training for students and teachers to employ AI technology effectively in vocabulary learning. Program designers would require special training programs/seminars to introduce AI features to students and teachers and the methodology to use them fully in LL programs. However, before implementing these strategies, there is a solid need to gauge the initial perceptions of students and teachers regarding AI. This study aims to explore students' and teachers' perceptions, beliefs, and attitudes concerning AI, which could greatly assist the program designers in effectively implementing AI-powered vocabulary learning programs.

As a teacher of English for 10 years, it was observed that there was a lack of EFL writing skills among preparatory school pupils, and it was clearly noticed that many pupils do not have many EFL writing skills. And through reviewing previous studies That recommended developing the four skills of the English language and the authors of these studies recommended the use of different strategies to develop writing skills during teaching such as (Abdullah, 2019; El Sayed, 2020). Several studies have confirmed the importance of reducing writing apprehension such as (Byker & Hemphill Davis, 2023; Othman, 2021). On the other hand, many studies have also confirmed the effectiveness of artificial intelligence in teaching different subjects such as (Abdul Gawad & Syed, 2019; Al-Tai & Ghazi). Some previous studies have also confirmed the effectiveness of artificial intelligence on developing English language skills such as (Edmett et al., 2023; Schmidt & Strasser, 2022) Some other studies have proven that there is a decline in

preparatory school pupils' EFL writing skills such as (Abdelateef, 2021; Abdullah, 2019). To document the research program a pilot study was conducted to discover the difficulties which preparatory school pupils face in acquiring EFL writing skills. This study consisted of an English writing test prepared by the researcher. The researcher applied the listening test to 20 preparatory school pupils from Fatimah Al-Zahraa Preparatory School in Ashmoun. The research aimed to measure some of their writing skills:

Table 1: The Result of the Pilot Study.

Question /Skill	Max Score	Mean	Percentage%
Grammar	5	2.30	46
Vocabulary	5	2.00	40
Organization	5	2.10	42
Punctuation	5	2.00	40
Total	20	8.40	42

Statement of the Problem

The problem of the current research is the low level of preparatory school pupils in Vocabulary Aspects, in the other words, the current study aims to answer the following main question:

What is the effectiveness of using artificial intelligence to develop preparatory school pupils' EFL Vocabulary Aspects?

Significance of the Study

The current research could be significant as following:

A. Pupils
- It could help preparatory school pupils develop their vocabulary aspects.

B. EFL Teachers
- It could helpful for EFL teachers as it might raise their awareness of the importance and benefits of artificial intelligence and how it could be implemented effectively EFL classrooms.
- It could also provide English language teachers with information about some artificial intelligence applications that could help them enhance preparatory school pupils' vocabulary aspects.

C. EFL Supervisors
- It could direct EFL supervisors to the necessity of developing EFL vocabulary aspects using artificial intelligence and some other technological tools.

D. Curriculum Designers

- It could draw their attention to the importance of vocabulary aspects and make use of the various AI tools that help pupils and/or students develop their vocabulary aspects by incorporating some AI tools in pupils' / students' textbook tasks and activities.

Objectives of the Study

The present research aims at developing preparatory school pupils' vocabulary aspects through using AI.

Research Hypotheses

There is a statistically significant difference at the level of significance (0.05) between the mean scores of the research participants of the experimental and control groups in EFL Vocabulary Aspects on the post administration of overall EFL Vocabulary Aspects in favor of the experimental group.

Method

In this study, the researcher relies on the use of the quasi-experimental method as it fits with the nature of the research to its ability to control the various factors and stabilize most of the extraneous variables affecting the phenomenon or problem of the research, so the researcher selected a random sample of third-year preparatory school pupils and divide them into two groups. First, an EFL Vocabulary Aspects pre-test for both groups to see if the experimental and control groups are equal in writing skills before the administration of the program. Then, the control group is taught by the traditional method, but the experimental group is taught using a proposed program based on artificial intelligence and then the EFL Vocabulary Aspects skills post-test will be applied for both experimental and control groups to verify the effectiveness of program based on artificial intelligence to develop the experimental group's EFL Vocabulary Aspects.

Participants of the Study

The participants of the study are sixty EFL third year preparatory school pupils at Fatimah Al-Zahraa School in Ashmoon.

