The impact of using artificial intelligence techniques on enhancing and improving English language teaching methods

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Abstract

Due to the development that world is witnessing in the artificial intelligence techniques, most of the applications have depended on it in a strong project especially in the education domain, and in the light of the great importance that the English language occupies among the country's languages, it is considered the main and most widespread language, as it is being dealt with in commercial and economic fields and tourism and travel areas and so on. Academy, the technological and Internet content is mostly based on the English language, which makes it imperative to adopt artificial intelligence-based techniques for the teaching of English language. This study is intended to identify and evaluate the impact of the use of artificial intelligence techniques in learning the English language and in the quality of learning, as well as to identify the obstacles and challenges facing the use of artificial intelligence techniques in the development of learning quality, through a methodology in which is based on a combination of methodologies including description methodology, analysis methodology, and scientific methodology. And quantitative and comparative methodology based on a review of robust and reliable research related to the use of artificial intelligence in teaching and learning the English language during the years from 2015 to 2024, In order to identify how far-reaching the

impact of the use of artificial intelligence techniques is to improve the quality of learning, in addition to identifying the current progress in this field and understanding the challenges associated with it. Most of the results showed a promising future for the communication of artificial intelligence in teaching the English language, since these technologies have represented a high contribution in improving language skills, translation and the quality of learning, and that with more research related to the integration of artificial intelligence technologies with the integration of educational processes, it is possible to raise the efficiency of the educational process in general and the English language in particular.

 Keywords: teaching English language, artificial intelligence techniques, quality of learning, obstacles and challenges.

أثر استخدام تقنيات الذكاء الاصطناعي في تحسين وتطوير أساليب تدريس اللغة الإنجليزية

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الملخص

نظراً للتطورات الهائلة التي يشهدها العالم في تقنيات الذكاء الاصطناعي، فقد اعتمدت معظم التطبيقات عليها بشكل كبير، لا سيما في مجال التعليم. ونظراً للأهمية البالغة التي تحتلها اللغة الإنجليزية بين لغات العالم، حيث تُعتبر اللغة الرئيسية والأكثر انتشاراً، إذ تُستخدم في المجالات التجارية والاقتصادية والسياحية وغيرها. كما أن المحتوى الأكاديمي والتكنولوجي والإنترنت يعتمد بشكل كبير على اللغة الإنجليزية، مما يجعل من الضروري تبني تقنيات الذكاء الاصطناعي في تدريسها. تهدف هذه الدراسة إلى تحديد وتقييم أثر استخدام تقنيات الذكاء الاصطناعي في تعلم اللغة الإنجليزية وجودة التعلم، بالإضافة إلى تحديد العقبات والتحديات التي تواجه استخدام هذه التقنيات في تطوير جودة التعلم، وذلك من خلال منهجية تجمع بين عدة منهجيات، تشمل المنهجية الوصفية والتحليلية والمنهجية العلمية. تعتمد هذه الدراسة منهجية كمية ومقارنة، مستندةً إلى مراجعةٍ لأبحاثٍ موثوقةٍ ورصينةٍ حول استخدام الذكاء الاصطناعي في تدريس وتعلم اللغة الإنجليزية خلال الفترة من ٢٠١٥ إلى ٢٠٢٤، وذلك لتحديد مدى تأثير استخدام تقنيات الذكاء الاصطناعي في تحسين جودة التعلم، بالإضافة إلى رصد التقدم الحالي في هذا المجال وفهم التحديات المرتبطة به. أظهرت معظم النتائج مستقبلًا واعدًا لاستخدام الذكاء الاصطناعي في تدريس اللغة الإنجليزية، نظرًا لإسهام هذه التقنيات الكبير في تحسين

مهارات اللغة والترجمة وجودة التعلم. ومع إجراء المزيد من الأبحاث حول دمج تقنيات الذكاء الاصطناعي في العمليات التعليمية، يُمكن رفع كفاءة العملية التعليمية عمومًا واللغة الإنجليزية خصوصًا.

