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Using Artificial Intelligence in English As A Foreign Language Classrooms: Ethical Concerns and Future Prospects

Amal Abdul-Aziz Mohammad Al-Othman
Department of English Language and Literature, College of Languages and Translation, Imam Mohammad Ibn Saud Islamic University (IMSIU)
Email: aalothman@imamu.edu.sa

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Abstract

This qualitative study aimed to explore how teachers of English perceive the advantages and disadvantages of using artificial intelligence by Saudi students who study English as a Foreign Language. The study used semi-structured interviews to delve into teachers' pedagogical beliefs, ethical concerns, and expectations regarding using artificial intelligence tools by Saudi students, using a college of English language in a public university as a case study. The main research question focused on examining the positive and negative impacts of artificial intelligence on students' language performance. The study findings revealed several themes from teachers' interviews, including strategies for implementing artificial intelligence in the classroom, the impacts of artificial intelligence on students' language proficiency, and the importance of guiding students to effectively use artificial intelligence applications. The findings also highlighted teachers' expectations for expanding open-source language learning online channels and the widespread use of robots in English classrooms. The study recommends aligning professional development programs with language curricula to equip teachers with the necessary skills for effectively integrating artificial intelligence technologies into the classroom. The significance of this study stems from its contribution to the current debate on using artificial intelligence in education, presenting empirical evidence on its impacts on students' language performance.

Keywords: artificial intelligence, artificial intelligence applications, ChatGPT, education technology, English as a Foreign Language, language education

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Introduction

Artificial Intelligence technology equips educators and students in higher education with numerous tools to optimize complex tasks, enhancing the teaching and learning experience. Artificial intelligence is improving conventional educational approaches by enriching personalized and interactive learning experiences, while also offering ongoing automated feedback to assess teaching and learning processes more effectively (Baidoo-Anu & Owusu-Asah, 2023). Virtual classrooms, automated evaluation systems, language learning applications, chatbots, and telepresence robots, offer immersive and engaging learning experiences, enabling teachers and students to discover appropriate solutions for learning problems (Chen et al., 2022). According to Ouyang and Jiao (2021), the shift that artificial intelligence brings to education is defined by three paradigms: enhancing cognitive learning, supporting collaboration among learners, and empowering learners as leaders. In this respect, Ouyang and Jiao (2021) state, "Artificial intelligence (AI) is used to represent and direct cognitive learning while learners are recipients of AI service" (p.2). Artificial intelligence technologies perceive learning as the reinforcement of knowledge acquisition through structured instructions that provide immediate feedback on students' learning, which can help improve the quality of education.

In Saudi Arabia, educators are focused on enhancing the quality of education, particularly within the domain foreign language instruction. While policymakers prepare to equip classrooms with modern technologies, teachers are actively exploring new teaching methods to effectively integrate artificial intelligence technologies into their daily instructional strategies. Artificial intelligence assists teachers in data gathering, monitoring learning progress, and devising innovative strategies. Comparing traditional instructional environments to artificial intelligence technology-based learning settings, research like those of Divekar et al. (2022), Jia et al. (2022), and Song and Song (2023) indicated that the collaboration between artificial intelligence and humans offers learning experiences that boost engagement, contributing to the development of foreign language acquisition. Artificial intelligence scaffolds students' learning, especially students who study English as a Foreign language (EFL), reducing anxiety when using English in diverse social situations (El Shazly, 2021; Huang et al., 2023). Artificial intelligence assists students in acquiring writing, speaking, listening, and reading skills, for developing English proficiency (Junaidi et al., 2020; Kang,2022; Soleimani et al., 2022; Song & Song, 2023). Artificial intelligence provides students with authentic learning opportunities to enhance self-regulated learning (Jia et al., 2022; Hsu et al., 2023). Nevertheless, some questions remain unanswered regarding teachers' ethical concerns about using artificial intelligence, the extent to which teachers receive adequate professional development programs to effectively incorporate artificial intelligence into their instruction, and whether students use artificial intelligence applications appropriately.

Therefore, the research problem that the current study addresses focuses on examining teachers' concerns regarding the advantages and disadvantages of using artificial intelligence tools in the classroom. Many teachers believe that while these tools may help students develop their language proficiency, however, the ineffective use of such applications raises crucial ethical issues, including plagiarism. Teachers also complain that students' excessive use of artificial intelligence negatively impacts their autonomous learning. Many teachers also complain that there is not adequate professional development for incorporating artificial intelligence in the classroom.

The rise of artificial intelligence, such as ChatGPT, in higher education has sparked considerable debate surrounding ethical issues that could potentially impede the optimal use of

artificial intelligence tools in classrooms and influence their broader implications (Wylde et al., 2023). Although artificial intelligence technologies have the potential to impact language education by providing personalized learning experiences for students and automating administrative tasks for teachers, there is not adequate incorporation of artificial intelligence educational tools by teachers, and there is limited understanding of teachers' concerns (Choi, 2022). Rather than solely emphasizing the adoption of artificial intelligence solutions from a technological standpoint, there is a need to shift focus towards understanding teachers' perspectives. Specifically, exploring how teachers can effectively utilize these tools in English as a Foreign Language (EFL) classrooms to enhance meaningful learning experiences (Tammets & Ley, 2023). There is a gap in the literature regarding exploring teachers' pedagogical beliefs and concerns about utilizing artificial intelligence technologies in EFL classrooms. This gap highlights the need to understand teachers' expectations. It is also crucial to emphasize the importance of studying how enhancing teachers' knowledge and training in integrating artificial intelligence tools into education can promote optimal practices for language learning (Celik, 2023; Choi et al., 2022; Shadiev et al., 2023). The main aim of the current study is an attempt to fill this gap.