Delimitation of the Research

The present research is delimited to the following:

1. Sixty EFL third year preparatory school pupils at Fatimah Al-Zahraa School in Ashmoun, Menofia.

2. EFL writing skills: the dimension of vocabulary aspects (meaning, connotation and collocations).
3. The first semester of the academic year 2024-2025.

Instruments and materials of the Research

The researcher has prepared and used the following tools and materials:

1. An EFL vocabulary aspects checklist.
2. An EFL vocabulary aspects test.
3. The pupil's book.
4. The teacher's guide.

Definition of Terms

The present study handles the following definitions:

1. Artificial Intelligence

According to Wang (2019), artificial intelligence refers to the ability of devices or systems to think like humans, and have the power and skills to learn, perceive, and make decisions rationally and intelligently (Enholm et al., 2022; Tredinnick, 2017) describes artificial intelligence as a set of technologies and different computing science approaches to make rational, flexible decisions in line with unexpected environmental conditions.

The researcher defines artificial intelligence operationally as a set of technologies that enable machines to operate at a very high level of intelligence similar to humans.

2. Aspects of Vocabulary

In spite of the importance of vocabulary learning in English language learning, there is a lack in the pupils' EFL vocabulary learning. This lack is resulted from the fact that students don't have the opportunity to practice vocabulary in a communicative context. They make mistakes in pronunciation. They lack the ability to comprehend what they read. They couldn't communicate their ideas as they would like to and they could hardly grasp the ideas transmitted to them Because of their weak vocabulary (El-Garawany, 2017; Jin, 2024). Students need to learn vocabulary in meaningful context and realistic situations not only see the form but also hear the pronunciation and practice the words in context (Ahmed Hamdy Hussien Emam, 2020; Alkhlili, 2018). Using context skills is the most frequent way to discover and learn the meaning of a new word (Hameed, 2009; Salem & Tayes, 2022). The vocabulary learning received a scanty focus as the priority has been given to structures. In the class, vocabulary is taught as a list of words usually arranged alphabetically and defined. This implies that teaching vocabulary

means teaching of words. This raises some conclusions: the word may be understood but not used, the word may not actually be understood but may be used, the idea to which a 'word' is applied may be known but the symbol neither known nor usedand the word by itself may mean little or nothing and only the meaning of a 'word' may be known or used (Al-Dagel, 2009; El-Shamy, 2021; Panjaitan et al., 2021).

Results of the study

T-test

In order to make sure that both experimental and control groups were homogenous before the treatment and the improvement of the EFL writing skills would be attributed to the AI-based program, the EFL Vocabulary Aspects test was per-administered to both groups in the first semester of the Academic Year 2024-2025 t-test for independent samples was used to find out if there were any statistically significant differences between the two groups in the pre-administration of the EFL Vocabulary Aspects test. Results are presented in the following table.

Table 2: t-test value of experimental and control groups for the pre-administration of the EFL Vocabulary Aspects Test.

Item	Group	N	Mean Score	SD	D.f.	t-value	Sig.
Overall EFL Vocabulary Aspects	Experimental	30	3.46	0.46	58	0.49	0.62
	Control	30	3.46	0.83	58		

Table (2) indicates that the t-value is (0.49) which is significant at a level greater than (0.05). This means there were no statistically significant differences between the experimental and control group students in the pre-administration of the EFL Vocabulary Aspects test. Therefore, both groups are homogenous and at equivalent level of performance before implementing the AI-based program.

To ensure the test validity, it was submitted to a number of EFL specialists during the second semester of the Academic Year 2024-2025. The jury panel was asked to add, modify, or omit whatever they found important and evaluate the test in terms of the following criteria:

a) The suitability of the audio and reading texts to students' language proficiency level.
b) The compatibility of the test items to the stated writing skills skills of the test.
c) The suitability of the timing to the items of the test.
d) The sufficiency of items to cover the identified skills.
e) The clarity of the test items.

The test was approved by the jury members as valid for measuring the intended vocabulary aspects. However, the following remarks were highlighted:

1- Some sentences in the dialogue (Part II) were rephrased, other sentences were omitted to make it more suitable for students' language level.
2- Some items of the test were modified or rephrased to be suitable for the language level of third year secondary students.
3- It was suggested to highlight some key words in the questions so that it would be easy for students to keep focused.

