Influence of Generative Artificial Intelligence on English Language Teaching

Ghada M. Chehimi[1] & Hussin J. Hejase[2,*]

[1]School of Foreign Languages, Bogazici University, Istanbul, Türkiye

[2]Basic and Applied Sciences Research Center, Al Maaref University, Beirut, Lebanon

*Correspondence: Basic and Applied Sciences Research Center, Al Maaref University, Beirut, Lebanon. IEEE Senior Member. E-mail: hussin.hejase@mu.edu.lb

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Abstract

Language teaching, especially English, is expanding through the integration of technology. Teachers must enhance their skills to effectively use technology in their teaching, equipping students with a modern and current learning environment. Generative Artificial Intelligence (GAI) technology applications in English language instruction include, but are not limited to, Chatbots, AI-based writing assistants, AI grading tools, and AI language learning platforms. Due to their proven benefits and ease of use, GAI tools have the potential to become increasingly popular among educators for supporting modern language acquisition. This paper aims to evaluate the knowledge, usage, and attitudes of a sample of English teachers from Turkey and Lebanon regarding GAI tools in their teaching. The analysis combines descriptive statistics with inferential methods such as frequencies, percentages, t-tests, cross-tabulations, and regression analysis. Data analysis is conducted using IBM SPSS version 27.0. Teachers were selected through convenience sampling, contacted via email to complete the survey. Results indicate that 60% of teachers are familiar with these tools; the most common are AI writing assistants and AI language learning apps, each used by approximately 30%, followed by Chatbots at about 18%. Only 55% of teachers feel confident in their ability to work with AI tools. Ultimately, 72.5% of teachers would continue using GAI applications if given the opportunity. These findings offer valuable insights into the training and professional development needed for teachers to meet 21st-century educational demands.

Keywords: Generative AI (GAI), teaching, teachers, readiness, Lebanon, Turkey

1. Introduction

Law (2024) posits “that successful interpersonal, academic, and professional interactions depend on good communication and intercultural understanding, language instruction and learning are crucial.” Also, Ahtif & Gandhi (2022) assert that “Being able to communicate, navigate different cultural contexts, and participate in meaningful interactions are all made possible by language proficiency.” Language educators have historically played a pivotal role as catalysts or facilitators of language learning in academic settings. They teach students essential language skills and evaluate their progress through written and oral assessments. However, according to Law (2024), “the introduction of the internet and search engines has completely changed how students learn languages.” Rather than depending solely on their teachers, Sparrow, Liu, & Wegner (2011) assert that “students can now access a wealth of knowledge, language resources, and platforms tailored to their specific needs.”

Using the World Wide Web's established capabilities, artificial intelligence (AI) is spreading throughout today's advanced societies (West & Allen, 2018). It significantly impacts marketing (Haleem, Javaid, Qadri, Singh, & Suman, 2022), entertainment (Rammal, Hejase, & Hazimeh, 2024), and design (DOT Content Team, 2024). Additionally, it is growing in higher education (HE) (Adiguzel, Kaya, & Cansu, 2023). Researchers at various Higher Education Institutions (HEIs), such as Lee et al. (2024), AlDhaen (2022), and Shaikh et al. (2022), investigated “the effects of using generative artificial intelligence (GAI) on learning and teaching (L&T) in higher education (HE) at a time when the field was only starting to address the implications of AI.” In summary, Srivastava

& Verma (2024) assert that "Education 4.0 is a new revolution, i.e., personalized, adaptive, and data-driven learning that takes advantage of cutting-edge technological breakthroughs to improve student engagement, knowledge retention, and academic success. AI is a critical enabler of this revolution, and AI-powered education technology has enormous potential in the Education 4.0 landscape."

According to the Center for Teaching and Learning (2024), "A subset of artificial intelligence known as 'GAI' creates new, unique content (text, photos, video, or audio) by using machine learning models to identify patterns and statistically likely relationships found in training data." This ability is made possible by sophisticated algorithms and neural networks trained on enormous volumes of data to react to human cues. These technologies can produce coherent, contextually relevant output in response to instructions.

As technology and digital platforms have advanced, Van et al. (2021) posit that "so too has the ease of teaching and studying English". Fitria (2021) agrees that "Advanced technologies now present the chance to increase language proficiency in English." In addition, Shin (2018) asserts that "This suggests that if an English-teaching machine exists, perhaps we won't need any English teachers or English education in the classroom." Thus, GAI does not necessarily need to replace English instruction. Rather, the process of teaching and learning English should be integrated with the creation of an AI-based English classroom model. Fitria (2021) stresses that "Digital and language literacy work well together to enhance global competency."

Sussmann (2024) contends that "The most practical application of AI for English language teachers is in English Language Teaching (ELT)." And Fitria (2021) adds, "One of the common languages of the globe with a structured grammatical structure is English." Consequently, according to Mehrotra (2019), "Students in the English as a Second Language (ESL) and English as a Foreign Language (EFL) courses have always found it extremely challenging to acquire the language." For example, students' inadequate and unfavorable perceptions of learning a second language impede their capacity to do so (Lennartson, 2008). Therefore, Wang (2019) stresses that "Natural language processing (NLP), intelligent search, and AI machine learning (ML) may all successfully advance the reform of English teaching and learning."

This paper aims to highlight the influence of GAI tools on the teaching of the English language.

1.1 Artificial Intelligence (AI-based) Tools Used in English Teaching

Kannan & Munday (2018) contend that "Language learning is a social and cultural phenomenon" (p. 14). During the last decades, according to Parveen, Farid, & Fatima (2023), "The integration and applications of information and communication technology (ICT) have brought about transformative changes in how language is taught and learned" (p. 608). Kannan & Munday (2018) assert that "New technologies introduced in the twenty-first century have also brought a social dimension to ICT, enabling what is known as Networked Learning (NL)" (p. 14). Goodyear, Banks, Hodgson, & McConnell (2004) define "NL as Learning in which ICT is utilized to promote connections: Between one student and other learners, between learners and tutors; and between a learning community and its learning resources" (p. 1). Moreover, Kannan & Munday (2018) posit that "Networked Learning has enabled language learners to connect globally, freely access resources, and self-regulate their learning processes."

Woo & Choi (2021) posit that "There is a lack of comprehensive reviews on available AI-based language learning tools and the pedagogical effects and learner perceptions of these tools" (1784). Existing reviews on AI in language learning (Kannan & Munday, 2018; Pokrivcakova, 2019) have focused on certain AI-based tools or AI's overall impact on the future of language teaching and learning.

This study focuses on Srivastava & Verma's (2024) "Education 4.0 paradigm enabled by GAI tools." Therefore, GAI tools addressed include Chatbots, AI-based writing assistants, AI-based grading tools, and AI-based Language Learning tools. GAI tools have impacted a wide spectrum of language teaching which include according to Woo & Choi (2021), "Skill areas (speaking, listening, writing, pronunciation, grammar, vocabulary, and reading) with the type of tool (e.g., robots, mobile applications, and virtual assistants) and AI technology" (p. 1786).

