Utilization of Artificial Intelligence Tools in Fostering English Grammar and Vocabulary among Omani EFL Learners

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Abstract

Artificial intelligence (AI) is increasingly being integrated into language teaching and learning, offering numerous benefits and opportunities, especially for enhancing learning and teaching English as a Foreign Language (EFL). Many studies have investigated the impact of AI in EFL contexts. However, few studies investigated the impact of AI tools on learning English grammar and vocabulary, especially in the Arab context. Therefore, this study investigates the impact of AI tools in fostering Omani EFL learners' grammar and vocabulary. The data were collected from 160 Omani EFL students enrolled at a branch of Omani Government University, using a survey. They were selected from the fourth level (Foundation Program) and students of the English General Requirements (Post-Foundation Program). Findings revealed that Omani EFL learners had positive perceptions towards AI tools for fostering their English grammar and vocabulary skills. In terms of differences between the study groups and variables, there was a significant difference between the learners' views on the impact of AI tools on improving English grammar and vocabulary. There was no significant difference between the views of the students of the two levels towards the impact of AI tools in fostering English grammar and vocabulary. On the other hand, a significant difference existed between the perspectives of those learners who use AI tools and those who do not use AI tools. In terms of correlation, there was no correlation between the level of study and the learners' views about using AI tools. However, a correlation was found between the actual use of AI tools and the learners' perspectives of using them to foster English grammar and vocabulary. Overall, these findings lead to some recommendations and suggest avenues for upcoming research in this innovative area.

Keywords: AI, tools, grammar, Omani EFL learners, vocabulary

1. Introduction

Artificial intelligence (AI) has been widely invested in learning and teaching foreign languages, offering practical solutions to the challenges faced by learners (e.g., Al-Raimi et al., 2024; Mudhsh et al., 2024; Russell & Norvig, 2020). It refers to the capacity of a computer or software program to replicate human intelligence, encompassing skills like learning, reasoning, problem-solving, perception, and language usage (Aitchison, 2017; Russell & Norvig, 2020). Considering English learning in Oman, AI technology can play a significant role in mitigating the challenges that Omani learners encounter and, hence, achieving the Oman 2040 vision's goals. In the same context, the implementation of AI in the process of acquiring proficiency in the English language has gained significant traction as a research subject, owing to its capacity to augment the results of language acquisition. AI-powered language learning tools can offer customized learning experiences that are specifically designed to meet the unique demands of each student. These tools can also provide prompt feedback on student performance, allowing students to pinpoint areas requiring development and concentrate on those specific areas (SumaKul et al., 2022). Research on the integration of AI into English language learning is still in its nascent phase. Furthermore, studies have shown that using AI applications to practice English can lead to significant improvements in English proficiency (Al-Raimi et al., 2024; Young & Shishido, 2023; Yang et al., 2022). AI in the field of education has been increasingly favored owing to its capacity to augment the process of acquiring knowledge (Al-Saiari et al., 2024; Zhaoyi, 2018), and make English learning more personalized. Students can receive personalized instruction from AI, leading to improved learning outcomes (Zhou, 2018). Mudhsh et al. (2024) and Mayora (2006) revealed that the adoption of technology in the EFL setting can effectively cater to various learning needs, boost student enthusiasm, and promote language proficiency.

Given the potential of AI tools to impact EFL learners' English grammar and vocabulary, it is crucial to investigate the extent to which these tools affect EFL learners in these areas. The overriding objective of this paper is to investigate how Omani EFL learners can effectively utilize such tools in learning English grammar and vocabulary. The significance of this study stems from the fact that more research is needed on this topic in the Omani context (Al-Saiari et al., 2024). While it is possible to study the impact of AI on grammar and vocabulary separately, integrating them together using AI tools offers a more holistic, efficient, and practical approach to language learning. This comprehensive approach better prepares learners for real-world communication, where both terms (grammar and vocabulary) are used in tandem.

1.1 Research Objectives and Questions

To address these issues, this research study generally aims to investigate how AI fosters English grammar and vocabulary among Omani EFL learners at the Preparatory Studies Center, University of Technology and Applied Sciences (UTAS), Salalah, Sultanate of Oman. The study specifically set out to address the following three research questions:

1. To what extent do the AI tools impact the learning English grammar and vocabulary in the Omani EFL context?
2. Are there differences in learners' perspectives on the use of AI tools in fostering English grammar and vocabulary at two different levels?
3. Is there a correlation between the levels of study and the views towards using AI tools in improving English grammar and vocabulary, and between the use of AI tools and the perspectives towards the impact of AI tools in fostering English grammar and vocabulary?

2. Literature Review

2.1 AI in Language Learning

Implementing AI in Language learning involves utilizing AI technologies to support the process of learning a new language. AI can offer personalized teaching, generate interactive exercises, and provide feedback on learner performance. AI can also be utilized to generate virtual environments where learners can practice speaking and listening to a new language (Kay, 2021; Wang, 2022). Since the 1960s, AI has been utilized in the field of language teaching and learning. Initially, the development of computer-assisted language learning (CALL) applications utilized AI to assist language learners in acquiring vocabulary and grammar. Although the functionality of these initial programs was restricted, they laid the groundwork for later advancements in language learning software that employed AI to individualize the learning process (Chiu & Chung, 2018).

Presently, AI is improving language learning and teaching in numerous ways. For instance, learners may receive conversational practice from chatbots and virtual assistants; learner data may be analyzed by natural language processing algorithms, which may then provide individualized feedback on areas requiring improvement. Additionally, translation tools propelled by artificial intelligence are gaining popularity, enabling students to rapidly translate texts and enhance their reading comprehension (Rosell-Aguilar, 2018). Overall, the history of AI in language learning has been characterized by a gradual evolution from early computer-assisted learning programs to more sophisticated software that uses AI to personalize the learning experience.