Reliability of the Test According to Mackey and Gass (2005), reliability in its simplest definition refers to consistency. In other words, an individual who takes a particular test would get a similar score on two administrations of the same test. To estimate the reliability coefficient of the EFL Vocabulary Aspects test of the current study, the test re-test technique was used. A group of third year secondary students at Fatimah Al Zahraa School (n = 20) was selected. Implementation took place in the third week of March and first week of November, 2024. The scores of the two administrations were correlated with two different methods; Cronbach's Alpha and Pearson Correlation Formula. The results are shown in the following table.

Table 3: EFL Vocabulary Aspects test reliability coefficient.

EFL Vocabulary Aspects	Cronbach's Alpha	Pearson Coefficient
	0.83	0.82

Table (3) shows that the reliability coefficient of overall EFL Vocabulary Aspects using Cronbach's Alpha was (0.83), and Pearson Coefficient was (0.82) which indicate the test has a high stability coefficient. This proves that the test was considered a reliable one.

Data Analysis

In order to analyses the data and verify the effectiveness of the using AI in developing EFL Vocabulary Aspects for third property stage pupils, the researcher used the following statistical techniques:

1- The mean scores and standard deviations of the pretest and the posttest of EFL Vocabulary Aspects for both the experimental and control group
2- t-test for independent samples to verify the difference between the mean scores of the experimental group students and those of the control group students on the posttest of EFL Vocabulary Aspects.
3- t-test for paired samples to verify the difference between the mean scores of the experimental group students in the pre and post administration of overall EFL Vocabulary Aspects test.
4- Eta squared (η^2) formula of effect size for independent groups to calculate the effect size related to the first hypothesis and Cohen's formula of effect size for paired samples to

calculate the effect size related to the second hypothesis. The effect size values were interpreted in terms of the rules set by Cohen.

Results of the Study

The results of the study were presented in the light of examining the hypotheses as follows:

Verifying the Study Hypothesis

The hypothesis of the study stated "There is a statistically significant difference at the level of significance (0.05) between the mean scores of the research participants of the experimental and control groups in EFL Vocabulary Aspects test on the post administration of overall EFL Vocabulary Aspects test in favor of the experimental group." To verify that hypothesis, t-test for independent samples was used and the results are shown in table (4).

Table (4): t-test results of the Experimental & Control Group Students' Posttest of EFL Vocabulary Aspects.

EFL Vocabulary Aspects	Control Group N = 30		Experimental Group N = 30		t-value	D.f.	Sig.	Effective size
	Mean	SD	Mean	SD	5.63	58	0.00	0.35
	3.47	0.64	5.33	1.11				

Results in table (4) reveal that the mean score of experimental group students on the post test of overall EFL Vocabulary Aspects is (5.33) with standard deviation of (1.11), which is higher than the mean score of the control group pupils on the same posttest of overall EFL Vocabulary Aspects that is (3.47) with standard deviation of (0.64). Moreover, it can be noticed that the t-test value between the two scores is (5.63) which is significant at (0.00). This proves the difference between the scores of the experimental and control group on the same posttest of overall EFL Vocabulary Aspects in favor of experimental group and consequently, the first hypothesis is verified.

After calculating the effect size using Eta squared (η^2) formula, it was noticed that the program has a large effect size on improving the micro skills of writing. The following diagram shows the difference in writing skills between the control and experimental groups on the posttest.