1.1.1 Chatbots

Ashfaque, Tharewal, Iqhbal & Kate (2020) define "A Chatbot as a computer application that simulates human-like, natural conversations with users through text and/or voice." According to Eisenringan, Jamiluddin, Hairul, & Putri (2024), "Chatbots are one of the technologies that can be used for English language teaching and learning. Relying on the huge benefit and ease of implementation, using Chatbots could be the leading technology for teachers to promote modern language learning" (p. 127). Researchers interested in Chatbots are engaged in studying and assessing their impact on students (Kim, 2019; Hew, Huang, Du, & Jia, 2023; Eisenringan et al., 2024) and instructors.

Acres (2023) contends that "November 30, 2022, marked the launching of the famous Chatbot 'ChatGPT,' that changed the potential of applications of AI in language instruction, among many other applications. Kohnke, Moorhouse, & Zou (2023a) assert that "ChatGPT supports language learning by simulating authentic interactions" (p. 3). Recent state-of-the-art Chatbots, according to Jiang, Cheng, Yang, & Gao (2022), "Use advanced artificial intelligence (AI) techniques including natural language processing (NLP), machine learning (ML), and deep learning (DL); these AI-powered chat-bots learn how to react to user inquiries based on a massive human language dataset." In addition, Kohnke et al. (2023a) clarify that "When a teacher assigns learners a text, they may not understand the meaning of certain words in context. ChatGPT can explain these terms and continue the interaction by answering follow-up questions" (p. 3).

1.1.2 AI-based Writing Assistants

Researchers like Gayed, Carlon, Oriola, & Cross (2022) have "designed a new AI-based web application labeled 'AI KAKU' to assist EFL learners overcome cognitive hurdles when writing in English" (p. 1). Much research (Williams, 2001; Nourdad & Aghayi, 2016; Gayed et al., 2022) has demonstrated that EFL learners frequently lack the flexibility to produce well while writing in a second language. Furthermore, Gayed et al. (2022) posit that "Cognitive (working memory) resources are expended on low-level writing tasks (word generation, translation), depriving time for higher-level writing tasks such as organization and revision" (p. 1). While there has been a lot of research and discussion around Automated Writing Evaluation (AWE) technologies (Li, Link, & Hegelheimer, 2015) and earlier technologies like spell check and grammar check (Peterson-Karlan, 2011). Gayed et al. (2022) stress that "few studies have sought to use AI-based tools as learning tools outside of assessments." However, the National Commission on Writing (2003) identified "four challenges for writing instruction: Increasing student writing time, improving assessment, implementing emerging technologies, and providing professional development for teachers."

The aforementioned report has encouraged the implementation of emerging technologies, therefore, accelerating the fast-growing new applications in AI-based writing assistants. According to Lang (2024), "There are various AI applications and tools on the market that promise to help you generate, streamline, and automate your writing process" (para 4). Moreover, Lang (2024) provides "a count of the latest eight AI-based writing assistants, namely Buffer's AI Assistant, Jasper, Copy.ai, Writer, Sudowrite, Type, SEOWind, and ChatGPT" (para 8).

1.1.3 AI-based Grading Tools

Foltz, Laham, & Landauer (1999) assert that "Essay-based testing (EBT) is thought to develop a greater conceptual comprehension of the content and to represent a deeper, more useful level of knowledge and application among students. Thus, written texts' grading and commenting are crucial as an assessment tool and as a feedback device to assist students in learning both subject and thinking and writing abilities" (p. 1). Page (2003) states that "The first automated essay scoring (AES) system was introduced in 1966 (p. 43). Li, Link, & Hegelheimer (2015) contend that "Since then, new scoring engines like e-rater®, Knowledge Analysis Technologies™, and IntelliMetric® help assess text properties at several levels, including lexical, syntactic, semantic, and discourse." (p. 1).

1.1.4 AI-based Language Learning Tools

Knight (2024) posits, "AI-powered language learning technologies, such as Chatbots and language learning applications, can provide a level of customization and engagement that traditional self-learning approaches rarely achieve. They can engage learners in one-on-one chats, provide rapid feedback, vary the difficulty level based on skill, and even replicate real-life circumstances to create immersive learning experiences" (para 8). Woo & Choi (2021) inform that "Their review compiled information on AI tools developed between 2017 and 2020. The majority of these applications used ML and NLP to detect faults, provide feedback, and evaluate language skills. After using these tools, students showed improvements in their language skills and knowledge" (p. 1783).

Becker (2024) asserts that "Since the launch of the advanced Chatbot 'ChatGPT' in 2022, there has been a surge of interest in the possible applications of AI in language instruction. This tendency is consistent with the growing study and deployment of computer-assisted language learning (CALL)." Chen, Zou, Xie, & Su (2021) posit that "CALL encompasses a wide range of themes, including technology-enhanced pedagogical design, self-paced learning, and language evaluation" (p. 169).

1.2 Research Merit

Very few studies have been conducted on Lebanese GAI students' literacy (see Danaoghlian & Baalbaki, 2024), on corpus linguistics based on data-driven learning (DDL) (see Sfeir & Massoud, 2024), and on utilizing ChatGPT in teaching English 'ESL' (Saleh, 2024). However, none (to the best of the authors' knowledge) have been conducted on the assessment of the impact of generative artificial intelligence (GAI) on English language teaching within the

context of Lebanese and Turkish university instructors. Consequently, this exploratory article highlights the knowledge needed to clarify the prospects of this topic. Thus, this paper provides initial insights, supported by descriptive and inferential statistics and evidence (in the form of a regression model) demonstrating the key determinants (explanatory variables) influencing GAI's impact on teaching. The findings will strengthen the empirical understanding of this subject in Lebanon and Turkey. This paper consists of four parts: Starting with the introduction, the significance of the work, and the research questions; part two describes the research methodology; part three presents the results, findings, and discussion; and part four concludes with limitations and recommendations.

1.3 Research Questions

1. Is there an effective impact of how instructors find Generative AI tools in enhancing student learning, and the AI tools used?
2. What AI tools are being integrated into teaching and learning processes?

2. Materials and Methods

This work used a positivist philosophy. Hejase & Hejase (2013) describe it as "Positivism is when the researcher acts as an impartial analyst who is not influenced by the research's subject or interferes in any way" (p.77). Park, Konge, & Artino (2020) assert that “Positivists produce testable research questions.” At the same time, this study's approach is quantitative, deductive, and systematic. Using primary data to operationalize concepts promotes the definition’s clarity. Concepts are scrutinized, discussed, and statistically evaluated.

In addition, a survey strategy is used, whereas a standard questionnaire is distributed to a carefully selected sample of people. The goal is to gather primary data for statistical analysis. Because the research will take place during a set period in the spring semester of 2024, the temporal perspective is cross-sectional.