The primary objectives of this study focused on exploring female teachers' classroom experiences regarding the benefits and drawbacks of integrating artificial intelligence into English as a Foreign Language classrooms, their concerns and expectations for artificial intelligence in higher education, and the impact of artificial intelligence on students' language performance To this end, the present study's significance lies in its contribution to the ongoing debate about the use of artificial intelligence in education, providing empirical evidence of its effects on students' language performance.

The current study attempts to answer the following three research questions:
1. What are the perspectives of English as a Foreign Language instructors on the benefits and drawbacks of utilizing artificial intelligence within their classrooms?
2. How does the implementation of artificial intelligence impact students' language proficiency?
3. How does professional development influence teachers' beliefs, use, and apprehensions about integrating artificial intelligence into their teaching practices?

Literature Review

Artificial Intelligence: Definitions and Theoretical Framework

Artificial intelligence refers to a computational system possessing human-like capabilities, specifically intelligence, that can execute tasks that traditionally rely on human intelligence (Guerrero et al., 2022). These tasks encompass visual perception, speech recognition, language modeling, language translation, and decision-making. Thus, artificial intelligence in education involves collaboration among professionals, including system designers, linguists, and education experts. Together, they aim to create intelligent education systems to assist teachers and learners in developing adaptable knowledge and skills suited for constantly shaping the future of education (Grassini, 2023, p. 692). This interaction results in enhancing human capabilities by integrating artificial intelligence technology to boost cognitive functions, promoting augmented humanity (Guerrero et al., 2022). Therefore, the theory of human augmentation is widely used in artificial intelligence. Augmented humanity involves integrating human-computer technologies to enhance capacity and productivity, expanding human physical, intellectual, and social capabilities beyond normal limits (Guerrero et al., 2022, p. 514). Thus, human augmentation leverages the integration

of human and artificial intelligence capabilities to surpass human potential, enhancing overall efficiency (De Boeck & Vaes, 2024), and amplifying creativity and motivation (Lin & Wang, 2023). Artificial intelligence tools are employed to integrate virtual and real-world experiences, improving language learners' comprehension through simulated tools, applications, websites, audiovisual aids, and real-time machine translation tools during language practice. In this respect, Kessler et al. (2023) used a pretest-posttest to examine the effectiveness of *Babbel* and *Duolingo* apps (which utilize gamification techniques, and interactive exercises to help students learn languages), revealing that students developed various language skills, including reading, writing, speaking, listening, vocabulary, and grammar. In a similar study, Klimova (2021) investigated the impact of artificial intelligence language apps on students' learning, indicating that artificial intelligence technologies provide L2 students with immersive and authentic environments that help them develop learning autonomy. Junaidi et al. (2020) corroborated these findings, employing Lyra Virtual Assistant (LVA) app, which is used to assist learners to improve communication, revealing significant results in developing speaking skills. Hsu (2024) found that artificial intelligence provided L2 learners with situated learning experiences to immerse themselves in interactive virtual environments that simulate real-life situations, making language learning more engaging. Similarly, Qiu et al. (2023) conducted a study comparing students' language proficiency development between virtual reality-based learning methods and traditional approaches, highlighting the superior impact of artificial intelligence on enhancing student outcomes. In a different study, Bacca-Acosta et al. (2022) found that virtual reality scaffolding features played crucial roles in helping English learners understand conceptual information. Likewise, in their comparative analysis, Feng and Ng (2023) showed that learners using immersive virtual reality outperformed those in conventional classrooms in terms of word usage, lexical density, and task completion, thus, enhancing vocabulary use in writing.

Potentials and Challenges of Using Artificial Intelligence in the English Classroom

Artificial intelligence in education holds potential benefits, revolutionizing conventional approaches to teaching and learning by increasing efficiency, refining learning outcomes, providing personalized instruction, and fostering student engagement (Chen et al., 2022; Grassini, 2023; Hsu, 2024; Huang et al., 2023). In this context, Baidoo-Anu and Owusu Ansah (2023) explored the advantages of artificial intelligence, such as ChatGPT, in enhancing teaching and learning. They underscored its ability to facilitate interactive learning, language translation, personalized tutoring, adaptive learning, and automated grading. Similarly, Kim et al. (2019) indicated that effective utilization of artificial intelligence tools in teaching foreign languages can be valuable pedagogical aids. Chatbots play pivotal roles in equipping students with language knowledge and skills, improving students' communication skills by enhancing the frequency of their interactions. Furthermore, artificial intelligence provides various tools for teachers to improve instructional designs, teaching methodologies, learning environments, and interactions with students (Celik, 2023; Jiang, 2022). In this respect, Ouyang and Jiao (2021) stated, "Multiple AI implementations, such as the dialogue-based tutoring systems (DTSs) or the exploratory learning environments (ELEs) have been developed to achieve [….] mutual interactions between the system and the learners" (p. 3). In other words, an advantage of using artificial intelligence tools is to promote learning that is based on collaboration.

While previous research found that the implications of artificial intelligence in education have increased due to its ability to make predictions, diagnoses, recommendations, and decisions,

which empowered learning in higher education, (Rahiman & Kodikal, 2023), however, there are some challenges for utilizing artificial intelligence tools in teaching and learning (Chen et al., 2022; Nguyen et al., 2023; Sharma et al., 2019). Previous research highlighted some of the disadvantages of using artificial intelligence in education. For example, Yang et al. (2021) argued that "artificial intelligence focuses more on perception and human audiovisual literacy, which is the ability to see, hear, read, and write. Therefore, we should focus on cultivating students' cognitive thinking in addition to their computational thinking" (p. 3). Previous studies also investigated other threats of artificial intelligence to education, including compromising academic integrity, normalizing plagiarism, and diminishing human creative abilities. In this regard, Chan (2023) emphasized various considerations essential for effectively integrating artificial intelligence into education. These considerations are structured within a comprehensive framework for university teaching and learning, encompassing pedagogical, governance, and operational dimensions. The pedagogical aspect focuses on examining the impacts of artificial intelligence on educational outcomes, while the governance facet deals with concerns surrounding privacy, security, and accountability. The operational aspect deals with infrastructure and training requirements.