AI effectively enables a new interaction between humans and computers, helping the technological revolution from text interfaces to graphical and natural language interfaces (Qing, 2018). It is potentially transformative in the realm of language acquisition. Personalized learning experiences (Al-Khalifa, 2019), immediate feedback (Chapelle, 2016), and gamification are all features that AI-powered language learning tools can offer to assist students in acquiring language skills more rapidly and efficiently. Cost, inaccuracy, and bias are a few of the obstacles that must be surmounted prior to the complete implementation of AI in language acquisition (Porter & Grippa, 2020). These obstacles will probably be surmounted as AI technology advances, and AI will evolve into an even more potent instrument for acquiring language skills. AI technologies have the potential to offer interactive and individualized learning experiences that aid in the comprehension and mastery of a new language by language learners (Liu & Brantmeier, 2019). This individualized methodology enables students to concentrate on their specific requirements and advance at their own rhythm (Qing, 2018).

In addition, AI technologies have the capability to replicate authentic conversations via chatbots or virtual assistants. Conversational agents employ natural language processing algorithms in order to comprehend the input provided by learners and deliver appropriate responses. Participating in dialogues with these AI-driven agents provides students with the opportunity to enhance their verbal abilities within a secure setting, devoid of apprehension regarding errors or criticism from others. Additionally, these chatbots can assist students in improving their linguistic accuracy by delivering immediate feedback on vocabulary and grammar usage. In the realm of language acquisition, AI also serves to augment vocabulary acquisition (Zhang & Huang, 2024). AI systems are capable of identifying frequently used words and phrases by analyzing immense quantities of text data from a variety of sources using machine learning algorithms.

Moreover, AI technologies can employ spaced repetition techniques, optimizing vocabulary review timing to maximize long-term retention. By leveraging AI in vocabulary acquisition, learners can expand their word bank efficiently and effectively. AI also plays a crucial role in providing language learners with authentic and immersive experiences. This immersive experience allows learners to apply their language knowledge in practical situations, enhancing their fluency and confidence (Qing, 2018).

Recently, unprecedented developments in artificial intelligence have led to the implementation of generative AI, such as chatbots, into EFL situations. These AI-based tools offer significant potential by enabling EFL learners and teachers to not only generate ideas but also to create useful content and learning materials, including texts, audios, videos. A body of research has emphasized the importance of generative chatbots in the learning process. For instance, Young and Shishido (2023) and Yang et al. (2022) revealed that AI chatbots can motivate learners to be involved in dialogues by generating conversational materials of prime quality. Klimova et al. (2023) pointed out that these tools foster the learning process because they are effective at motivating learners and exposing them to natural, authentic language.

2.2 AI in Omani EFL Context

In the Omani scenario, English language is used as the medium of instruction in colleges and universities. The aim, as suggested by

Al-Bakri (2013), Al-Mahrooqi (2014), and Tuzlukova (2014), is to provide learners with the essential language abilities and skills for employability and international communication. As stated differently, the purpose is to help learners attain proficiency in the target language as a long-term skill to succeed in the labor market after graduation. Despite this ambitious aim, a range of studies have highlighted the challenges Omani EFL learners encounter in mastering the English language. Thakur (2020) revealed that vowel substitution was a phonological problem facing the learners. Al Yaqoobi et al. (2016) found that mastering pronunciation, vocabulary, grammar, reading, and writing are the most challenging areas for Omani learners of English. Sivaraman et al. (2014) attributed learners' difficulties to the use of English as a medium of instruction, as the learners' ability to comprehend the target language is still finite. According to Al Mahrooqi (2012), lack of interest among learners, unproductive teachers, insufficient curricula, and a lack of practice outside the classroom are the main reasons for learners' low proficiency and fluency in the target language.

When it comes to AI studies in the Omani setting, Al-Raimi et al. (2024) examined Omani EFL learners' perceptions and practices of using artificial intelligence tools for writing skills. The results showed positive attitudes towards AI, with the majority being used for translating words, checking spelling and grammar, and generating ideas. The study found no significant gender differences or correlations. Recently, Govindarajan and Christuraj (2024) investigated the use of ChatGPT in English language teaching (ELT) at a university in Oman. It highlights its benefits, such as problem-solving scenarios and teacher relief from a heavy workload. However, it also highlights potential risks and the need for proper training for teachers and students. Further research is necessary to fully explore ChatGPT's potential and address its challenges, according to the research findings.

2.3 Integration of AI in English Grammar

The integration of AI in English grammar learning has had a profound effect, providing customized learning paths, immediate feedback, and precise assessments (Ulfa, 2023). Furthermore, numerous studies have investigated the integration of AI into grammar learning. Both Ghali (2018) and Soegiyarto (2022) discovered that AI tools, such as Grammarly and intelligent tutoring systems, can significantly improve students' grammar skills. Sari (2024) and Park (2019) further discuss the development and implications of AI-based grammar learning media and grammar convergence. Winaitham (2022) underscores the potential of AI functions, such as competitive chunking and natural language processing, to enhance grammar learning. Eny (2004) addressed the challenges in this field by presenting the development of an intelligent computational instructional environment for grammar and orthography instruction.

Recent years have seen a growing body of research on the use of AI in grammar learning. This research has shown that AI can be effective in helping learners improve their language skills in a variety of areas, including grammar, vocabulary, pronunciation, and fluency. For example, a study by Yang and Kyun (2022) found that AI-powered chatbots can be effective in helping learners improve their grammar skills. Fitria (2021) conducted a study to present a comprehensive overview of 'Grammarly', an artificial intelligence (AI)-based English writing assistant that aids English as a Foreign Language (EFL) students in their English writing. This study employs a descriptive-qualitative research methodology. The data demonstrates that the utilization of Grammarly software led to a boost in performance. Prior to utilizing Grammarly, the test score stood at 34 out of 100. The utilization of Grammarly resulted in a performance text score of 77 out of 100. This score reflects a notable development in textual writing proficiency. Grammarly's recommendations for a premium subscription can improve performance.