2.1 Sampling and Sample Size

Sampling in this research is based on convenience, where participants are willing to participate willingly and may stop whenever they desire. Research respondents are affiliated with the Lebanese and Turkish population of English instructors, whose age varies between 25 and 45 years old. The overall population totals 120 instructors belonging to two selected universities. The first is a small private university in Lebanon with about 3000 students and 22 English instructors, and the second is a public university in Turkey with about 13,000 students and 125 English instructors. The research sample consists of 40 instructors. The surveys were distributed via targeted WhatsApp messages to the population with an online SurveyMonkey [https://www.surveymonkey.com/r/8X7YRVH]. Reliability error resulting from the selected sample size was extracted from Hardwick's (2022). For validity reasons, the authors herein followed suit with other researchers (Masoudi and Hejase, 2023; Hejase, Fayyad-Kazan, Hejase, Moukadem, & Danach, 2023a; Hejase, Rkein, Hamdar, & Hejase, 2023b; Nasser, Hejase, Mezher, Termos, & Hejase, 2022; Rammal, Hejase, & El Takach, 2025; Chehimi and Hejase, 2024). The estimated total population (both institutions) is 147 English instructors.

Table 1 illustrates that for a population of around 150 and a sample size of 40, a target reliability error is around 13%. This study's 40-person sample size yields an acceptable reliability error of ±12.5% at the 95% level. This means that in 87.5 out of 100 survey repetitions, the results will not deviate by more than 12.5%, with a maximum reliability error of ± 13%. This level of reliability is appropriate for this study.

Table 1. Statistical Reliability versus Sample Size (Hardwick, 2022)

[50/50% proportion characteristics]					
	Population				
Sample Size	**100**	**500**	**1000**	**5000**	**10000**
30	±14.7%	±17.1%	±17.3%	±17.6%	±17.7%
50	±9.7%	±13.1%	±13.5%	±13.8%	±13.9%
75	±5.6%	±10.4%	±10.9%	±11.3%	±11.4%

Note: at 95% statistical confidence (i.e., 5% standard error).

2.2 Survey Design

The survey consists of ten questions distributed as follows: One question with a dyadic style, six questions with a 5-level Likert scale, and three open questions. Questions are aimed at assessing instructors' attitudes and knowledge concerning the influence of generative AI on English language teaching. It is worth noting that the adopted AI-based applications and tools are congruent with Edtech within Srivastava & Verma's (2024) Education 4.0 revolution.

For validity reasons, four academic scholars reviewed the questions, and a few modifications were made. This was followed by testing the questionnaire with five instructors (3 in Lebanon and 2 in Turkey) who were not part of the sample.

2.3 Data Analysis

Hejase & Hejase (2011) state that assigning a purpose to data creates profound understanding. Moreover, according to Hejase & Hejase (2013), "Descriptive statistics use simple, illustrative numbers or visuals to try and make sense of a set of data" (p. 272). The results were illustrated using tables and figures for better visualization of the data meanings. "IBM's Statistical Product and Service Solutions –SPSS" (Hejase & Hejase, p. 58) version 27.0 package was used for data evaluation. A one-sample T-test, Cross-tabulation, and Regression modeling analysis are further inferential statistical methods used.

3. Results and Discussion

3.1 Descriptive Statistics

3.1.1 Familiarity with Generative AI

Table 2. Respondents' Familiarity with GAI

		Frequency	Percent
Valid	Not familiar at all	4	10.0
	Slightly familiar	5	12.5
	Moderately familiar	16	40.0
	Very familiar	11	27.5
	Extremely familiar	4	10.0
	Total	40	100.0

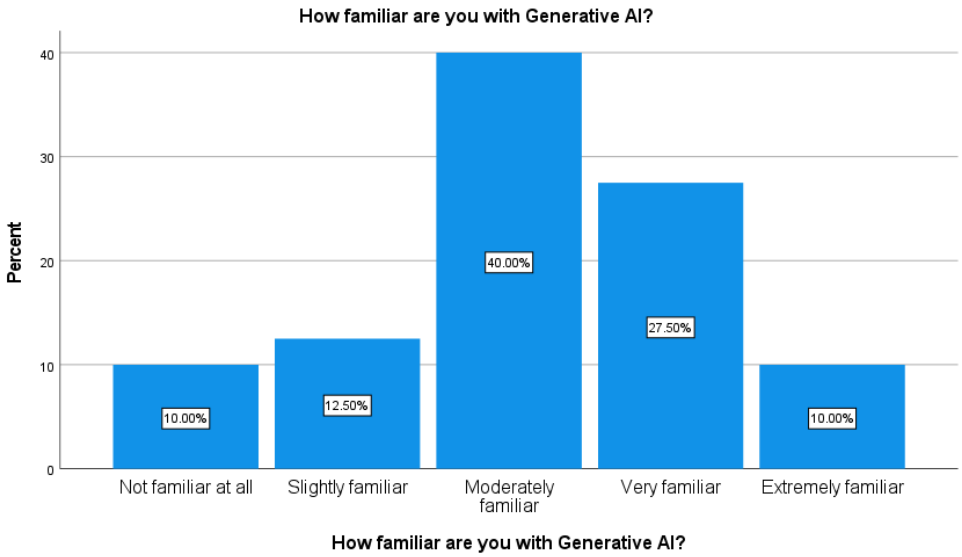

Figure 1. Familiarity with Generative AI

Table 2 and Figure 1 demonstrate that 77.5% of the respondent teachers are familiar (adding up to three levels of familiarity ranging from moderate to extremely familiar). Such a result is encouraging since the teachers have to be ready for the 21st-century requirements for teaching and learning (T&L) that will highly impact university students and their motivation to learn the English language. Having a prepared teaching staff is fundamental for the success of teaching with advanced AI artifacts and technologies. Chehimi, Hejase, & Hejase (2024) reported that "86.90% of students were satisfied with English courses at the University and 86.20% claim they have gained the necessary knowledge of English to perform better in their major courses" (p. 39). These students were taught using blended education. The aforementioned implies students possess the minimum requirements to deal with educational technology, which in turn may expand to higher levels of AI language teaching.

3.1.2 Usage of AI Tools

Table 3. Frequency of Use of AI Tools in Teaching

		Frequency	Percent
Valid	Never	4	10.0
	Rarely	12	30.0
	Sometimes	19	47.5
	Always	5	12.5
	Total	40	100.0

Being familiar with AI tools does not lead teachers to use them. Table 3 shows that 60% of the teachers claimed using AI tools sometimes (47.5%) and always (12.5%). In reality, a 60% figure is encouraging amid universities' diversity, technological endeavors, and recent reports. This result is more positive than Corrigan's (2024) report, which illustrates that "According to a poll conducted by the EdWeek Research Center, 59% of educators do not currently use ChatGPT or other artificial intelligence tools, despite the obvious benefits of using AI in language teaching and learning. Teachers just don't know where to begin or don't have the time to learn how to use all of these new tools, which is one reason why avoiding the use of AI applications" (para 3).