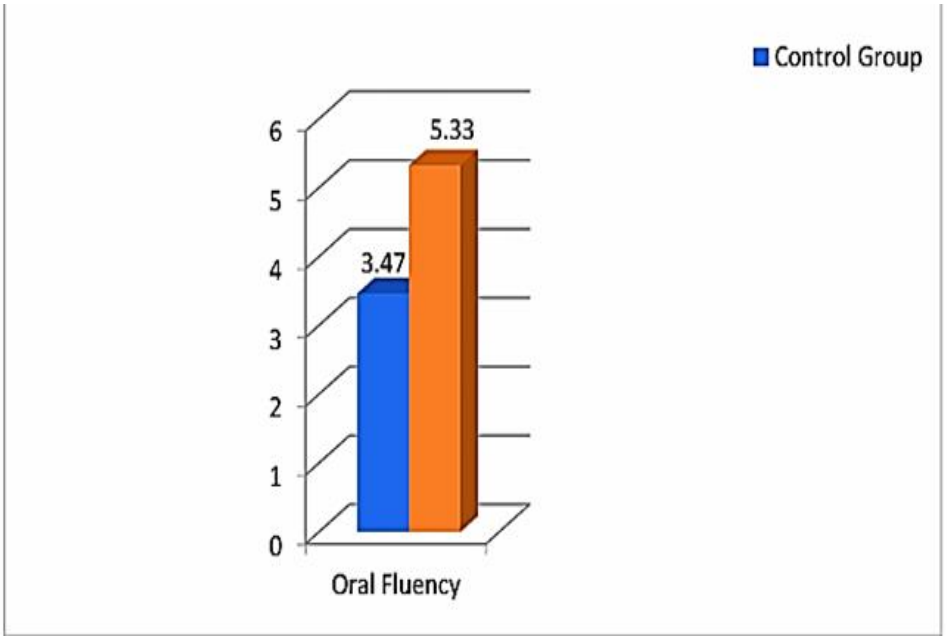

Figure 1: Comparison of the Control & the Experimental Group Pupils' Mean Scores on EFL Vocabulary Aspects skills Posttest.

Figure (1) shows that students of the experimental group outperformed the pupils of the control group on the EFL Vocabulary Aspects posttest. This difference can be attributed to the implementation of the AI based program.

Discussion of Results

The findings of the present study were interpreted in light of relevant pedagogical theories, previous empirical research, and the AI-based classroom environment designed and implemented by the researcher. The integration of artificial intelligence into English as a Foreign Language (EFL) instruction yielded significant improvements in the writing skills of second-preparatory stage pupils.

Quantitative analysis revealed that the AI-based instructional program had a positive and statistically significant impact on students' overall writing performance. Specifically, learners demonstrated notable progress in key areas of writing fluency: the appropriate use of word and sentence stress, accurate intonation patterns, controlled pacing to convey intended meaning, coherent and natural flow of ideas, and reduced occurrences of pauses or hesitations.

The effectiveness of the intervention was clearly reflected in the improvement of both macro- and micro-level writing skills. A statistically significant gain in students' writing fluency was observed, with the mean score increasing from 3.6 pre-intervention to 5.33 post-intervention.

This improvement indicates a substantial shift in learners' ability to express their ideas fluidly and logically in written form.

Throughout the intervention, participants engaged in a variety of AI-enhanced activities that targeted writing fluency. These included crafting dialogues based on given scenarios and composing reflective texts about their experiences using AI tools. Such tasks provided students with opportunities to internalize natural writing patterns and improve coherence, ultimately contributing to measurable progress in their writing proficiency.

These results are consistent with those of prior studies, confirming the beneficial role of AI in language learning contexts. For example, similar enhancements in vocabulary acquisition and pronunciation accuracy were reported by (Anggraeni, 2023); Encalada and Sarmiento (2019), as well as Afriliani et al. (2020); (Yanti et al., 2024). The current findings thus support the growing body of evidence affirming AI's potential to enhance language instruction and learner outcomes in EFL settings.

Conclusions

Based on the research findings, as well as a detailed discussion and interpretation of the data collected, it can be reasonably concluded that the AI-based instructional program proved to be effective in enhancing various aspects of the participants' vocabulary acquisition. The learners actively embraced the concept of self-directed learning, gradually developing an awareness that classroom instruction, while foundational, is insufficient on its own to fully develop the complex skills involved in academic and functional writing. They began to recognize the value of engaging with AI tools outside of classroom hours as a means of extending their learning and reinforcing what was taught during formal instruction. The program not only facilitated vocabulary growth but also offered students the chance to use English in authentic and meaningful communicative contexts, delivered through a medium that is both engaging and familiar to them artificial intelligence.

By integrating AI tools into the language learning process, students were provided with frequent opportunities to engage in a range of communicative acts, including discussion, inquiry, negotiation of meaning, and the pursuit of clarification. These were carried out in a learning environment that was intentionally structured by the researcher to be low-anxiety, supportive, and responsive to student needs. For a significant number of participants, this was their first exposure to the practical use of AI within an educational setting, and it was perceived as both novel and stimulating. Interacting with real-time AI applications added an element of excitement and modern relevance to the learning experience, allowing students to reframe their engagement with English as an active, ongoing process rooted in real-world tools and platforms.