Kim (2019) investigated the effects of the use of artificial intelligence chatbots for improving English grammar skills for Korean college students. In this study, 70 undergraduate students took part. A general English course at a Korean university was offered to them. The study involved two distinct groups. Thirty-four students participated in the human group compared to thirty-six in the chatbot group. The researcher administered pre- and post-tests to track the participants' grammar progress over time. The researcher then performed an independent t-test to examine the improvement between the two groups. The following are the main findings: First, participants' English grammatical skills improved dramatically in both groups, demonstrating the positive effects of conversation. Additionally, the improvement between the chatbot and human groups differed statistically significantly, suggesting that using chatbots had better results. The participants in the chatbot group had better grammar than those in the human group, according to this study.

2.4 Integration of AI in English Vocabulary

The integration of AI into English vocabulary learning has shown significant promise for improving proficiency and retention. Ulfa (2023) and Agnes (2024) highlighted the learning paths and support that AI can provide, leading to improved vocabulary acquisition. Rusmiyanto (2023) and Hang (2022) further emphasize AI's role in developing communication skills and efficient learning, with the latter employing the analytical hierarchy process and Technique for Order of Preference by Similarity to Ideal Solution to rank AI-based paradigms. Liao (2023) and Vadivel (2023) investigate the use of AI in English vocabulary tests, as well as the potential effects of coding on academic performance and comprehension. Lastly, Hsu (2023) underscores the benefits of AI image recognition technologies in vocabulary acquisition, self-regulation, and learning anxiety. Tapalova et al. (2022) found that AI-powered adaptive learning systems can be effective in helping learners improve their vocabulary skills.

Alsadoon (2021) conducted a study on the process of learning English as a foreign language (EFL) vocabulary in Arabic using a chatterbot that engages learners through interactive storytelling. The researcher developed a chatterbot and provided it with four linguistic resources: a lexicon, visual aids, a tool for translating to the user's native language, and a program for analyzing word usage patterns. The tools improved the target words by providing learners with engaging and easily understandable information. The objective of this study is to identify the most commonly utilized tools by English as a Foreign Language (EFL) learners who are practicing English with a

chatterbot. Furthermore, it aims to ascertain the most effective tool for enhancing language acquisition and retention. The study findings suggest that the dictionary is the preeminent and efficacious resource for acquiring vocabulary. The results indicate that the L1 translation shows a slightly higher level of retention compared to the dictionary, however, this difference is not statistically significant.

Fannoni et al. (2023) investigated the efficacy of the DALL-E AI platform in enhancing students' vocabulary acquisition. They utilized an innovative design methodology to accomplish their objective. They invited thirty-one senior high school students from an Islamic-based school in Yogyakarta to participate in this research. The researchers administered three interventions, preceded by an initial assessment and followed by a final assessment. A paired-sample t-test indicated a significant improvement in scores, with an increase from 56.35 in the pretest to 67.58 in the posttest. In addition to the average results, the t-test indicated a substantial disparity between the mean scores of the pretest and posttest, with a significance value of.000. This finding leads to the acceptance of the alternative hypothesis. The result suggests that the teacher could use the DALL-E platform to enhance the students' vocabulary acquisition.

To sum up, in terms of language skills, AI has a promising future. Language learning, generally, has the potential to be revolutionized and made more accessible to all through the use of AI-powered tools. Over the coming years, it is foreseeable that language learning tools propelled by AI will become more sophisticated and efficient as AI technology advances. This advancement requires further investigation and exploration.

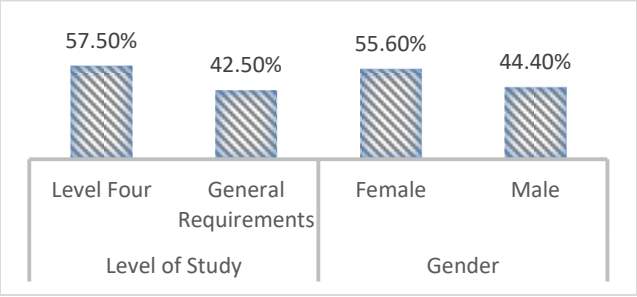
3. Method

The study aimed to investigate the use of AI tools in fostering English grammar and vocabulary by Omani EFL learners who study English skills as general requirements and those who are at Level Four. It used a descriptive research design to fulfil the study's objectives, which took place at in the Sultanate of Oman at a government university, at the end of the second semester of the academic year 2023-2024.

3.1 Participants

A sample of 160 EFL learners, based on their consent by answering the question "Do you agree to participate in this questionnaire?" participated in the study; 68 were sampled from the Level of General Requirements and 92 from Level 4. This sample consisted of 89 females (55.6%) and 71 males (44.4%). They were enrolled at the levels of General Requirements (68 = 42.5%) and Level 4 (92 = 57.5%). The following graph represents the demographic information of the sample in percentage.

Graph 1. Demographic information of the sample of the study



3.2 Instrument

A 5-point Likert questionnaire was utilized in a Google Form to gather data from the participants based on their consent. The participants' consent was obtained by answering a question, "*Do you agree to participate in this questionnaire?*". Following the introduction to the questionnaire, it included three parts. The first part was used to collect the demographic information of the participants, such as their gender, level of study, and whether they use AI tools for improving their English grammar and vocabulary or not. The second part included 13 items with the alternatives "*strongly agree, agree, neutral, disagree, and strongly disagree*" in order to gather information about the participants' perspectives towards utilizing AI tools to improve English grammar. Twelve items made up the third part, which asked participants about their views about utilizing the AI tools to improve their English vocabulary. The options included "*strong agreement, agreement, neutrality, disagreement, and strong disagreement*". The researchers tailored the questionnaire and its items to the Omani setting. Prior to its administration, the researchers examined the validity and reliability of the questionnaire and made modifications based on advice from statistical analysts and experts. After checking the reliability of the questionnaire with the use of Cronbach's alpha, it was.964, indicating that it was highly and sufficiently valid for the study. It was then distributed to the participants as a Google Form.