There are 51 universities in Lebanon (1 public and 50 private ones). Each university has its own track in adopting the latest blended education programs, and very few involve advanced AI tools in their language teaching classes. One reason for such selectivity is having the necessary technology investment and budgeting to prepare fully smart classes. Bashir, Hejase, Danach, Yassin, & Hejase (2024) illustrated such differences in the use of advanced technologies in their study of how Lebanese universities manage their social media platforms to attract and recruit potential students.

3.1.3 Identification of AI Tools Used in Teaching

Table 4. AI Tools Integrated into Teaching and Learning Processes

		Frequency	Percent
Valid	Chabots	6	15.0
	AI-based writing assistants	3	7.5
	AI-based language learning applications	5	12.5
	Other	2	5.0
	None of the above	6	15.0
	Chatbots and AI-based writing assistants	2	5.0
	Chabots and AI-based grading tools	1	2.5
	Chatbots, AI-based writing assistants, AI-based grading tools, and AI-based language learning applications	3	7.5
	AI-based writing assistants and AI-based language learning applications	9	22.5
	AI-based writing assistants, AI-based grading tools, and AI-based language learning applications	3	7.5
	Total	40	100.0

Note: AI-based applications are congruent with Edtech within Srivastava & Verma's (2024) Education 4.0 revolution.

Table 4 supports the previous question about the use of AI tools. This table shows that 22.5% of the respondents use AI-based writing assistants and AI-based language learning applications, followed by Chabots (15%), and thirdly, use AI-based language learning applications as stand-alone tools (12.5%). According to Corrigan (2024), "AI has also emerged as an invaluable educational resource, especially for language teaching and learning" (para 1). In fourth place, three combinations are used: [AI-based writing assistants]; [Chatbots, AI-based writing assistants, AI-based grading tools, and AI-based language learning applications]; and [AI-based writing assistants, AI-based grading tools, and AI-based language learning applications], each with 7.5%, respectively. Crompton & Burke (2023) posit that AI is highly used in "language learning with 17%, followed by computer science at 16%, and engineering at 12%" (p. 11). Moreover, the various GAI-enabled applications are supported by Srivastava & Verma's (2024) Education 4.0 revolution requirements.

Table 5. Unique AI Tools Chosen and Used in Teaching

		Frequency	Percent
Valid	Chabots	12	17.91
	AI-based writing assistants	20	29.85
	AI-based grading tools	7	10.45
	AI-based language learning applications	20	29.85
	Other	2	2.98
	None of the above	6	8.96
	Total	67	100.0

Table 5 was generated by counting the uniqueness of each tool, permitting repetition. Illustrated using AI-based writing assistants and AI-based language learning applications come first with about 30% each, followed by using Chatbots (about 18%), then grading tools (about 10%). About 3% voted for other tools, mostly on computer-supported textbooks. According to Eisenring et al. (2024), "The integration of Chatbots in English Language Teaching (ELT) has yielded numerous advantages for students, boosting their enthusiasm and motivation towards English language learning" (p. 136). Crompton & Burke (2023) assert that AI is highly used in "language learning" (p. 11). Therefore, using the tools above in combination and integrating them into the curriculum of teaching the English language is encouraged.

3.1.4 Effectiveness of GAI in Enhancing Student Learning

Table 6. Effectiveness of GAI Tools in Enhancing Student Learning

		Frequency	Percent
Valid	Not effective	3	7.5
	Slightly effective	8	20.0
	Moderately effective	18	45.0
	Very effective	7	17.5
	Extremely effective	4	10.0
	Total	40	100.0

Table 6 and Figure 2 demonstrate that 29 out of 40 teachers (72.5%) believe that using generative AI is effective in teaching students the English language and enhancing their learning. This fact is supported by Eisenring et al. (2024). Moreover, Liang et al. (2021) asserted that "earlier researchers primarily focused on language learning utilizing AI for writing, reading, and vocabulary acquisition capitalizing on the advantages of AI-based language learning applications like natural language processing (NLP) and intelligent tutoring systems employed." This is consistent with research by Ayse & Nil (2022) "using AI to provide automated feedback on writing in a foreign language."

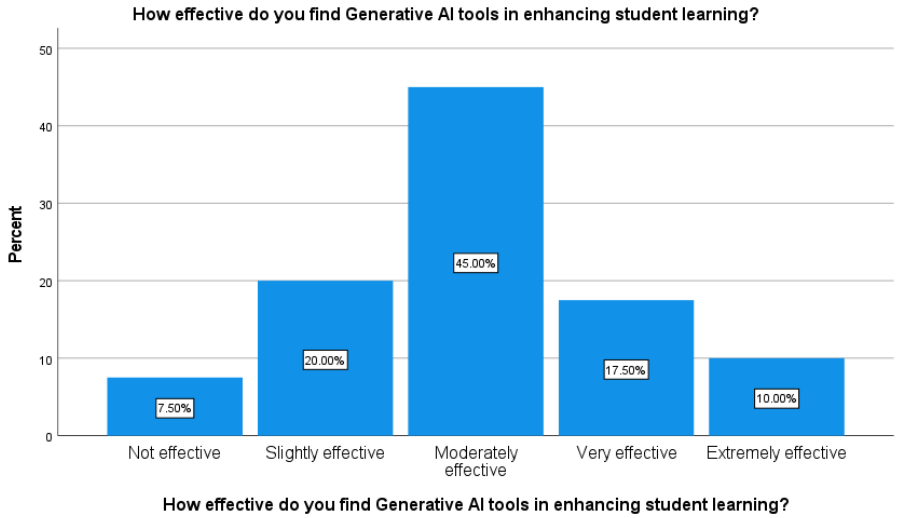

Figure 2. Effectiveness of GAI Tools in Enhancing Student Learning

3.1.5 Teachers' Confidence in Their Skills to Use GAI in Teaching

Table 7. Confidence Extent in Skills to Use GAI Tools in Teaching

		Frequency	Percent
Valid	Not confident	5	12.5
	Slightly confident	13	32.5
	Moderately confident	8	20.0
	Very confident	10	25.0
	Extremely confident	4	10.0
	Total	40	100.0

Table 7 depicts that 22 out of 40 teachers (55%) are confident (from moderate to extreme agreement levels) in themselves to use GAI in teaching students the English language and enhancing their learning. In addition, 32.5% were slightly confident. These numbers show that most teachers are not trained enough to use AI tools for teaching, and this is justified by Corrigan's (2024) report, which illustrates that "Despite the obvious benefits of using AI in language teaching and learning. Teachers just don't know where to begin or don't have the time to learn how to use all of these new tools, which is one reason why avoiding the use of AI applications" (para 3).