الكلمات المفتاحية: تدريس اللغة الإنجليزية، تقنيات الذكاء الاصطناعي، جودة التعلم، العقبات والتحديات .

1. Introduction

The English language is one of the most important and most widely spoken languages in all countries of the world. It is considered the first foreign language in most countries after the mother language. This language is widely used; whether in transactions related to travel, tourism, or even commercial transactions, as the English language is considered the language of international business and is used in all negotiations (Rao, 2019).   Contracts and correspondence are in the English language, so mastering the English language is very important as it opens The field increases job opportunities and career development, especially in global multinational companies. From an academic standpoint, most academic research and studies are published in English, and most prestigious international universities also offer their programs in English. Students enrolled in these universities must master the English language. There are some universities in the world in general and in Arab countries in particular where some specializations are taught in English, especially medical and engineering specializations. As for technology, communications and the Internet, the majority of content on the Internet is written in English. Also, modern programming science relies mainly on the English language, especially since this software Programmed primarily in English. Therefore, developing the teaching of the English language has become an important and urgent matter to achieve sustainability in the field of education in general and in the field of teaching the English language in particular (Zhang, 2013).

In light of the tremendous technological development, global openness to globalization and modernization, and the emergence of artificial intelligence technologies, which have become the cornerstone of many applications, including applications related to education. All research and studies have focused on studying how to benefit from artificial intelligence techniques in teaching the English language and developing the English language skills of learners, whether in public schools and universities or even private schools and universities. Especially after artificial intelligence has revolutionized the field of education, as artificial intelligence technologies contribute to improving the learning experience, personalizing it and making it more effective and efficient. The importance of using artificial intelligence technology in education in particular and in teaching the English language in general is due to the fact that it helps improve the quality of learning, enhances interactive participation and interactive learning (Barakina, & Voskovskaya, 2021). and prepares students for a promising digital future. It makes learning processes flexible and easy for learners (Rusmiyanto, 2023).

The importance of this study, which aims to identify and evaluate the impact of the use of artificial intelligence techniques on learning the English language, is due to the fact that it addressed the subject from several different aspects, whether for learners or even for teachers. It also addressed identifying the obstacles and challenges facing the use of artificial intelligence techniques in the process of learning the English language and presenting Solutions to overcome these obstacles, through a methodology based on a systematic review of robust and reliable research related to the use of artificial intelligence in teaching and learning English during the period from 2015 to 2024, with the aim of determining the extent of the impact of the use of artificial intelligence techniques in improving the quality of learning, as well as the current

progress in this field and understanding the challenges associated with it.

Despite the importance of using artificial intelligence techniques in English language teaching processes, there are some challenges and obstacles facing the use of these techniques. Including data privacy and protecting students and scholars from some unethical violations, especially in light of the difference in cultures and customs between peoples, especially in our Arab world, in addition to the high cost of using artificial intelligence techniques, as most artificial intelligence applications require specific tools and techniques, human competencies and expertise that can deal with these applications and deliver them. To students in a smooth and flexible way. Also, excessive reliance on artificial intelligence is one of the most important negative aspects of using these applications, as there are students who may rely entirely on artificial intelligence applications in learning processes without making any personal effort. In addition to a final point, which is the availability of technical and material capabilities in some areas, whether they are rural areas or remote, isolated areas before the Internet reaches them, or accessing the Internet to them is expensive (Chen et al., 2022).

2. The theoretical background of the study

The theoretical background of the study (Theoretical Framework) The theoretical background of any study is one of the most important basic components in scientific research, especially since it provides the theoretical and analytical foundation on which the study was built. Through this part, a set of concepts, theories and models that were used in the study will be presented, as well as linking the research to previous literature. To clarify how this study contributes to the development of current and future knowledge.

2.1. Methods and theories of teaching English language

The English language occupies first place in terms of the number of speakers in the world, as Figure No. (1)

Figure 1: shows English language occupies in terms of the number of speakers in the world

Given this importance, many countries are interested in teaching and learning the English language and developing its teaching methods, and one of the most important methods of teaching the English language is:

1. The traditional method (Grammar-Translation Method): It is a method in which the focus is on learning the grammar rules and translating texts from English to the mother tongue, as well as teaching language grammar and memorizing vocabulary with a focus on reading and writing. It is a distinctive method that may be suitable for teaching reading and writing. Especially in the academic stages, but it does not focus on speaking and listening skills, which makes its effectiveness less.