3.3 Data Collection and Analysis

To verify that the participants were not pressured by the time, the researchers waited for 30 days for the responses from the participants. After 30 days of distributing the questionnaire, the researchers collected the participants' responses, starting the process of coding and analyzing. The data were analyzed using SPSS (Version 26.0). The respondents' demographic data and responses to the item "*Do you use AI tools in learning English grammar and vocabulary such as Grammarly, Chat-GPT, Jasper.ai, Quillbot, Rytr.me, Copy.ai, Paperpal etc.?*" were subjected to descriptive analysis. Out of all 160 participants, 133 (83.1%) used AI tools to learn English grammar and

vocabulary, while 27 (16.9%) did not use AI tools for the intended purpose. In addition to the descriptive statistics, some statistical tests, like the Mann-Whitney U Test, Wilcoxon W Test, Regression Test, and Spearman's rho Test, were specifically and carefully used to measure the differences and correlation between the variables, according to the type of data. The researchers filtered and tabulated the outputs to present the necessary results in a systematic manner.

3.4 Ethical Considerations

The study was approved by the Department of Research and Consultation, University of Technology and Applied Sciences, Salalah. The approval certificate was obtained on April 28, 2024. The participants' consent was obtained by asking them if they agree or not to participate in the questionnaire in the distributed Google Form. The questionnaire's introduction guaranteed participants' anonymity and acknowledged that their participation is voluntary, they could withdraw at any time, and it would not affect their academic performance or grades.

4. Results

The results obtained are displayed in tables and interpreted in relation to the existing body of literature on the topic of AI in learning and teaching English in a worldwide context. The results and their discussion are arranged according to the three research questions.

RQ1: To what extent do the AI tools influence learning English grammar and vocabulary in the Omani EFL context?

The impact of the AI tool was measured using the means scores and standard deviations (Tables 1, 2). Table 1 shows the means and std. deviations of the first 13 items of the questionnaire that were devoted to eliciting information about the use of AI tools in fostering English grammar by the Omani EFL learners.

Table 1. means and standard deviations of the grammar items

Items		Mean	Std. Deviation
1.	AI tools help me foster my English grammar.	4.1938	.82031
2.	AI tools enhance my grammatical range.	4.0688	.79402
3.	I think AI tools improve my grammatical accuracy.	3.9938	.78905
4.	I think AI tools can operate on all levels of English grammar.	4.1750	.81302
5.	AI tools help me recognize the correct grammatical structures, e.g., tenses, prepositions, linking words, articles, clauses, etc.	3.9938	.91457
6.	AI tools help me write correct grammatical sentences.	4.0063	.90767
7.	AI tools help me avoid grammatical errors/mistakes.	3.9750	.88984
8.	AI tools help me practice English grammar.	3.9250	.89408
9.	I believe using AI tools makes English grammar easier.	4.0250	.83138
10.	AI tools can open up new possibilities for using English grammar.	3.4500	.70755
11.	AI tools and applications can be used to test English grammar knowledge.	3.9500	.91665
12.	I use AI tools to check my English grammar.	4.0063	.92822
13.	AI tools assist me in doing my grammar homework.	4.0625	.90899
Total		3.9865	.63253

Table 1 reveals that learners hold a positive perspective on the role of AI tools in enhancing English grammar, with a mean score of 3.99 and a standard deviation of.63. By focusing on the means of the items separately, it is found that the statement "AI tools help me foster my English grammar" has the greatest mean among other statements (M = 4.19), whereas the statement that has the least mean is "AI tools can open up new possibilities for using English grammar" (M = 3.45). Generally speaking, Omani EFL learners are in favor of using AI tools to foster their English grammar.

Likewise, the results pertinent to vocabulary are arranged in Table 2. It shows the means and std. deviations of the 12 items of the questionnaire that were devoted to eliciting information about the use of AI tools in fostering English vocabulary by the Omani EFL learners.

Table 2. means and standard deviations of the vocabulary items

Items		Mean	Std. Deviation
1.	AI tools help me foster my English vocabulary.	4.1250	.82987
2.	I think AI tools improve my vocabulary range.	4.1938	.85779
3.	I think AI tools help me improve my vocabulary accuracy.	4.1000	.84823
4.	The use of AI tools makes learning English vocabulary easier.	4.1625	.76797
5.	AI tools can operate at all levels of English vocabulary.	4.0813	.87575
6.	AI tools help me memorize new vocabulary.	4.0063	.92142
7.	AI tools help me write the correct vocabulary.	4.0813	.78486
8.	AI tools can open up new possibilities for using English vocabulary.	3.9875	.85405
9.	AI tools help me practice my English vocabulary.	4.0125	.83166
10.	I think AI tools help me overcome the challenges related to English vocabulary.	4.0000	.85414
11.	AI tools help me identify vocabulary errors.	4.0000	.86874
12.	AI tools help me identify the parts of speech of new vocabulary.	3.9000	.95298
Total		4.0542	.6606

Table 2 reveals that Omani EFL learners hold a positive perspective on the role of AI tools in enhancing their English vocabulary, with a mean score of 4.05, and a standard deviation of.66. By focusing on the means of the items separately, it is found that the statements related to using AI tools for fostering English vocabulary have almost the same means with very little difference between them, but in general, it can be accurately said that the Omani EFL learners are in favor of using AI tools in fostering their English vocabulary.