3.1.6 Belief that GAI Replaces Traditional Teaching Methods

Table 8. Belief That GAI Can Replace Traditional Teaching Methods

		Frequency	Percent
Valid	Strong Disagreement	8	20.0
	Disagreement	15	37.5
	Neutral	8	20.0
	Agreement	9	22.5
	Total	40	100.0

Table 8 shows that teachers were divided in their opinions about GAI replacing traditional teaching methods. However, only 57.5% rejected the fact, while 42.5% confirmed the replacement. 20% were indifferent. This result is congruent with the results obtained in Table 1, where 60% are familiar with GAI. The aforementioned justifies why

about 60% reject the fact that AI may replace traditional teaching. Researchers like Liang et al. (2021), Ayse & Nil (2022), and Eisenring et al. (2024) recommend that "the integration of generative AI into teaching enhances and supports students' engagement and interaction with their language learning, leading to better performance."

3.1.7 Exclusion of AI in Teaching

Figure 3 depicts that the majority, 72.5% of the instructors, will not exclude generative AI applications if they have the opportunity to do so, which is realistic. The rapid development of technology applications in education and language teaching, in particular, will not stop, and those teachers who do not develop their skills and knowledge will fall behind and, in the future, lose the opportunities to keep teaching. The only way to keep abreast of innovation is with self-development and universities' intervention to upskill their staff. Crompton & Burke (2023) posit that "Similar to the findings of other studies, using AI in language learning was the most common subject domain. This included writing, reading, and vocabulary acquisition" (p. 19).

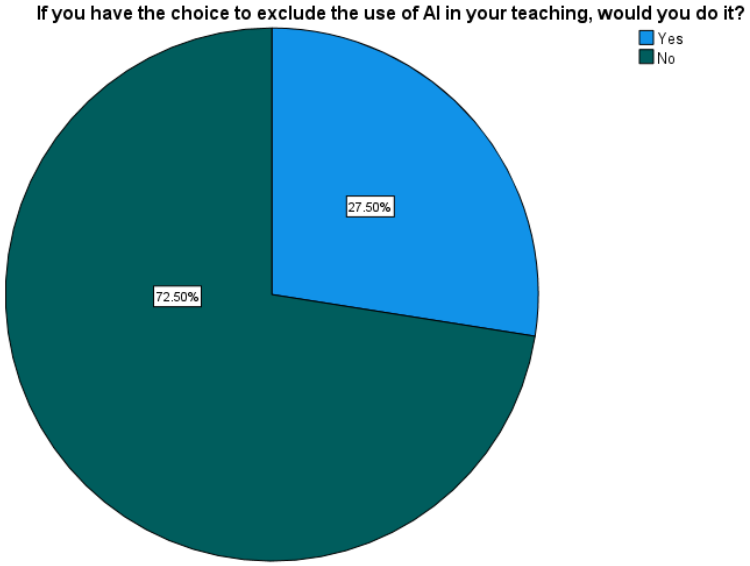

Figure 3. The Choice to Exclude the Use of AI in Teaching

3.2 Tests of Validity and Reliability

The first constructed questionnaire was presented to a panel of four academic scholars, who provided informative feedback, including a few changes. With everyone's consent, the final version improved the survey's validity. Internal reliability was tested with Cronbach's Alpha.

The resultant internal reliability values were 65.7% and 67.8% (see Table 9). Looking at the questionnaire statements, Cronbach's alpha values ranged between 0.507 and 0.781, which, according to Hejase & Hejase (2013, p. 570) and Burns & Burns (2008, p. 481), "were designated as an overall 'Good'." Chehimi, Hejase, & Hejase (2019) assert that "This shows an adequate relationship and demonstrates that the questions chosen are appropriate for the objective of the questionnaire" (p. 1915). However, looking at a Cronbach's alpha of 0.507 may raise concern for this study, since according to Hejase & Hejase (2013), "it indicates a poor strength of association of the questions/statements." However, according to Taber (2017, p. 1278), "one may tolerate such a result" quoting Griethuijsen et al. (2014) who "used an overall Cronbach's alpha of 0.446, and justified continuing with their analysis arguing that slightly increasing the number of items would lead to acceptable values for Cronbach's alpha" (Griethuijsen et al., 2014, p.589). The aforementioned value is lower than this research's alpha of 0.507. However, it is worth noting that when the six items are considered, a good value of Cronbach's alpha is reported.

Table 9. Reliability Results

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.657	0.678	6

3.3 Inferential Statistics

3.3.1 t-test

Emory University (2024) posits that "A t-test is used to determine whether a sample is representative of the total population of individuals (i.e., English instructors, for example) but does not have access to complete population data." Therefore, the purpose is to determine if our sample of 40 English instructors is generally like or unlike other English instructors. However, it is necessary to review the descriptive statistics of our sample. Table 10 provides such data.

Table 10. Descriptive Statistics of This Research's Sample

	Familiarity with GAI	Frequency of use of AI tools in teaching	Effectiveness of GAI tools in enhancing student learning	Confidence in skills to use GAI tools in teaching	Believing that GAI can replace traditional teaching methods
Mean	3.15	2.75	3.03	2.88	2.45
Median	3.00	3.00	3.00	3.00	2.00
Mode	3.00	3.00	3.00	2.00	2.00
Std. Deviation	1.099	1.080	1.050	1.223	1.061
Skewness	-0.312	0.659	0.088	0.162	0.205
Std. Error of Skewness	All constructs standard error = 0.374				
Kurtosis	-0.235	0.480	-0.130	-1.016	-1.153
Std. Error of Kurtosis	All constructs standard error = 0.733				
Minimum	1	1	1	1	1
Maximum	5	5	5	5	4

Note: Results from SPSS for this study. A total sample of 40 instructors responded.

Data from Table 10, especially values of skewness and kurtosis, as indicators for symmetry or asymmetry of data, are necessary to decide whether to continue running a t-test. According to Hair, Hult, Ringle, & Sarstedt (2022), "a skewness or kurtosis value between −1 and +1 is considered excellent, but a value between −2 and +2 is generally considered acceptable. Values beyond −2 and +2 are considered indicative of substantial nonnormality" (p. 66). Hence, the reported results comply with Hair et al.'s recommendation; therefore, a t-test was run.

The hypothesis to test:

Ho: Null Hypothesis: The sample mean equals the specified mean value of 3.00 for the population

Ha: Alternative hypothesis: The sample mean is different from the specified mean value of 3.00 of the population

Tables 11 & 12 demonstrate this study's t-test results. One can state the following:

Table 10 shows that the mean value hypothesized for the population is 3.00, i.e., the [approximate] mean of the responses of the overall English instructor population. Four statements have $p > 0.05$; therefore, all the null hypotheses are accepted, such that the mean response of instructors at the selected universities is equal to the hypothesized population mean of 3.00, and conclude that the mean opinion is about equal to 3.00. On the other hand, one statement showed $p < 0.05$; therefore, the null hypothesis is rejected, such that the sample's mean is not equal to the population hypothesized mean of 3.00. Moreover, Table 12 illustrates the Cohen's effect value for each tested hypothesis. As shown, one statement has a significant statistical size effect difference (SE > 0.5), while the other four statements are characterized by small to very small size effect differences.