Effects of Artificial Intelligence on Students' Language Performance

According to previous studies (Divekar et al., 2022; Jiang, 2022; Junaidi et al., 2020; Kang, 2022; Song & Song, 2023), using artificial intelligence technology in the classroom helps improve language acquisition, and consequently increases students' performance, developing comprehensive language skills. Affirming these findings, El Shazly (2021), Junaidi et al. (2020), and Kang (2022) revealed the positive impacts of artificial intelligence on students' speaking performance. These studies concluded that artificial intelligence technologies enhance the development of speaking skills in learners. This is attributed to students' increased engagement during interactions with artificial intelligence, which surpasses their interactions with peers in traditional classroom settings. Likewise, Soleimani et al. (2022) reported positive effects of artificial intelligence tools, assisting repeated reading, on incidental vocabulary learning in English as a Foreign Language contexts. Huang et al. (2023) revealed that artificial intelligence assisted students in learning various language skills, encompassing writing, reading, vocabulary, speaking, and listening. The study emphasized the frequent use of natural language processing and automated speech recognition to aid students in improving their language skills.

Additionally, Guo et al. (2021) found that with the assistance of artificial intelligence-powered grammatical checking software, students were able to improve not only their grammar usage but also engage in daily writing practices, acquiring writing strategies that helped them improve learning outcomes. In another study, Kim et al. (2019) investigated the effects of artificial intelligence chatbots on students' overall language proficiency. Their findings confirmed that students showed enhanced mastery of language knowledge, including grammar and vocabulary, as well as improvements in listening, speaking, and reading skills. Junaidi et al. (2022) employed a quasi-experimental approach with pre-test and post-test measurements, to assess four components of speaking skills: pronunciation, grammar, vocabulary, and fluency, indicating a significant improvement in the post-test scores of the experimental group utilizing artificial intelligence tools, compared to the control group using conventional methods. In the same vein, Hsu et al. (2023) investigated the influence of artificial intelligence-assisted image recognition technologies on learners' vocabulary knowledge, and self-regulation. The results indicated that

experimental learners experienced improvements in vocabulary knowledge and self-regulation while reducing language learning anxiety. Thus, artificial intelligence technologies have positive impacts on students' competencies, improving cognitive abilities and learning perception (Zheng et al., 2023), developing self-regulated learning (Hsu et al., 2023), and enabling immersive virtual reality environments (Bacca-Acosta et al., 2022), all of which affect students' engagement and motivation (Song & Song, 2023), and consequently language performance.

The Importance of Professional Development for the Future of Artificial Intelligence

Since the potential benefits of artificial intelligence in language education are impeded by ethical concerns, it is important to ensure that teachers guide students to use it appropriately. Findings from the study by Nguyen et al. (2023) shed light on crucial aspects regarding the use of artificial intelligence in education, emphasizing that the integration of artificial intelligence into educational practices must focus on providing more opportunities for academic development. In this respect, Tammets and Ley (2023) predicted that studies would develop new models for teacher professional development, assisting teachers in effectively integrating artificial intelligence into their instructional practices. Previous research (Gegenfurtner et al., 2020; Tammets & Ley, 2023; van Leeuwen et al., 2023) indicated that pedagogical practices can take advantage of artificial intelligence technologies by exploring innovative methods for using artificial intelligence in the classroom. For instance, Tammets and Ley (2023) proposed a conceptual model that highlights the potential of artificial intelligence to enhance various aspects of teaching, including teacher noticing, decision-making, adaptive teaching, alignment with competence frameworks, and cultivation of professional vision. Professional vision involves recognizing and interpreting relevant details in classroom situations through noticing and reasoning, leading to adaptive teaching strategies tailored to students' unique needs. This model emphasizes three key elements: teacher training, artificial intelligence solution design, and the development of professional vision through research-practice partnerships. In a different study, Campos et al. (2023) highlighted the importance of teachers' understanding of artificial intelligence tools' functionalities and underlying pedagogical models for their effective integration into education. The study emphasized the necessity for teachers to trust the outputs of artificial intelligence tools and incorporate them meaningfully into their practices. In this regard, Meniado (2023) suggested that when incorporating artificial intelligence tools into the professional development of English as a Foreign Language, teachers can effectively address significant concerns in the classrooms, such as threats to academic integrity, data security, and educational equality.

There is a gap in the existing literature concerning adequate exploration of teachers' pedagogical beliefs and ethical concerns regarding the use of artificial intelligence technologies in English as a Foreign Language classrooms. This gap underscores the necessity of comprehending teachers' perspectives and expectations. Furthermore, it is crucial to emphasize the significance of investigating the impact of enhancing teachers' knowledge and training in integrating artificial intelligence tools into education to promote optimal practices for language learning

Method

The current study employed a qualitative research method to explore the advantages and disadvantages of using artificial intelligence technologies in education, specifically in English as a Foreign Language classrooms. The study utilized semi-structured interviews to investigate teachers' pedagogical beliefs, ethical concerns, and expectations regarding the use of artificial intelligence tools among Saudi female students. The research was conducted at a collage of English

language in a public university, in Riyadh, Saudi Arabia. The study sample was non-randomly selected from female teachers who taught English during the third term of the academic year 2023.

Participants

The current study employed a qualitative research approach, centering on a case study involving a focused group of only female teachers of English to investigate their pedagogical beliefs and apprehensions regarding the integration of artificial intelligence within the classroom setting. Utilizing a purposive sampling technique, twenty-four EFL female instructors affiliated with the English department at a public university, in Riyadh, Saudi Arabia participated in this study.