RQ2: Are there differences between the perspectives of the learners of two different levels towards the use of AI tools in fostering English grammar and vocabulary?

This question pertains to the differences between the study variables and groups. Using Paired-Samples T Test to check the difference between Omani EFL learners' general views about utilizing AI tools in fostering their English grammar and their views about utilizing AI tools in fostering their English vocabulary, it was found that there is a statistically significant difference between them as the P-value is (.008) < (.05) as shown in Table 3.

Table 3. difference between the learners' views about using AI tools in fostering English grammar and English vocabulary

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Grammar–Vocabulary	-.06763-	.31968	.02527	-.11754-	-.01771-	-2.676-	159	.008

The Mann-Whitney U test reveals the differences between the learners in General Requirements Level and Level 4 in their views about using AI tools to foster English grammar and vocabulary. Table 4 displays the results. It was found that there is no statistically significant difference between the views of the two groups (General Requirements Level and Level 4) about using AI tools to foster their English grammar and vocabulary together (p. =.122 >.05). Separately, there is no statistically significant difference between the views of the two groups about using AI tools to foster English grammar and English vocabulary (p.=.088) and (p.= .206) respectively.

Table 4. differences between the views of the learners of General Requirements level and Level 4

	Means of Grammar and Vocabulary items	Means of Grammar items	Means of Vocabulary items
Mann-Whitney U	2680.000	2634.500	2763.000
Z	-1.548-	-1.707-	-1.264-
Asymp. Sig. (2-tailed)	.122	.088	.206

The researchers used the Mann-Whitney U test to compare the views of learners who use AI tools to learn English grammar and vocabulary with those who do not. As shown in Table 4, it was found that there is a statistically significant difference between the two groups (P = .00), i.e. < (.05). To deepen more, as shown in Table 5, the learners who use AI tools in learning English grammar and vocabulary are more positive towards the utilization of AI tools (mean rank = 86.36) than those who do not use AI tools (mean rank = 51.61) for the intended purpose

Table 5. difference between the learners' views who use AI tools in fostering English grammar and vocabulary and those who do not

Mann-Whitney U	1015.500
Z	-3.557-
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Do you use AI tools in learning English Grammar and Vocabulary?

Table 6. Mean Ranks of AI tool users and non-AI tools users

	Do you use AI tools in learning English Grammar and Vocabulary?	N	Mean Rank	Sum of Ranks
Means of Grammar and Vocabulary Items	No	27	51.61	1393.50
	Yes	133	86.36	11486.50
	Total	160		

RQ3: Is there a correlation between the levels of study and the views towards using AI tools in improving English grammar and vocabulary and that between the use of AI tools and the perspectives towards the impact of AI tools in fostering English grammar and vocabulary?

This question measures the correlation between the study variables. To find out the correlation between the level of study and the learners' views about the use of AI tools in fostering English grammar and vocabulary, Spearman's rho test was used. Table 6 shows such a correlation. It is found that there is no correlation between the level of study and the Omani EFL learners' views about using AI tools in fostering their English grammar and vocabulary together, between the level of study and their views about using AI tools in fostering English grammar, and between the level of study and their views about using AI tools in fostering English vocabulary, as the correlation coefficients are (.123), (.135) and (.100), respectively.

Table 7. Correlation between level of study and the learners' views about the use of AI tools in fostering English grammar and vocabulary

			Level of Study
Spearman's rho	Grammar and Vocabulary items	Correlation Coefficient	.123
		Sig. (2-tailed)	.122
		N	160
	Grammar items	Correlation Coefficient	.135
		Sig. (2-tailed)	.088
		N	160
	Vocabulary items	Correlation Coefficient	.100
		Sig. (2-tailed)	.207
		N	160

**. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 8, there is a strong positive correlation between the use of AI tools and the learners' views about the use of AI tools in fostering their English grammar and vocabulary together, English grammar and English vocabulary as the correlation coefficients are (.282**), (.267**), and (.267**), respectively. This indicates that when more AI tools are used, there is a more positive view of using AI tools to foster English grammar and vocabulary, and vice versa.

Table 8. correlation between the use of AI tools and the learners' views about the use of AI tools in fostering English grammar and vocabulary

Do you use AI tools in learning English Grammar and Vocabulary?			
Spearman's rho	Grammar and Vocabulary items	Correlation Coefficient	.282**
		Sig. (2-tailed)	.000
		N	160
	Grammar items	Correlation Coefficient	.267**
		Sig. (2-tailed)	.001
		N	160
	Vocabulary items	Correlation Coefficient	.267**
		Sig. (2-tailed)	.001
		N	160

**. Correlation is significant at the 0.01 level (2-tailed).

5. Discussion

This section discusses the results of the three research questions. Regarding the first question, results showed that Omani EFL learners had positive perceptions of AI tools for enhancing their English grammar and vocabulary skills. The learners showed a positive attitude toward using AI tools, with high mean scores indicating their effectiveness in fostering grammar and vocabulary. However, there is some uncertainty about the potential for novel applications in grammar usage. The findings suggest that AI tools can be effectively integrated into language learning curricula, and future research should explore additional features and applications to maximize their impact. As for the results of the second question, the Paired-Samples T-Test showed a statistically significant difference ($P = 0.008$), indicating varied views on AI tools' impact on grammar versus vocabulary. However, the study found no significant differences between learners at different academic levels ($p > 0.05$). Notably, learners who use AI tools have a more positive attitude (mean rank = 86.36) compared to those who do not (mean rank = 51.61), as shown by the Mann-Whitney U test ($P = 0.00$).

These findings suggest that exposure to AI tools enhances learners' perceptions of their benefits. In terms of correlation, the results of the third question show no significant correlation between the level of study and Omani EFL learners' views on using AI tools for grammar and vocabulary improvement. However, a strong positive correlation was observed between the use of AI tools and learners' positive perceptions of their effectiveness. This suggests that increased use of AI tools leads to more favorable views on their role in enhancing grammar and vocabulary skills. These findings underscore the importance of integrating AI tools into language learning curricula to positively influence learners' attitudes.