Table 11. T-test: One-Sample Test

One-Sample Test						
	Test Value = 3.00					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
How confident are you in your skills to use Generative AI tools in teaching?	-.646	39	.522	-.125	-.52	.27
Do you believe that Generative AI can replace traditional teaching methods?	-3.279	39	.002	-.550	-.89	-.21
How familiar are you with Generative AI?	.863	39	.393	.150	-.20	.50
How often do you use AI-based tools in your teaching?	-1.464	39	.151	-.250	-.60	.10
How effective do you find Generative AI tools in enhancing student learning?	.151	39	.881	.025	-.31	.36

Source: Researchers' SPSS outputs.

Note: Only interval and ratio data.

Table 12. One-Sample Effect Sizes

		Standardizer[a]	Point Estimate	95% Confidence Interval	
				Lower	Upper
How confident are you in your skills to use Generative AI tools in teaching?	Cohen's d	1.223	-.102	-.412	.209
	Hedges' correction	1.248	-.100	-.404	.205
Do you believe that Generative AI can replace traditional teaching methods?	Cohen's d	1.061	-.518	-.846	-.185
	Hedges' correction	1.082	-.508	-.830	-.181
How familiar are you with Generative AI?	Cohen's d	1.099	.136	-.176	.447
	Hedges' correction	1.121	.134	-.172	.438
How often do you use AI tools in your teaching?	Cohen's d	1.080	-.231	-.544	.084
	Hedges' correction	1.101	-.227	-.534	.082
How effective do you find Generative AI tools in enhancing student learning?	Cohen's d	1.050	.024	-.286	.334
	Hedges' correction	1.070	.023	-.281	.327

a. The denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation.

Hedges' correction uses the sample standard deviation, plus a correction factor.

Source: Researchers' SPSS outputs.

3.3.2 Crosstabs

Having a sample of 40 instructors requires using Exact Tests, i.e., Exact Pearson's Chi-square and Fisher-Freeman-Halton Exact Tests. Table 13 illustrates the results of hypothesis testing for the independence of variables. It shows that four of five relationships have p-values less than the set significance value of 5%. Only one relation is characterized by a p-value larger than 5%. Then, looking at the first relationship with an exact p-value based on Pearson's statistic is 0.009, compared to 0.014 for the Fisher-Freeman-Halton Exact Test. Using the exact p-value, the null hypothesis that the two variables are independent would be rejected at the 0.05 significance level, and one would conclude that there is evidence that "How effective do you find GAI tools in enhancing student learning?" and "How familiar are you with GAI?" are related. "The Exact calculation always produces a reliable result, regardless of the size, distribution, sparseness, or balance of the data" (Mehta and Patel, 2012, p. 1). Similarly, the interpretation applies to the following crosstabs: "How effective do you find Generative AI tools in enhancing

student learning? * How often do you use AI tools in your teaching?", "How effective do you find GAI tools in enhancing student learning? * How confident are you in your skills to use GAI tools in teaching?", and "How effective do you find GAI tools in enhancing student learning? * If you had the choice to exclude the use of AI in your teaching, would you do it?" One statement did not show statistical significance; therefore, we accept the null hypothesis that the two variables are independent.

The Crosstabs show a one-to-one relationship and ensure that, according to the sample instructors, the effectiveness of GAI tools in enhancing student learning increases when the instructors are familiar with the new AI application, when they often use the tools in teaching when they are confident in their skills to use GAI tools in teaching, and when they embrace the use of GAI tools for teaching. These findings assert the positive disposition of the instructors towards GAIs; however, theoretically, since no evidence was collected for them using the tools. This last observation may be considered a limitation in generalizing the findings of this study.

Table 13 illustrates that the sample instructors believe that the effectiveness of GAI tools in enhancing student learning does not relate to believing that GAI can replace traditional teaching methods.

Table 13. Crosstabs Exact Test: [Null hypothesis that the two variables are independent, α = 5%]

	Pearson Chi-Square	df	Exact Sig. (2-sided)	Fisher-Freeman -Halton Exact Test	Exact Sig. (2-sided)	Pearson's R	Sig	Spearman Correlation	Sig
How effective do you find GAI tools in enhancing student learning? * How familiar are you with GAI?	32.140	16	0.009	23.182	0.014	0.375	0.017	0.351	0.026
How effective do you find GAI tools in enhancing student learning? * How often do you use AI tools in your teaching?	40.639	12	0.000	22.013	0.004	0.594	0.000	0.505	0.001
How effective do you find GAI tools in enhancing student learning? * How confident are you in your skills to use GAI tools in teaching?	45.263	16	-	28.168	0.001	0.442	0.004	0.389	0.013
How effective do you find GAI tools in enhancing student learning? * Do you believe that GAI can replace traditional teaching methods?	17.954	12	0.108	14.464	0.149	- 0.195	0.229	- 0.217	0.178
How effective do you find GAI tools in enhancing student learning? * If you have the choice to exclude the use of AI in your teaching, would you do it?	9.996	4	0.037	8.386	0.047	0.339	0.032	0.328	0.039

3.3.3 Regression Model

Dependent Variable: How effective do you find GAI tools in enhancing student learning?

Independent Variables: What AI tools do you use in your teaching?

How often do you use AI tools in your teaching?

The resultant regression model tested the relationship between each of the two explanatory variables versus the effectiveness that the instructors find in GAI tools in enhancing student learning. The results of the regression details are reported in Tables 14, 15, and 16. The model shows a moderate strength in Pearson's coefficient of correlation and small coefficients of determination suggesting that they fit the available data (Table 14); additionally, the models' significant probabilities of 0.000 ($p < \alpha = 0.05$) and 0.064 ($p < \alpha = 0.10$) suggest that these are appropriate qualitatively (Table 16). The regression equation obtained from ANOVA testing (refer to Table 15) with an F-value of 12.880 (Sig. $P = 0.000 < \alpha = 5\%$) ensures that the results are more accurate than would be predicted by chance. In addition, the standardized betas shown in Table 16 (with one Sig. $P < 5\%$ and one Sig. $P < 10\%$) are statistically significant. Furthermore, as indicated by the Variance Inflation Factors (VIFs) in Table 16, all VIF values are less than 2; therefore, there is no multicollinearity and the explanatory variables are suitable for establishing causal associations using regression (Younis, Hejase, Abdallah, Haddad, & Hejase, 2021, p. 26; Hejase et al., 2023a, p. 149; Hejase et al., 2024, p. 39;)

Table 14. Regression Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	**F Change**	**df1**	**df2**	**Sig. F Change**	
1	.641[a]	.410	.379	.827	.410	12.880	2	37	.000	2.238

a. Predictors: (Constant), What AI tools do you use in your teaching? How often do you use AI tools in your teaching?

b. Dependent Variable: How effective do you find Generative AI tools in enhancing student learning?

Table 15. Regression Model ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.639	2	8.820	12.880	.000[b]
	Residual	25.336	37	.685		
	Total	42.975	39			

a. Dependent Variable: How effective do you find Generative AI tools in enhancing student learning?

b. Predictors: (Constant), What AI tools do you use in your teaching? How often do you use AI tools in your teaching?