Furthermore, the program introduced learners to a variety of emerging technologies that not only supported vocabulary development but also fostered a sense of learner autonomy. It encouraged students to take ownership of their language development by highlighting key

linguistic features such as word and sentence stress, intonation, and pragmatic use of expressions, particularly while interacting with English-language vlogs. These features, often overlooked in traditional classroom settings, became more salient through AI-assisted exploration. Pupils responded positively, noting that they found the experience enjoyable, motivating, and different from typical classroom instruction. One student described the most enjoyable aspect as the sensation of watching a video purely for entertainment, which incidentally led to significant vocabulary acquisition blurring the line between study and leisure. Another student expressed a strong interest in continuing to use AI tools independently, especially to strengthen skills in writing and reading. A third participant reflected on the ease with which expressions modeled by AI could be integrated into real conversations and how mimicking the tone and style of AI feedback helped in developing fluency.

Overall, student responses suggested a high level of satisfaction with the program and its pedagogical approach. The majority of learners not only welcomed the incorporation of AI into their language learning journey but also demonstrated increased motivation and curiosity. In conclusion, the AI-based language learning program yielded multiple educational benefits. It supported vocabulary acquisition, enhanced engagement with the English language in both spoken and written forms, and broadened learners' understanding of the cultural contexts in which English operates. Through exposure to AI-driven materials and activities, students developed a more dynamic and self-directed approach to learning, which could have long-term implications for their academic success and lifelong learning habits.

Recommendations

Based on the findings of the current study, the following recommendations seem pertinent:

- **Teachers should purposefully design and assign classroom activities that promote frequent and meaningful oral interaction among pupils, with a particular focus on the development of oral fluency skills.** These activities should go beyond rote repetition and instead emphasize real-life communicative situations where students are encouraged to express ideas, negotiate meaning, and apply language structures naturally and confidently. By fostering regular opportunities for spoken communication, learners can gradually build fluency, reduce anxiety, and improve pronunciation and spontaneity in English.
- **EFL teachers are encouraged to reconsider their traditional role as the sole source of knowledge and instead adopt a more dynamic, learner-centered approach.** In the modern classroom, the role of the teacher should shift toward being a facilitator of learning experiences, a motivator who inspires engagement, an organizer of interactive tasks, and a provider of timely and constructive feedback. This pedagogical shift aligns with contemporary views on language acquisition, which emphasize the importance of learner autonomy, collaboration, and the integration of digital tools.

- **School administrations play a pivotal role in supporting the development of pupils' writing skills by promoting relevant writing activities and ensuring that learners have access to essential tools and resources.** This includes the provision of digital devices, internet connectivity, and access to AI-powered applications that aid in writing practice, such as grammar checkers, text analyzers, and interactive writing platforms. Creating an infrastructure that supports technological integration is fundamental to enabling students to engage more actively and effectively in the writing process.
- **It is imperative that teachers establish meaningful and context-rich classroom environments where students feel encouraged to participate in discussions, collaborative tasks, and written assignments.** When classroom activities are situated in authentic and relevant contexts, students are more likely to invest in the learning process, draw connections between language and real-world use, and develop both linguistic and cognitive skills. The use of themes that resonate with students' lives, interests, and future aspirations can significantly enhance their engagement and sense of purpose in language learning
- Curriculum planners and developers are invited to enrich curricula with activities which enhance pupils' writing skills and utilize AI in curricula.
- Teachers have to encourage pupils to work together as much as possible, through group work and pair work as it is important for pupils o listen, read, interact, communicate, gain confidence, and get rid of any reluctance to share ideas with others.
- In light of the study's findings, it is recommended that teachers carefully select and design instructional activities that are closely related to pupils' personal interests and existing knowledge frameworks. When students perceive that the learning material is relevant to their own experiences, they are more likely to engage meaningfully with it. AI-based applications, with their ability to adapt content and tasks based on user input and preferences, serve as valuable tools in facilitating such tailored instruction, allowing educators to create learning environments that are both individualized and pedagogically sound.
- Teachers are also encouraged to take an active role in guiding learners toward greater autonomy and self-management in their educational journey, particularly in the development of writing skills. The process of writing requires sustained effort, reflection, and revision—skills that are strengthened when students are taught to take initiative and responsibility for their own learning. Through structured support and gradual release of control, educators can help learners cultivate habits of independent learning. AI tools may assist in this process, but it remains the teacher's responsibility to nurture these competencies through intentional instructional strategies.
- Finally, the integration of modern technological resources especially AI-based applications—should be viewed as an essential component of contemporary language instruction. These tools offer not only immediate feedback and interactive learning experiences but also the capacity to address diverse learner needs when used appropriately. However, it is imperative that such integration be done with careful consideration of learners' age, language proficiency, and personal interests. When