The results of the three questions together are in parallel with the findings of many studies, such as Abu Ghali et al. (2018), Agnes and Srinivasan (2024), Al-Khalifa (2019), Al-Raimi et al. (2024), Chapelle (2016), Hsu et al. (2023), Kim (2019), Liu and Brantmeier (2019), Park (2019), Porter and Grippa (2020), and Sari et al. (2024). However, some studies showed that there are some challenges in using AI in learning English (Jamshed et al., 2024; Idham et al., 2024; Makeleni et al., 2023), but this study does not aim to check the challenges of using AI in learning English as a second language. It gives way to some other studies to take over and extend this line of research in the Arab context and even beyond it.

6. Recommendations for EFL students and University Teachers

The findings put the researchers in a favorable position to put forward some recommendations and pedagogical implications. The EFL students are encouraged to utilize AI tools to improve their grammar and vocabulary. Researchers are recommended to study the impact of AI tools on some other skills, including listening, speaking, reading, and writing. They are also recommended to conduct further studies on the challenges of using AI tools in the process of learning EFL using quantitative and qualitative data. Teachers of EFL in Arab countries are recommended to integrate AI tools into the processes of teaching and learning EFL. The syllabi makers are also recommended to integrate

the AI tools into the syllabi of EFL on the basis of all the studies in the field.

7. Limitations of the Study

Although the research design included descriptive and inferential statistics, the findings are not devoid of some limitations. Although the researchers intended to collect more data of a qualitative type to enrich the discussion, it was difficult to analyze the qualitative data as the answers of the participants to the question "What are the AI tools you use to improve your English grammar and vocabulary?" were unclear and uncomplete and only a few of the participants answered this question. In addition, the study' was applied to one Omani university which can limit its applicability to other Omani universities. These limitations would be valuable directions for future research.

8. Conclusion

To close, the study revealed that AI tools have a positive impact on the process of learning EFL. The Arab EFL learners, particularly the Omanis, have positive perspectives towards utilizing AI tools to improve their English grammar and vocabulary. It was found that there was a significant difference between the learners' views towards the impact of AI tools in improving English grammar and English vocabulary, and there was no significant difference between the views of the students at levels of General Requirements and Level 4 towards the impact of AI tools in fostering English grammar and vocabulary. However, it was found that there is a significant difference between the views of AI tool users and non-users of AI tools towards the impact of AI tools in fostering English grammar and vocabulary. Furthermore, there is a correlation between the use of AI tools and the learners' views about how AI tools foster English grammar and vocabulary.

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Authors' contributions

All authors made an equal contribution to the development and planning of the study.

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Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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References

Abu Ghali, M. J., Abu Ayyad, A., Abu-Naser, S. S., & Abu Laban, M. (2018). An intelligent tutoring system for teaching English grammar. *Int. J. Acad. Eng. Res. 2,* 1-6.

Agerfalk, P. J. (2020). Artificial intelligence as digital agency. *European Journal of Information Systems, 29*(1), 1-8. https://doi.org/10.1080/0960085X.2019.1694966

Agnes, D., & Srinivasan, R. (2024). Fostering Vocabulary Memorization: Exploring the Impact of AI-Generated Mnemonic Keywords on Vocabulary Learning Through Anki Flashcards. *World Journal of English Language, 14*(2). https://doi.org/10.5430/wjel.v14n2p434

Aitchison, J. (2017). *The language web: The power and promise of language* (3rd ed.). Cambridge University Press.

Al-Bakri, S. (2013). Problematizing English medium instruction in Oman. *International journal of bilingual and multilingual teachers of English, 207*(1172), 1-15.

Al-Khalifa, H. (2019). The impact of artificial intelligence on language learning. *International Journal of Artificial Intelligence in Education, 29*(1), 1-19.

Al-Mahrooqi, R. (2012). A student perspective on low English proficiency in Oman. *International Education Studies, 5*(6), 263-271. https://doi.org/10.5539/ies.v5n6p263

Al-Mahrooqi, R., & Tuzlukova, V. (2014). English communication skills and employability in the Arabian Gulf: The case of Oman. *Pertanika Journal of Social Sciences & Humanities, 22*(2).

Al-Raimi, M., Mudhsh, B. A., Al-Yafaei, Y., & Al-Maashani, S. (2024). Utilizing artificial intelligence tools for improving writing skills: Exploring Omani EFL learners' perspectives. *Forum for Linguistic Studies, 6*(2), 1177. https://doi.org/10.59400/fls.v6i2.1177

Al-Raimi, M., Mudhsh, B. A., Muqaibal, M. H., & Al-Yafaei, Y. (2024). To What Extent Has Artificial Intelligence Impacted EFL Teaching and Learning? A Systematic Review. *JURNAL ARBITRER, 11*(3), 399-412. https://doi.org/10.25077/ar.11.3.399-412.2024

Al-Saiari, M. W., Al-Mughairiyah, Y. M., Al-Mashaikhiya, B. N & Mudhsh, B. A. (2024). Investigating the Impact of Training Program on Generative AI Applications in Improving University Teaching. *Qubahan Academic Journal, 4*(3), 315-332. https://doi.org/10.48161/qaj.v4n3a760

Al-Yaqoobi, Z. M., Ali, F., & Sulan, N. (2016). An analysis of errors caused by Omani EFL learners in pronouncing certain consonant sounds. *International Journal of Language Education and Applied Linguistics, 5*. https://doi.org/10.15282/ijleal.v5.501

Chapelle, C. (2016). The impact of artificial intelligence on second language learning. *TESOL Quarterly, 50*(3), 519-532. https://doi.org/10.1002/tesq.300

Chiu, Y. H., & Chung, C. H. (2018). The rise of artificial intelligence in language learning: Challenges and opportunities. *Journal of Educational Technology Development and Exchange, 11*(1), 1-14.