Research Instruments

The researcher employed a semi-structured interview method, validated through a pilot study, which included a statement of consent to inform participants about the research's purpose and obtain their approval to participate. The utilization of NVivo (version 14) software facilitated a systematic approach to data coding and analysis, thereby enhancing the validity and reliability of the study. Comprising two sections, the interview began with standardized closed-ended questions to gather demographic data including age, nationality, languages spoken, teaching and technology experience, and courses taught. The second part included six open-ended questions designed to capture participants' viewpoints on the benefits and drawbacks of artificial intelligence in English as a Foreign Language classrooms, its influence on students' language skills, and ethical issues surrounding students' use of artificial intelligence.

Research Procedures

For data analysis, NVivo (version 14) was utilized. This software facilitated comprehensive text analyses by enabling the identification of themes within the collected data. Initial data codes were assigned to capture participants' experiences with artificial intelligence-mediated instruction, which were then organized into potential themes reflecting significant patterns concerning the effects of artificial intelligence on English as a Foreign Language classrooms.

Research Limitation

It is important to discuss the current study's limitations. The present study was conducted on a small scale, collecting data from only twenty-four participants who teach English as a Foreign Language (EFL) to female undergraduate students. The small sample served as a focus group, allowing for a thorough qualitative analysis of teachers' pedagogical beliefs and concerns regarding the integration of artificial intelligence in EFL classrooms. The sample did not include male teachers due to social constraints that hindered the interviewing of English teachers from the male section. While the small focused group enabled a thorough investigation of the research questions, future research may explore these issues on a larger scale, including both female and male teachers from different universities.

Results

Demographic Results

The results of the demographic data revealed that 20 participants (80%) were Saudis, while 4 (20%) were foreigners. Regarding age distribution, 54% of participants, totaling 13 individuals, fell within the 31-50 age range, while 42% (10 participants) were between 51 and 65 years old.

Only one participant (4%) belonged to the 25-29 age group. The majority of participants (96%) reported Arabic as their native language, with English being the first language for only one participant (4%). Concerning teaching experience, 79% of participants (19 individuals) had over 10 years of teaching experience, while 17% (4 participants) had between 5 and 10 years of experience, and one participant (4%) had less than 5 years of teaching experience. Regarding technology proficiency, 67% of participants (16 individuals) reported having more than 10 years of experience, 13% (3 participants) had between 5 to 10 years of experience, and 20% (4 participants) had less than 5 years of experience. Additionally, 88% of participants (21 individuals) taught English as a Foreign Language (EFL), with one participant (4%) teaching EFL alongside educational technology and two participants (8%) teaching EFL and research methodology. Figure One illustrates these results.

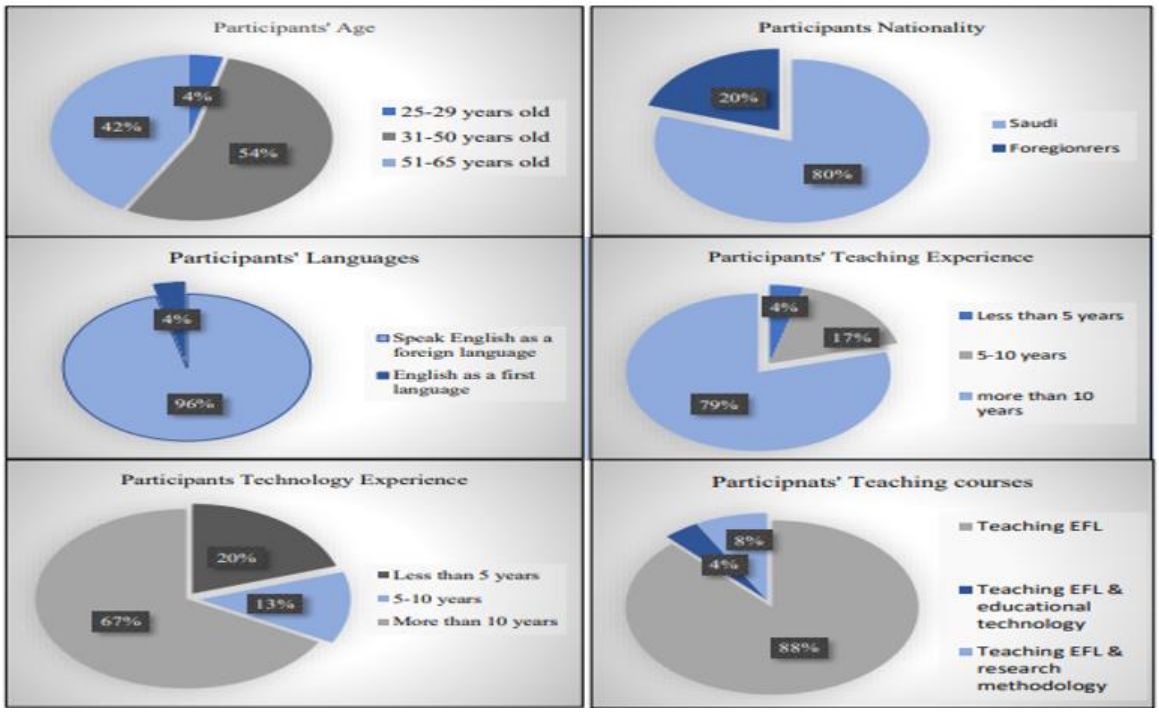


Figure 1. Results of demographic data

Interviews Emerging Themes

The analysis of participants' interviews revealed seven emergent themes. Firstly, the advantages of artificial intelligence in English as a Foreign Language classrooms were highlighted by 18 participants, representing 75% of the sample. Secondly, the disadvantages of artificial intelligence in English as a Foreign Language classrooms were reported by six participants, representing 25%. The third theme focused on suggesting approaches for applying artificial intelligence in the classrooms, mentioned by 17 participants, representing 71%. The fourth theme explored the effects of using artificial intelligence on students' language performance, reported by 20 participants, representing 83%. The fifth theme addressed the need for professional development for teachers of English as a Foreign Language, reported by 22 participants, representing 92%. The sixth theme delved into ethical considerations for using artificial intelligence, reported by all 24 participants, representing 100%. Finally, the seventh

theme discussed the future of artificial intelligence in language education, reported by 21 participants, representing 88%. Table One displays these themes.