2. Direct Method: It is a method that focuses on learning and teaching the English language without using the mother tongue, as the focus is on listening and speaking with the use of pictures, gestures, and realistic contexts to teach vocabulary and grammar. It is a distinctive method that improves speaking and listening skills and encourages

thinking in the English language. But its downside is that it may be difficult for some, especially beginners, especially in light of the absence of translation processes

3. The Audio-Lingual Method: It is a method that relies on repeating linguistic patterns and practicing them through the use of audio or repeated dialogues to teach the rules of pronunciation and the rules of writing. It is an effective method in improving pronunciation and fluency, but its disadvantage is that it may be boring due to repetition and lack of focus. To be creative in using language

4. The Communicative Language Teaching - CLT method: It is a method that relies on real communication and interaction through the use of group activities, discussions, and participation projects. It is characterized by improving communication skills and encouraging the use of language in realistic contexts, but its drawback is that it does not focus on grammatical rules in a satisfactory manner.

5. The Natural Approach: It is a method in which understanding is relied upon before speaking, meaning that it is very similar to the method of learning and teaching the mother tongue in any country through the use of visual and audio materials to teach the language, especially in the early stages. It is very suitable for beginners and reduces the processes of fear and tension related to learning a new language. One of its disadvantages is that it is slow and progress is slow, especially with regard to speaking skills.

6. The task-based method (Task-Based Learning - TBL): It is a method that relies on implementing realistic tasks by teaching students' tasks such as planning or solving a specific problem. It is a method that is characterized by improving communication skills and encourages thinking, but one of its disadvantages is that it does not focus properly. Enough to learn grammar and vocabulary (Yanti, 2020).

7. Content-Based Instruction - CBI: It is a method that relies on teaching the English language through academic content, where topics such as science, history, and geography are studied. It improves language skills and academic concepts at the same time, but it may be difficult for students who struggle from a basic weakness found in the language (Turgunova, & Abdurahimovna, 2023).

8. The project-based method (Project-Based Learning - PBL): It is a method that relies on teaching the language through the implementation of long-term projects by teaching students special projects, such as submitting and writing reports and making presentations. It is distinguished in improving research and teamwork skills, but it has its drawbacks. It takes a long time and you may not focus on the grammar enough (Rustamova, 2023).

9. Blended Learning: It is a method that relies on integrating traditional learning methods with electronic learning methods through the use of tools such as virtual classrooms, augmented reality applications, virtual reality, and other online resources. It is characterized by providing flexibility in learning and improving listening skills, but its disadvantage is that it requires... It has high financial and technical capabilities that may not be suitable for some students.

10. The method based on artificial intelligence (AI-Based Learning): These are methods that rely on artificial intelligence techniques to customize the learning experience, virtual assistance, and active participation. They are distinguished by providing and improving a high level of learning quality, but their disadvantages are that they require technical and material capabilities that are not within everyone's reach (Mohammed 2017).

The appropriate method for teaching the English language must be chosen according to the objectives of the teaching process and the objectives of the students. If the goal is to improve communication, then