Ellis, R. (2020). *The study of second language acquisition* (3rd ed.). Oxford University Press.

Fitria, T. N. (2021). Grammarly as AI-powered English writing assistant: Students' alternative for writing English. *Metathesis: Journal of English Language, Literature, and Teaching, 5*(1), 65-78. https://doi.org/10.31002/METATHESIS.V5I1.3519

Govindarajan, R., & Christuraj, G. (2024). Opportunities and challenges of using ChatGPT in the ELT scenario of UTAS, Nizwa, Oman. *Journal of Teaching English for Specific and Academic Purposes*, 593-605.

Hang, Y., Khan, S., Alharbi, A., & Nazir, S. (2024). Assessing English teaching linguistic and artificial intelligence for efficient learning using analytical hierarchy process and Technique for Order of Preference by Similarity to Ideal Solution. *Journal of Software: Evolution and Process, 36*(2), e2462. https://doi.org/10.1002/smr.2462

Hsu, T. C., Chang, C., & Jen, T. H. (2023). Artificial Intelligence image recognition using self-regulation learning strategies: effects on vocabulary acquisition, learning anxiety, and learning behaviours of English language learners. *Interactive Learning Environments*, 1-19. https://doi.org/10.1080/10494820.2023.2165508

Idham, A. Z., Rauf, W., & Rajab, A. (2024). Navigating the Transformative Impact of Artificial Intelligence on English Language Teaching: Exploring Challenges and Opportunities. *Jurnal Edukasi Saintifik, 4*(1), 8-14. https://doi.org/10.56185/jes.v4i1.620

Jamshed, M., Alam, I., Al Sultan, S., & Banu, S. (2024). Using artificial intelligence for English language learning: Saudi EFL learners' opinions, attitudes and challenges. *Journal of Education and e-Learning Research, 11*(1), 135-141. https://doi.org/10.20448/jeelr.v11i1.5397

Kim, N. Y. (2019). A study on the use of artificial intelligence chatbots for improving English grammar skills. *Journal of Digital Convergence, 17*(8). https://doi.org/10.14400/JDC.2019.17.8.037

Kl ́mov ́ B., & Ibna Seraj, P. M. (2023). The use of chatbots in university EFL settings: Research trends and pedagogical implications. *Frontiers in psychology, 14*, 1131506. https://doi.org/10.3389/fpsyg.2023.1131506

Liao, L. (2023). Artificial Intelligence-Based English Vocabulary Test Research on Cognitive Web Services Platforms: User Retrieval Behavior of English Mobile Learning. *International Journal of e-Collaboration, 19*(2). https://doi.org/10.4018/ijec.316656

Liu, C., & Brantmeier, C. (2019). Artificial intelligence in language learning: Opportunities and challenges. *Language Teaching Research, 23*(2), 151-167.

Makeleni, S., Mutongoza, B. H., & Linake, M. A. (2023). Language education and artificial intelligence: An exploration of challenges confronting academics in global south universities. *Journal of Culture and Values in Education, 6*(2), 158-171. https://doi.org/10.46303/jcve.2023.14

Mayora, C. A. (2006). Integrating Multimedia Technology in a High School EFL Program. *In English teaching forum* (Vol. 44, No. 3, p. 14). US Department of State. Bureau of Educational and Cultural Affairs, Office of English Language Programs, SA-5, 2200 C Street NW 4th Floor, Washington, DC 20037.

Mudhsh, B. A., Al-Yafaei, Y., Muqaibal, M. H., & Al-Raimi, M. (2024). Using Smartphones for English Speaking Skill Development from the Omani EFL Learners' Perspectives. *World Journal of English Language*, *14*(5), 322-331. https://doi.org/10.5430/wjel.v14n5p322

Park, J. (2019). 'Implications of AI-based grammar checker in EFL learning and testing: Korean high school students' writing. *The Korea English Language Testing Association, 14*(1), 11-39. https://doi.org/10.37244/ELA.2019.14.11

Pijls, F., Daelemans, W., & Kempen, G. (1987). Artificial intelligence tools for grammar and spelling instruction. *Instructional Science, 16*(4), 319-336. https://doi.org/10.1007/BF00117750

Porter, M., & Grippa, C. (2020). The benefits of artificial intelligence for language learning. *Language Learning, 70*(2), 395-424.

Qing, Z. (2018). A brief analysis of the feasible application of artificial intelligence in college English teaching. *Intelligence, 31*, 67.

Rosell-Aguilar, F. (2018). State-of-the-art review of technology-mediated task-based language teaching. *Language Learning & Technology, 22*(2), 1-23.

Rusmiyanto, R., Huriati, N., Fitriani, N., Tyas, N. K., Rofi'i, A., & Sari, M. N. (2023). The role of artificial intelligence (AI) in developing English language learner's communication skills. *Journal on Education, 6*(1), 750-757. https://doi.org/10.31004/joe.v6i1.2990

Russell, S., & Norvig, P. (2020). *Artificial intelligence: A modern approach* (4th ed.). Pearson Education.

Sari, R., Aini, I., & Fauziah, F. (2024). Development of Grammatic Learning Media AI Artificial Intelligence (AI) Based. *In Proceedings of the 5th International Conference on Innovation in Education, Science, and Culture, ICIESC 2023, 24 October 2023, Medan, Indonesia*. https://doi.org/10.4108/eai.24-10-2023.2342090

Servan-Schreiber, E., & Anderson, J. R. (1990). Learning artificial grammars with competitive chunking. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 16*(4), 592. https://doi.org/10.1037/0278-7393.16.4.592

Sivaraman, I., Al Balushi, A., & Rao, D. H. (2014). Understanding Omani students' (university) English language problems. *International Journal of Sciences: Basic and Applied Research (IJSBAR), 13*(1), 28-35.