Table 16. Regression Model Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	**Std. Error**	**Beta**			**Tolerance**	**VIF**
1	(Constant)	1.143	.394		2.905	0.006		
	How often do you use AI tools in your teaching?	.524	.126	.539	4.165	0.000	.951	1.051
	What AI tools do you use in your teaching?	.067	.035	.247	1.909	0.064	.951	1.051

a. Dependent Variable: How effective do you find Generative AI tools in enhancing student learning?

Note: Sig. P of 0.064 is considered valid at 10% significance.

The resultant regression equation:

[How effective do you find Generative AI tools in enhancing student learning?]

= 0.539 [How often do you use AI tools in your teaching?] + 0.247 [What AI tools do you use in your teaching?].

Several regression analyses (not shown here due to space limitations) were conducted to examine the impact of GAI on English language teaching, with the dependent variable being [How effective do you find GAI tools in enhancing student learning?], and regressed against several explanatory variables, including [How confident are you in your skills to use GAI tools in teaching?], [Do you believe that GAI can replace traditional teaching methods?], [How familiar are you with GAI?], [How often do you use AI tools in your teaching?], [What AI tools do you use in your teaching?], and [If you had the choice to exclude the use of AI in teaching, would you do it?]. All the explanatory variables tested were statistically non-significant (Sig. P > 10%) except for two, as shown in Table 16. Therefore, the study's findings indicate that the impact of GAI on enhancing student English language learning depends on the frequency of AI tools use and the specific tools employed. As previously mentioned, 60% of teachers occasionally (47.5%) or always (12.5%) used AI tools. In reality, this 60% usage rate among instructors is an encouraging result given the diversity of universities, technological efforts, and recent reports. This outcome is more positive than Corrigan's (2024) finding that 59% of instructors do not use ChatGPT or other AI tools in teaching. Additionally, Lee et al. (2024) found that their survey participants most frequently used AI tools for teaching, at 48.3%. Regarding which GAI tools are used for teaching English, Table 5 shows that AI-based writing assistants and language learning applications are the most common, each accounting for about 30%, followed by Chatbots (around 18%) and grading tools (approximately 10%). It is worth noting that many researchers have explored the benefits and growing trends of AI-based assistance and learning tools (Arnold, Chauncey, & Gajos, 2020; Gayed et al., 2022). Moreover, Eisenring et al. (2024) state that "The integration of Chatbots in English Language Teaching (ELT) has yielded numerous advantages for students, boosting their enthusiasm and motivation towards English language learning" (p. 136). Furthermore, Crompton & Burke (2023) assert that AI is extensively used in "language learning" (p. 11).

4. Conclusion and Recommendations

4.1 Conclusion

This paper aims to highlight the influence of GAI tools on the teaching of the English language. Two research questions are explored and investigated. Results for these questions are presented sequentially to provide a concise summary of the findings.

1. Is there an effective impact of how instructors find GAI tools in enhancing student learning, and the AI tools used?

Descriptively, 77.5% of the respondent teachers are familiar (on average ranging from moderately to extremely familiar). Such a result is encouraging since the teachers have to be ready for the 21st-century requirements for teaching and learning (T&L) that will highly impact university students and their motivation to learn the English language. Also, 55% of teachers are confident in themselves to use GAI in teaching students the English language and enhancing their learning. In addition, 32.5% were slightly confident. These numbers show that most teachers are not trained enough to use AI tools for teaching, and this is justified by Corrigan's (2024) report, which illustrates that "Despite the obvious benefits of using AI in language teaching and learning. Teachers just don't know where to begin or don't have the time to learn how to use all of these new tools, which is one reason why avoiding the use of AI applications" (para 3). Therefore, having a prepared teaching staff is fundamental for the success of teaching with advanced AI artifacts and technologies (Chehimi et al., 2024). However, being familiar with AI tools does not lead teachers to use them. Table 3 supports the aforementioned in that 60% of the teachers use GAI tools sometimes (47.5%) and always (12.5%). In reality, a 60% figure is encouraging amid universities' diversity, technological endeavors, and recent reports. This result is more positive than Corrigan's (2024) report, which illustrates that "According to a poll conducted by the EdWeek Research Center, 59% of educators do not currently use ChatGPT or other artificial intelligence tools, despite the obvious benefits of using AI in language teaching and learning. Teachers just don't know where to begin or don't have the time to learn how to use all of these new tools, which is one reason why avoiding the use of AI applications" (para 3). Findings reported in Table 6 illustrate that 72.5% of teachers think that employing generative AI is beneficial for teaching students the English language and improving their learning. Eisenring et al. (2024) provide support for this fact. Liang et al. (2021) claimed that "previous researchers mainly concentrated on language learning by using AI for writing, reading, and vocabulary development, leveraging the benefits of AI-driven language learning tools such as natural language processing (NLP) and

intelligent tutoring systems utilized." This aligns with the findings of Ayse & Nil (2022) "utilizing AI to deliver automated responses on writing in a second language." Finally, results show that a significant 72.5% of instructors will not choose to exclude GAI applications if given the chance, which is likely. The swift advancement of technology use in education, especially in language instruction, will continue, and teachers who fail to enhance their skills and knowledge will lag behind and eventually miss out on chances to continue teaching. The sole method to stay updated on innovation is through self-improvement and universities' involvement to enhance their employees' skills. Crompton & Burke (2023) suggest that "Like the results from other research, employing AI in language education was the prevalent subject area. This encompassed writing, reading, and gaining vocabulary" (p. 19).

Further crosstab results validate the above, whereby statistically significant evidence supports the relationships: "How effective do you find GAI tools in enhancing student learning?" * "How familiar are you with GAI?"; "How effective do you find Generative AI tools in enhancing student learning? * "How often do you use AI tools in your teaching?"; "How effective do you find GAI tools in enhancing student learning? * How confident are you in your skills to use GAI tools in teaching?"