Table 1. *Emerging themes from participants' interview*

Interviews Emergent Themes	*n* (=24)	Percent%
Advantages of AI for EFL classroom	18	75%
Disadvantages of AI for EFL classroom	06	25%
Approaches for applying AI in EFL classroom	17	71%
The effects of using AI on students' language performance	20	83%
Professional development for EFL teachers	22	92%
Ethical considerations for using AI	24	100%
Future of AI in language education	21	88%

In Table One, the abbreviation (AI) refers to Artificial Intelligence, and the abbreviation (EFL) refers to English as a Foreign Language. As shown in Table One, the prominence of ethical considerations and the future of AI in language education are illustrated, as perceived by 24 participants. Many expressed concerns regarding the heavy reliance on AI potentially leading to plagiarism, with one participant highlighting the challenge for teachers in detecting plagiarized work due to AI's involvement. One participant stated, "[…] and the difficulty of determining plagiarized work made AI an unpreferred tool for teachers." Another participant expressed a similar viewpoint, stating, "Insufficient awareness regarding the appropriate use of technology in the learning process can lead to ethical issues such as plagiarism." A third participant responded, "The crucial aspect is ensuring that students are aware of the limitations and biases that may exist within AI tools, [….] it is essential to educate students about these biases and encourage them to critically analyze the information provided by AI tools." Further, while the theme that highlights the advantages of AI for the EFL classroom has a rate of 75% among all themes, the theme addressing the disadvantages of AI for the EFL classroom is ranked the lowest at 25%, suggesting that participants perceive the benefits of AI to outweigh the drawbacks. In this regard, one participant noted, "Some of the drawbacks include over-reliance on AI tools in the EFL classroom, which can lead to a dependency on technology. Students may become less motivated to develop essential language skills, such as critical thinking and communication if they primarily rely on AI for translation, grammar correction, or pronunciation feedback." These comments indicate that while AI presents many advantages, its effectiveness in EFL education could be constrained by factors like over-reliance on technology, reduced human interaction, and concerns about privacy and data security.

Additionally, as displayed in Table One, the theme of professional development for teachers of English as a Foreign Language represents 92% of all the themes that emerged from the qualitative data, indicating that the participants fully realize the benefits of AI in English as a Foreign Language education. This calls for implementing comprehensive training programs and organizing meetings and seminars to achieve successful applications of AI. Regarding this issue,

one participant said, “Keeping abreast of the latest AI advancements enables teachers to make informed decisions and guide students in responsibly utilizing AI tools. This approach allows us to fully harness the potential of artificial intelligence in language education through practical, classroom-based applications.” Another participant stated, “Through ongoing training, teachers can benefit immensely from exploiting the potential of AI tools to enhance their pedagogical practices and help students improve their learning outcomes.”

Answering the Research Questions

Q1. What are the perspectives of English as a Foreign Language instructors on the benefits and drawbacks of utilizing artificial intelligence within their classrooms?

The results revealed a thematic pattern outlining the advantages of AI in the EFL classroom, comprising 8 invariant constituents: (a) personalized learning, reported by 22 participants, representing 92%; (b) interactive learning, reported by 21 participants, representing 88%; (c) improving self-regulated learning strategies, reported by 19 participants, representing 79%; (d) providing real-life language usage, increasing opportunities to communicate in English, as reported by 20 participants, representing 83%; (e) enhancing collaborative learning, reported by 21 participants, representing 88%; (f) developing supportive learning environments, reported by 20 participants, representing 83%; (g) improving social learning, reported by 18 participants, representing 75%; and (h) giving immediate automated feedback, reported by 21 participants, representing 88%. Table Two displays these results.

Table 2. *Invariant constituents of the themes of the advantages of AI in EFL classroom*

Invariant Constituents of the Theme Advantages of AI in EFL Classroom	*n* (=24)	Percent%
Personalized learning	22	92%
Interactive learning	21	88%
Improving self-regulated learning strategies	19	79%
Providing real-life language usage	20	83%
Enhancing collaborative learning	21	88%
Developing supportive learning environments	20	83%
Improving social learning	18	75%
Giving immediate automated feedback	21	88%

As displayed in Table Two, personalized learning emerges as the highest-ranked among the invariant constituents of the theme of the advantages of AI in the English as a Foreign Language classroom. In this context, one participant commented, "AI enables personalized information retrieval, saving students time and keeping them updated on technological advancements relevant to academic pursuits.” Another participant noted, “AI plays a crucial role in scaffolding low-proficient students, meeting their individual needs. Individualized learning is important for helping students identify strengths and weaknesses, dynamically adjusting the learning path accordingly.” A third participant stated, “AI facilitates real-life language usage, offering students immersive, interactive scenarios that increase opportunities for learners to communicate in English in authentic contexts.” Furthermore, the results also reveal the invariant constituents of the theme of

disadvantages of using AI in English as a Foreign Language classroom, as displayed in Table Three:

Table 3. *Invariant constituents of the themes of the disadvantages of AI in EFL classroom*

Invariant Constituents of the Theme Advantages of AI in EFL Classroom	*n* (=24)	Percent%
Lack of human interactions	16	67%
Limited contextual understanding	17	71%
Overemphasis of language correctness	21	88%
Full dependency on technology decreases human thinking	20	83%
Limited human critical and creative thinking	21	88%
Reducing language spontaneity	20	83%
Overemphasis of standardization of language	18	75%