thoughtfully implemented, AI tools can enhance the teaching of language skills in general, and writing in particular, while also encouraging digital literacy and learner engagement in meaningful ways.

Implications of the study

The results of the study raised a variety of implications in the field of EFL, these implications can be summarized as follows:

1- EFL pupils Using

AI in EFL has proved effective in enhancing writing skills. They represent a good way to expose pupils to various authentic lingual and cultural contexts at their convenience of pace and place. The program of the current study is considered a model for students who seek to improve their pronunciation and fluency in English. It helps to raise students' cultural awareness of the target language. In brief, the current program enhances EFL learning in a holistic manner.

2- EFL Teachers

The AI-based program provides EFL teachers with an unconventional means to capture pupils' attention and interest, making the learning experience more engaging and entertaining, because AI apps are already appealing to millennials and generation Z. the use of Vlog is a convenient way to get authentic language contents in real life context. In addition, it helps EFL teachers to easily incorporate cultural aspects in EFL instruction.

3- EFL Curricula Designers

A major contribution to the current study is that it makes language learning more relevant to contemporary communication styles. It also presents different instructional activities that proved to be effective in developing writing skills. Educators can make use of the program as a model to integrate cultural aspects into language learning materials. Therefore, curricula designers may adopt this useful strategy and integrate it in new curricula.

4- EFL Researchers

The current study has opened the road to researchers in the field of writing skills and AI apps for new disciplines of research. Researchers exploring these areas can investigate various aspects of the impact of Vlogs on EFL learning and teaching.

Suggestions for Further studies

Based on the results of the current study, the following suggestions can be presented for future research:

- **Future research may explore the integration of AI technologies in developing learners' critical and creative reading skills.** This includes examining how AI-driven reading platforms or intelligent text analysis tools can foster deeper engagement with texts, promote inferential and evaluative thinking, and support learners in forming independent, critical interpretations of written material.
- **It is also recommended to investigate how students' direct involvement in the creation or customization of AI tools may influence their language learning outcomes.** Such research could explore whether engaging students in designing AI chatbots, training language models, or selecting AI functions fosters greater ownership of learning, improves problem-solving abilities, and leads to enhanced academic performance in language subjects.
- **Another promising area of inquiry involves examining the impact of using English-language Vlogs on students' speaking skills and self-confidence, particularly among those with learning difficulties or communication disorders.** Research in this area could shed light on how authentic, audiovisual input combined with self-paced interaction contributes to both language fluency and psychological comfort in oral expression.
- **Research should also be directed toward understanding the extent to which AI tools can reduce students' reluctance to communicate in English.** This includes studying how AI-mediated environments, such as conversation simulators or virtual tutors, can create low-anxiety contexts that encourage learners to participate more freely and with less fear of judgment.
- **Further investigation is needed into the relationship between learners' use of communication strategies and their motivation to learn a foreign language.** Such studies may consider how AI-enhanced learning environments influence the development of strategic competence and whether these strategies are linked to sustained engagement and perseverance in language learning tasks.
- **Another significant line of research could examine the effect of AI usage on overall language achievement and learners' self-efficacy beliefs.** Understanding how access to intelligent feedback, adaptive content, and personalized practice contributes to students' confidence in their language abilities can inform more effective instructional practices.
- **Finally, there is a need to explore how AI-based tools may contribute to the development of critical listening skills and learners' willingness to listen actively.** Investigating the role of AI in delivering diverse, real-world listening input and in fostering reflective listening strategies could provide valuable insights into promoting more attentive and analytical listening behaviors among students.

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