Soegiyarto, M. S., Putri, R. A., & Saputra, S. D. (2022). The Importance of Getting Automated Grammar Feedback via Grammarly, for Increasing Students' English Language Proficiency. https://doi.org/10.31219/osf.io/749a2

Sumakul, D. T., Hamied, F. A., & Sukyadi, D. (2022). Artificial intelligence in EFL classrooms: Friend or foe? *LEARN Journal: Language Education and Acquisition Research Network, 15*(1), 232-256. https://doi.org/10.17509/learn.v15i1.29243

Swain, M., & Lapkin, S. (2015). Problems in SLA research: Using informant data to investigate the internal processes of second language learning. *Applied Linguistics, 36*(3), 295-314.

Thakur, V. S. (2020). Phonological Problems of Omani EFL Learners: Pedagogical Perspectives and Implications. *Arab World English Journal, 11*(1), 29-43. https://doi.org/10.24093/awej/vol11no1.3

Ulfa, K. (2023). The transformative power of artificial intelligence (AI) to elevate English language learning. *Majalah Ilmiah Methoda, 13*(3), 307-313. https://doi.org/10.46880/methoda.vol13no3.pp307-313

Vadivel, B., Ahmed, Z. A., Shaban, A. A., & Jeevarathinam, S. N. (2023). Integrating Coding and Artificial Intelligence in English Language Teaching: A Study at Cihan University-Duhok. *International Journal of Humanities and Education Development (IJHED), 5*(6), 124-132. https://doi.org/10.22161/jhed.5.6.16

Wang, S. (2022). Artificial intelligence in language learning: A review of recent research. *Language Learning & Technology, 26*(1), 4-25.

Winaitham, W. (2022). The Scientific Review of AI Functions of Enhancement English Learning and Teaching. *In 2022 13th International Conference on Information and Communication Technology Convergence* (ICTC) (pp. 148-152). IEEE. https://doi.org/10.1109/ICTC55196.2022.9952632

Yamauchi, M. (2009). Integrating internet technology into the EFL classroom: A case study. *International Journal of Pedagogies and learning, 5*(2), 3-19. https://doi.org/10.5172/ijpl.5.2.3

Yang, H., Kim, H., Lee, J. H., & Shin, D. (2022). Implementation of an AI chatbot as an English conversation partner in EFL speaking classes. *ReCALL, 34*(3), 327-343. https://doi.org/10.1017/S0958344022000039

Young, J. C., & Shishido, M. (2023). Investigating OpenAI's ChatGPT Potentials in Generating Chatbot's Dialogue for English as a Foreign Language Learning. *International Journal of Advanced Computer Science and Applications, 14*(6) 65-72. https://doi.org/10.14569/IJACSA.2023.0140607

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

Zhaoyi, L. (2018). Wing lesson net" big data, artificial intelligence for English teaching and teaching. *English Teachers, 18*(10), 8-10.

Zhou, Q. (2018). A brief analysis of the feasible application of artificial intelligence in college English learning [J]. *Intelligence, 31*, 67.

Appendix

Questionnaire

Utilization of Artificial Intelligence Tools in Fostering English Grammar and Vocabulary among Omani EFL Learners

Dear students,

We kindly invite you to take part in our study at the Preparatory Studies Center, University of Technology and Applied Sciences, Salalah, titled "Utilization of Artificial Intelligence Tools in Fostering English Grammar and Vocabulary among Omani EFL Learners", by answering the following set of questions. Your answers will be very helpful to us in understanding your different viewpoints on the application of AI tools, and they will also greatly improve the quality of our study. Completing the questionnaire is expected to take about ten minutes. Your answers are completely confidential and will only be utilized for study.

---

1. Name: …… (Optional)
2. Gender?
   Male / Female
3. Are you interested to complete this questionnaire?
   Yes/ No
4. Do you use AI tools in learning English grammar and vocabulary?
   Yes/No

Please read the statements carefully and choose the correct alternative (from strongly agree to strongly disagree).

Note: AI refers to artificial intelligence (AI).

No	Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	Grammar items					
1	AI tools help me foster my English grammar.					
2	AI tools enhance my grammatical range.					
3	I think AI tools improve my grammatical accuracy.					
4	I think AI tools can operate on all levels of English grammar.					
5	AI tools help me recognize the correct grammatical structures, e.g., tenses, prepositions, linking words, articles, clauses, etc.					
6	AI tools help me write correct grammatical sentences.					
7	AI tools help me avoid grammatical errors/mistakes.					
8	AI tools help me practice English grammar.					
9	I believe using AI tools makes English grammar easier.					
10	AI tools can open up new possibilities for using English grammar.					
11	AI tools and applications can be used to test English grammar knowledge.					
12	I use AI tools to check my English grammar.					
13	AI tools assist me in doing my grammar homework.					
	Vocabulary items					
1	AI tools help me foster my English vocabulary.					
2	I think AI tools improve my vocabulary range.					
3	I think AI tools help me improve my vocabulary accuracy.					
4	The use of AI tools makes learning English vocabulary easier.					
5	AI tools can operate at all levels of English vocabulary.					
6	AI tools help me memorize new vocabulary.					
7	AI tools help me write the correct vocabulary.					
8	AI tools can open up new possibilities for using English vocabulary.					
9	AI tools help me practice my English vocabulary.					
10	I think AI tools help me overcome the challenges related to English vocabulary.					

11	AI tools help me identify vocabulary errors.
12	AI tools help me identify the parts of speech of new vocabulary.

Please write the AI tools that you use for improving your English Grammar and Vocabulary.

……
……

Thank you in advance for your participation, and we greatly appreciate your cooperation.