As shown in Table Three, the findings revealed seven invariant constituents, namely: (a) lack of human interactions, reported by 16 participants, representing (67%); (b) constrained grasp of the situation's context, reported by 17 participants, representing (71%); (c) overemphasis on correctness, reported by 21 participants, representing (88%); (d) full dependency on technology decreasing human thinking, reported by 20 participants, representing (83%); (e) limited human critical and creative thinking, reported by 21 participants, representing (88%); (f) reduction in spontaneity reported by 20 participants, representing (83%); and (g) overemphasis on the standardization of language, reported by 18 participants, representing (75%). Feedback from the majority of participants indicated that teachers who embrace transformative teaching methods are more likely to seamlessly integrate AI into their instruction compared to those who adhere to traditional teaching approaches. In this regard, one participant said, "AI may contribute to a negative impact on human interactions, as increased reliance on automated systems could potentially lead to diminished students' face-to-face communication and interpersonal skills." Another participant noted, " to reinforce the lesson that human thinking is essential, I ask the student to rewrite a report based on their own work, and this exercise prompts them to reflect on their initial reliance on the AI tool and encourages them to consider the potential limitations of such tools, and thus by guiding the student through this process, my aim is to impart a valuable lesson about the importance of active participation and critical engagement in the learning process." A third participant said, "observing my students, I found that the overemphasis on correctness facilitated by AI leads to a stifling of creative expression, discouraging them from taking linguistic risks, and that an exclusive focus on correctness results in increasing anxiety in language use, hindering the development of spontaneous communication skills in real-world, dynamic contexts." Another participant noted, "when students retrieve mere information, without doing any kind of information literacy such as analysis or synthesis, it hurts their cognitive abilities, and the solution is to help students acquire the technology skills for using AI appropriately."

Q2. How does the implementation of artificial intelligence impact students' language proficiency?

The results revealed eight invariant constituents pertaining to the effects of using AI on students' language performance, including: (a) developing speaking skills, reported by 22 participants, representing (92%); (b) improving active listening skills and understanding different accents, reported by 20 participants, representing (83%); (c) enhancing pronunciation and intonation, reported by 22 participants, representing (92%); (d) enhancing reading comprehension, reported by 20 participants, representing (83%); (e) expanding English vocabulary, reported by 22 participants, representing (92%); (f) improving writing skills, reported by 19 participants, representing (79%); (g) reinforcing the use of correct grammar and a variety of syntactical structures, reported by 21 participants, representing (88%); and (h) identifying and correcting language mistakes to enhance language proficiency, reported by 21 participants, representing (88%). Table Four displays these results.

Table 4. *Invariant constituents of the themes of the effects of AI on language performance*

The invariant constituents of the Effects of AI on EFL Students' Performance	*n* (=24)	Percent%
Developing speaking skills	22	92%
Improving active listening	20	83%
Improving pronunciation and intonation	22	92%
Improving reading comprehension	20	83%
Expanding English vocabulary	22	92%
Improving reading speed	21	88%
Improving writing skills	19	79%
Using correct grammar	21	88%

Table Four shows that the use of artificial intelligence for enhancing language skills is demonstrated, emphasizing its impact on improving speaking proficiency and expanding English vocabulary. This was reported by 22 participants, representing 92% of the sample. In this context, one participant stated, "The influence of using AI on my students' language performance is significant as their final exam results showed how AI tools have the potential to greatly support language learning, providing them with opportunities to practice English and improve their language skills from receiving immediate informative feedback." Another participant said, "AI language tools serve as virtual guides, available to students whenever and wherever they need assistance to develop speaking, listening, reading, and writing skills, unlike traditional classroom where learning is constrained by time." A third participant noted, "AI-powered language learning platforms offer interactive exercises and simulations that allow students to practice speaking, listening, reading, and writing in a controlled and engaging environment, and these tools provide immediate feedback on pronunciation, grammar, and vocabulary usage, helping them identify and rectify their language errors, which result in improving their performance." Another participant noted, "AI can provide valuable insights, suggestions, and corrections that can help students improve their language skills, including speaking, listening, reading, and writing, so they can

develop a deeper understanding of the use of English in different situations." Another participant commented, "...In my experience, my students' final exam results demonstrated enhancements across their overall performance, including improvements in speaking, listening, and reading comprehension, as well as writing skills. This was evident in their ability to use correct and expressive English, along with enriched vocabulary."

Q3. How does professional development influence teachers' beliefs, use, and apprehensions about integrating artificial intelligence into their teaching practices?

The results revealed 8 invariant constituents relevant to the theme of teachers' expectations and future prospects of AI in language education, which include: (a) integrating AI into the English language curriculum, reported by 21 participants, representing (88%); (b) increasing augmented teaching, reported by 20 participants, representing (83%); (c) developing more diverse learning styles, reported by 23 participants, representing (96%); (d) increasing informal learning, reported by 19 participants, representing (79%); (e) increasing open-source learning language channels, reported by 20 participants, representing (83%); (f) widespread use of robots in the language classroom, reported by 22 participants, representing (92%); (g) aligning professional development for teachers using AI platforms with language curriculum, reported by 21 participants, representing (88%); and (h) increasing online international language institutions, reported by 23 participants, representing (96%). Table Five shows these results.