2. What AI tools are being integrated into teaching and learning processes?

Table 4 reinforces the aim of this research. This table indicates that 22.5% of teachers utilize AI-driven writing aids and AI-focused language learning apps, followed by Chatbots at 15%, and in third place, using AI language learning apps as independent tools at 12.5%. As noted by Corrigan (2024), "AI has become an essential educational tool, particularly in the realms of language instruction and acquisition" (para 1). In fourth position, three combinations are deployed: "AI-driven writing aids, Chatbots, AI-driven writing aids, AI-driven grading tools, and AI-driven language learning apps, and AI-driven writing aids, AI-driven grading tools, and AI-driven language learning apps. All share 7.5%. Crompton & Burke (2023) suggest that AI's usage is prominent in "language learning at 17%, followed closely by computer science at 16%, and engineering at 12%" (p. 11). Moreover, Table 5 illustrates that AI-driven writing assistants and AI language learning apps lead with approximately 30% each, followed by Chatbots at around 18%, and then grading tools at roughly 10%. Approximately 3% opted for alternative tools, primarily focused on computer-assisted textbooks. These results are recorded by tallying the distinctiveness of each tool. As per Eisenring et al. (2024), "Incorporating Chatbots in English Language Teaching (ELT) has provided multiple benefits for learners, enhancing their interest and motivation for learning the English language" (p. 136). Crompton & Burke (2023) claim that AI is extensively utilized in "language learning" (p. 11). One concern arises when dealing with GAI integration. Results from Table 8 indicate that teachers had differing views on whether GAI replaces conventional teaching methods. 57.5% of them denied the fact, whereas 42.5% affirmed the substitution. 20% showed a lack of concern. This outcome aligns with the finding that 60% are aware of GAI. This explains why 57.5% do not accept that AI could take the place of conventional teaching. According to researchers such as Liang et al. (2021), Ayse & Nil (2022), and Eisenring et al. (2024), "incorporating GAI into education improves and fosters students' involvement and interaction with their language studies, resulting in enhanced outcomes."

Regression analysis supports both research questions, providing statistical support that the effect of GAI on improving student English language acquisition is influenced by how often AI tools are used and which specific tools are utilized. As noted earlier, 60% of educators sometimes (47.5%) or consistently (12.5%) utilized AI tools. This 60% utilization rate among educators is an initial positive outcome considering the variety of universities, technological initiatives, and recent findings.

In conclusion, despite the lack of more in-depth inferential analysis results, t-test and regression analysis, and the descriptive statistics suggest that GAI tools have prospective applications, as opined by the sample of instructors from Lebanon and Turkey. The findings of the current exploratory research give the researchers a positive insight and hope, and they intend to carry out a larger study with more participants and different assessment tools. In addition, the findings of this exploratory research provide first-hand insight for teachers, other researchers, English departments' policymakers, and educational institutions to carry out a University-wide campaign to foster guided GAI applications, provided the appropriate policies are set beside the required investment in selected GAI applications as a start.

4.2 Limitations

Several limitations need to be outlined. First, although the respondents were taught in different contexts, the small sample size prevents us from generalizing. Second, as a condition of participating in the survey, having tried GAI at least once, results reflect instructors with a higher degree of mastery and familiarity with GAI, thus leading to an overrepresentation of favorable perceptions. Third, instructors' perceptions may change, and there is no guarantee that they will result in actions. Last, while inferential analysis sheds light on the relationship between the instructors'

perceptions of the impact of GAI and a few explanatory variables, determining causality necessitates further development and more in-depth analysis using a more developed survey.

4.3 Recommendations

Fostering teachers to adopt and adapt to the new wave of GAI applications for English language teaching (along the four required dimensions of listening, speaking, reading, and writing) requires them to undergo training and development about the existing GAI tools, including Chatbots, AI-based writing assistants, AI-based assessment and grading, and AI-based language learning applications. For such an endeavor, the following recommendations are suggested:

1. It is vital to comprehend language instructors' current level of preparedness and how to best equip them with the competencies required to teach successfully in the GAI-age, given according to Moorhouse (2024), "the quick uptake of these tools by students and their potential to drastically alter the educational landscape."
2. The current research found that 77.5% of the respondent teachers are familiar with GAI applications; however, only 55% of these instructors are confident (from moderate to extreme agreement levels) in using generative AI in teaching students. Given the status quo of English language instructors, it is possible that they weren't prepared to include GAI in their teaching programs, given what we know about teacher educators' technological proficiency (described as average or less than average) in the sample and abroad as reported by Lindfors, Pettersson, & Olofsson (2021). Research on GAI readiness (Kohnke, Moorhouse, & Zou, 2023b; Kaplan-Rakowski, Grotewold, Hartwick, & Papin, 2023) has revealed that "experienced in-service instructors were similarly unprepared." Therefore, HEIs must encourage their teaching staff, offering incentives, and developing them with the necessary competencies and knowledge to add the required GAI tools to their teaching as recommended by McGarr & McDonagh (2019) as well.
3. The researchers in this study assert that the rapid evolution and development of GAI applications leave institutions behind regarding assumptions about ethical conduct and copyright policies concerning plagiarism, the dependability, accuracy, and innate cultural biases of the generated writings. Therefore, HEIs have to continuously be abreast of new regulations and practices concerning the use of GAI by instructors and students.
4. It is important for HEI executives to recognize and appreciate the efforts made by instructors to digitize teaching methods. To put it another way, the authors of this study and other researchers (Uerz, Volman, & Kral, 2018; Lindfors, Pettersson, & Olofsson, 2021) recommend that leaders ought to prioritize this issue and demonstrate their willingness to provide instructors with the proper technology infrastructure and the best possible individual, collegial, and organizational settings so that instructors are equipped with the professional digital competence required to instruct students in increasingly digitalized educational institutions.

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Appendix

Survey on the Impact of Generative AI on English Language Teaching

This survey is intended to test the status of Generative Artificial Intelligence (AI) in language teaching. Accordingly, it consists of a set of ten questions, six of which use a 5-level Likert scale and four are open questions. Your cooperation and voluntary participation are highly appreciated. Responses do not reflect in any manner your identity, therefore preserving your confidentiality. All data generated will be used for scientific academic research.

Feel free to withdraw at any time, no questions asked.

Thank you

The researcher

Kindly mark your preferred answer by circling the response of your choice.

No.	Statement	Extremely familiar	Very familiar	Moderately familiar	Slightly familiar	Not familiar at all
1	How familiar are you with Generative AI?	5	4	3	2	1

No.	Statement	Always	Often	Sometimes	Rarely	Never
2	How often do you use AI tools in your teaching?	5	4	3	2	1

3. What AI tools do you use in your teaching? Select all that apply

1. Chatbots
2. AI-based writing assistants
3. AI-based grading tools
4. AI-based language learning apps
5. Other
6. None of the above

No.	Statement	Extremely effective	Very effective	Moderately effective	Slightly effective	Not effective
4	How effective do you find Generative AI tools in enhancing student learning?	5	4	3	2	1

5. Write one Strategy that you use to integrate Generative AI into your English teaching.

_____

No.	Statement	Extremely confident	Very confident	Moderately confident	Slightly confident	Not confident
6	How confident are you in your skills to use Generative AI tools in teaching?	5	4	3	2	1

7. Can you describe any creative ways you have used Generative AI in your classes?

_____

No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
8	Do you believe that Generative AI can replace traditional teaching methods?	5	4	3	2	1

9. What challenges have you faced in using Generative AI in your teaching?

_____

10. If you have the choice to exclude the use of AI in your teaching, would you do it?

1. Yes 2. No

Thank you for your time

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Participants were explicitly informed of the research goals and were assured of the confidentiality of their answers; thus, every participant willingly provided their responses and expressed no objections or concerns, whether physical or emotional, during this process. No clinical trials, procedures, or medical tests were necessary or conducted.

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