Table 5. *Invariant constituents of the theme of impacts of professional development for using A*I

The invariant constituents of the Theme of Future Expectations for AI in Language Education	*n* (=24)	Percent%
An increase in integrating AI into English language curriculum	21	88%
Increasing augmented teaching	20	83%
Developing more diverse language learning styles	23	96%
Increasing informal learning	19	79%
Increasing open-sources learning language channels	20	83%
Widespread use of robots in EFL classroom	22	92%
Aligning professional development for using AI with instruction	21	88%
Increasing online international language institutions	23	96%

In Table Five, the abbreviation (AI) refers to Artificial Intelligence, and the abbreviation (EFL) refers to English Foreign Language. As shown in Table Five, the invariant constituents of the theme of the future expectations for artificial intelligence in language education are revealed, highlighting the development of more diverse language learning styles, and an increasing number of online international language institutions, taking the first ranks among the invariant constituents, as reported by 23 participants, representing (96%) respectively, while increasing augmented teaching, and increasing informal learning take the lowest ranks, as reported by 20 participants, representing (83%) and 19 participants, representing (79%) respectively. A significant majority of 92%, comprising 22 participants, indicated a prevailing expectation for robots to become commonplace

in language classrooms, hinting at the potential for them to replace English teachers in the future. In this regard, the results revealed some comments from the participants regarding their expectations about the future of artificial intelligence in language education. For example, one participant said, "In my opinion, the use of artificial intelligence in English as a Foreign Language education holds significant expectations, and it is an inevitable force that educators must acknowledge, prepare for, and embrace, and it is crucial to encourage students to emphasize the potential of artificial intelligence tools to enhance their cognitive, affective, and social capabilities." Another participant stated, "I believe that teachers will benefit more greatly from the use of artificial intelligence, selecting various varieties of teaching materials, but they need professional training." A third participant stated, "Professional development programs are important as artificial intelligence will develop education shortly, and it will facilitate personalized learning, and it will help teachers at a large scale to save time and effort, grading students' assignments, monitoring students' progress and coping with each student's need." Another participant said, "In my opinion, the future of artificial intelligence in English as a Foreign Language education promises transformative possibilities. Teachers need professional development programs to cope with artificial intelligence technologies that are poised to revolutionize language learning by providing advanced technology for providing students with personalized, adaptive, and interactive learning experiences." Another participant said, "We need training on how artificial intelligent-powered language assessment tools can be used efficiently to evaluate students' speaking, listening, reading, and writing skills, by offering timely feedback and performance insights to both learners and educators." These results suggest that providing professional development on the practical applications of artificial intelligence in the classrooms will foster teachers' understanding of how artificial intelligence can support language learning.

Discussion

The findings highlight issues related to the advantages and disadvantages of artificial intelligence in English as a Foreign Language classroom, the impacts of artificial intelligence on students' language performance, and the effects of professional development on teachers' utilization of artificial intelligence in the classroom, and their ethical considerations regarding the incorporation of artificial intelligence in language education (see Table One). Regarding the findings concerning the benefits of artificial intelligence in the classroom, the results highlight its advantages in offering personalized learning experiences, enhancing self-regulated learning, facilitating real-life language application, expanding opportunities for real-time English communication in diverse contexts, fostering supportive learning environments, and delivering immediate automated feedback (see Table Two). These findings are relevant to studies from the literature review. For example, they are in alignment with previous research (Baidoo-Anu & Owusu Ansah, 2023; El Shazly, 2021; Feng & Ng, 2023; Kim et al., 2019), which emphasizes the advantages of artificial intelligence in providing personalized learning experiences that meet individual needs and preferences, and in facilitating learning by scaffolding in immersive virtual reality. Similarly, the present research findings are also relevant to those of Chen et al. (2022), indicating that artificial intelligence systems produce personalized learning avenues to address areas of language skills that need improvement, and thus the individualized approach can enhance extensive daily practice. Previous studies (Hsu, 2024; Song & Song, 2023) also revealed that students benefited from the potential of artificial intelligence for personalized support, research capabilities, and engagement. Thus, the findings of the current study suggest that traditional

teaching approaches show limited effectiveness in enhancing students' language skills. Thus, integrating smart classroom technology and artificial intelligence is a more effective strategy.

Concerning the drawbacks of artificial intelligence, the findings of the current study highlighted issues such as reduced human interaction, excessive focus on language correctness, increased dependence on technology diminishing human thought, limited critical and creative thinking skills, decreased spontaneity in language use, and an overemphasis on standardizing language (see Table Three). These findings are relevant to that of previous studies by (Chan, 2023; Chen et al., 2022; Nguyen, et al., 2023), which underscored concerns regarding accuracy and creativity. In this context, Chan (2023) highlighted that concerns go beyond learners' personal data collection, privacy, security, bias, unequal access, and limited inclusivity to include deficiencies in higher-order thinking skills. Other findings are related to the effects of using artificial intelligence applications on students' language performance, helping students develop speaking skills, improve active listening skills, expand English vocabulary, improve reading comprehension, use correct grammar and varieties of syntactical structures, improve writing skills, and identify and correct language mistakes to enhance language proficiency (see Table Four). In alignment with these findings, previous research (Bacca-Acosta et al., 2022; Divekar et al., 2022; El Shazly, 2021; Junaidi et al.; 2020; Kang, 2022;Soleimani et al., 2022) found that artificial intelligence technologies impact significantly the development of language skills, including reading, writing, grammar, speaking, and vocabulary among EFL learners. These studies found that artificial intelligence tools helped students apply correct grammatical rules and express themselves in proper writing practices. Similar results found by Hsu et al. (2023) emphasized that artificial intelligence-supported language learning tools helped students in developing vocabulary acquisition. Kang (2022), Soleimani et al. (2022), and Song and Song (2023) have also shown that artificial intelligence aids students in acquiring writing and reading skills, thereby enhancing their proficiency in English. Findings also pointed to artificial intelligence technologies having positive impacts on EFL students' performance, through enhancing real-time communication (Kim et al., 2019), improving cognitive abilities and learning perception (Zheng et al., 2023), and developing self-regulated learning (Hsu et al., 2023; Wang & Lin, 2023), which helped students develop language proficiency.

Findings from the current study also refer to the impacts of professional development on teachers' expectations, utilization, and ethical concerns of artificial intelligence in English as a Foreign Language classroom, encompassing themes about the integration of artificial intelligence into English language curriculum, developing more diverse learning styles, increasing open-sources learning language channels, and aligning professional development with language curriculums (see Table Five). These findings are relevant to studies from the literature review. For example, previous research by Chen et al. (2022), Rahiman and Kodikal (2024), and Wylde et al. (2023) indicated that the advancements in artificial intelligence mark a transformative shift with the capacity to reshape educational practices. In harmony with these results, Rahiman and Kodikal (2024) asserted that artificial intelligence has empowered high-quality learning, and therefore, performance expectation is a key factor that impacts the adoption of artificial intelligence tools within higher education.

One implication of the present study lies in offering empirical evidence on the pros and cons of integrating artificial intelligence into English as a Foreign Language education. Artificial intelligence technologies offer valuable tools, resources, and platforms, such as virtual classrooms, adaptive learning platforms, automated evaluation systems, automated grading systems, and

chatbots that help EFL teachers create immersive and engaging learning experiences. However, addressing ethical concerns is crucial when adopting artificial intelligence technologies to empower students to take ownership of their learning process. Another implication is that the present study places a special emphasis on aligning teachers' pedagogical knowledge with artificial intelligence technological skills by providing adequate professional development programs. These programs should be based on clarifying the concepts of augmented humanity, which entails a collaboration between humans and artificial intelligence to enhance humans' capacity and productivity. Therefore, the study recommends incorporating new professional development programs that align knowledge of EFL education with artificial intelligence practices. Based on the study results, the researcher formulated a model for EFL teacher professional development centered around artificial intelligence technology. Figure Two illustrates themodel.

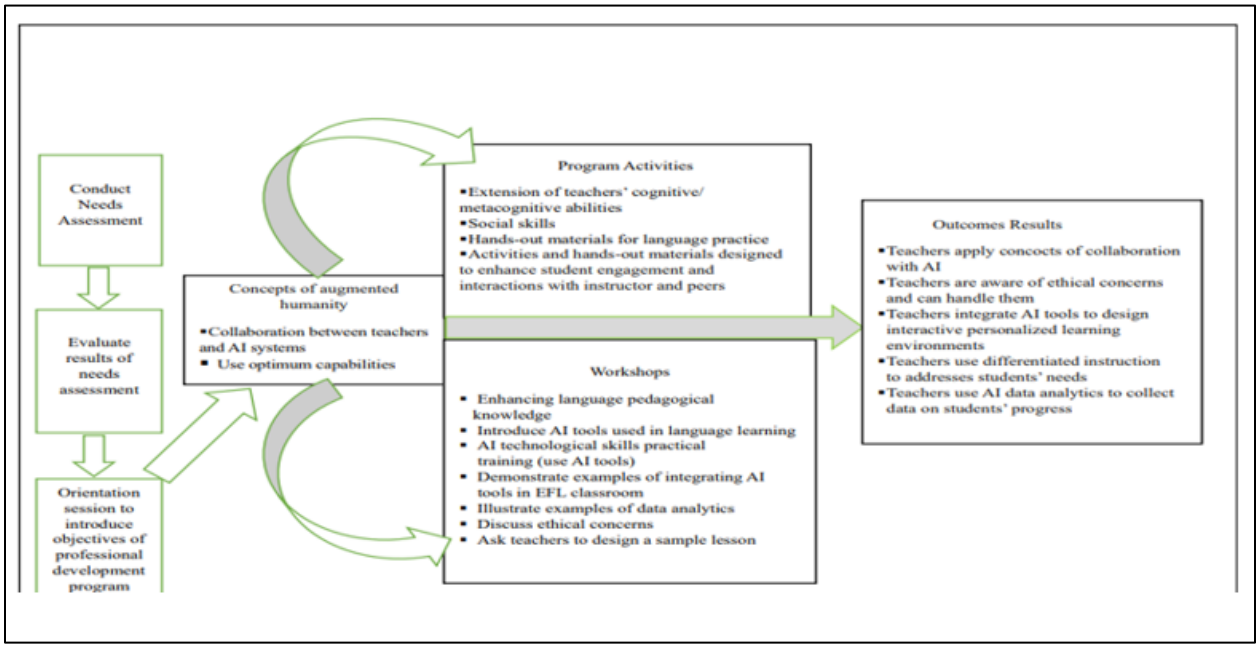


Figure 2. AI Technology-based model for EFL Teacher professional development

Using the study findings, Figure two shows the model of professional development that can be used to enhance teachers' applications of artificial intelligence in the classroom. This model underscores the collaboration between teachers and artificial intelligence systems. Program activities aim to improve teachers' cognitive, metacognitive, and social skills. The workshop materials should include language practice opportunities to encourage student engagement and interaction with both the instructor and their peers. Workshops within this model are intended to reinforce pedagogical knowledge in language teaching and introduce artificial intelliegnce tools utilized in language learning.

Conclusion

The present study investigated English teachers' pedagogical beliefs, apprehensions, and

outlooks concerning the incorporation of artificial intelligence tools in the classroom. The findings highlight two important issues: the positive impact of artificial intelligence on students' language performance and the need to address challenges and ethical concerns through professional development programs that align pedagogical knowledge with artificial intelligence technological skills. Continuous professional development is identified as a positive approach to addressing teachers' resistance to digital innovation. The study revealed that artificial intelligence applications significantly contribute to developing students' English language skills, including listening, speaking, reading, and writing. Thus, this research contributes to the field of English as a Foreign Language in higher education by providing an in-depth understanding of teachers' perceptions regarding the benefits and limitations of artificial intelligence tools in language education. According to the findings, the study suggests a professional development training model that focuses on aligning teachers' knowledge with artificial intelligence systems.

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About the Author:
Dr. Amal Abdul-Aziz Mohammad Al-Othman received her PhD in Applied Linguistics from IMSIU, College of Languages and Translation, English department with the first honor degree. She has been teaching English since 2004. Her research interests include EFL writing and Language acquisition, computational linguistics, phonology, sociolinguistics grammatical theory, historical linguistics, and psycholinguistics. ORCid ID https://orcid.org/0009-0000-7238-2173

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