the communicative method is the best. However, if the goal is to improve speaking and writing skills, methods that focus on that must be used, and the level of the students must also be taken into account when choosing. The appropriate way to teach and learn the English language
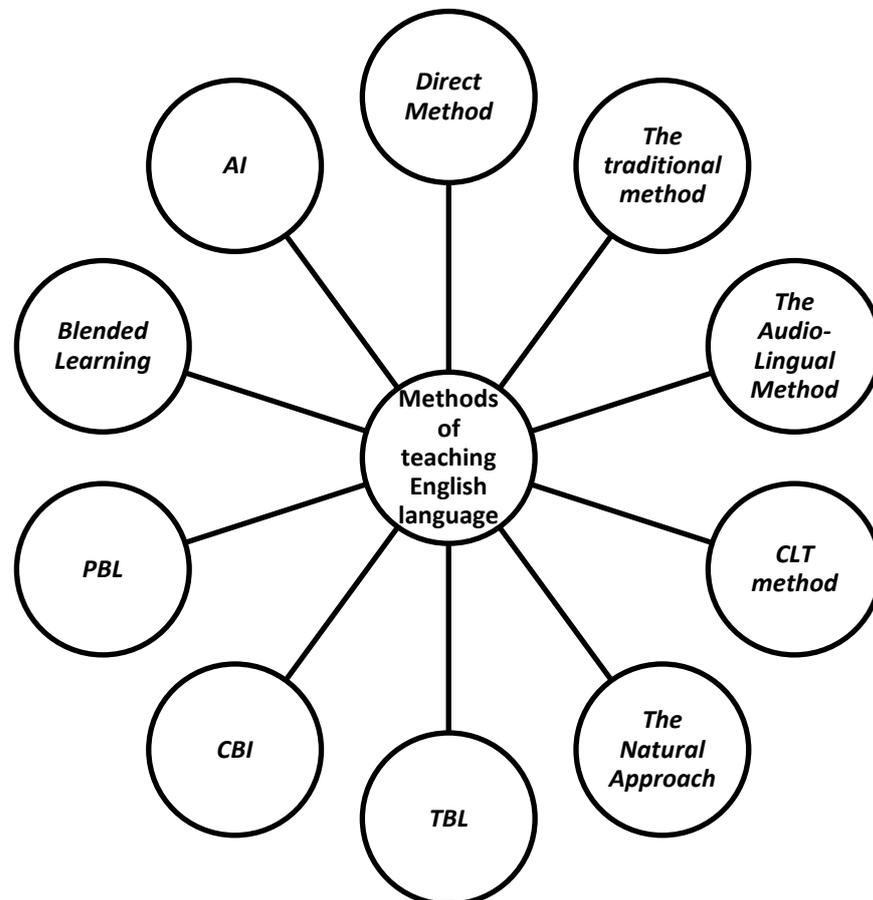

Figure 2: shows Methods and theories of teaching English language

2.2. Artificial intelligence techniques used in teaching

are used Artificial Intelligence (AI) technologies in the recent period, artificial intelligence technologies that are used in the educational process have increased in order to enhance the learning experience and improve teaching methods (Sun, & Praveen, 2021). The most important of these technologies are the following:

1. Adaptive Learning Systems: These have techniques that rely on artificial intelligence algorithms. Through these algorithms, students' performance is analyzed and customized educational content is provided

based on the level of each student by providing exercises, rules, and vocabulary that suit the students' level, and the difficulty of the exercises is adjusted based on that. Students' progress in learning. It is one of the most famous platforms that use this method Duolingo, Babble

2. Virtual assistants and educational robots (Virtual Assistants & Chatbots): These are methods that rely on the use of natural language processing techniques in learning the English language by helping students in practicing conversations in the English language and learning grammar and vocabulary through some activities, and one of the most famous of these platforms is Chat GPT or Replika (Fahimirad, & Kotamjani, 2018).

3. Pronunciation Tools: These are tools used to analyze students' pronunciation of the language and provide immediate feedback. They are also used in speech recognition and are one of the most important platforms. Elsa Speak Speech ling.

4. Instant Feedback Systems: These are tools that analyze students' level and progress, work to correct grammatical and spelling errors, and also provide suggestions for improving sentences and texts. Examples of these platforms are Grammarly Ginger.

5. Machine Translation: Algorithms and tools used to translate instant texts to and from the English language, as they help students understand difficult texts and through them, they can learn new vocabulary and expressions. One of the most important of these platforms is Google Translate Deeply.

6. Recommendation Systems: These are tools and algorithms that analyze students' behaviors and interests, teach them appropriate materials, and recommend specific videos, articles, and texts through which reading, writing, and listening skills can be improved. The most important of these platforms are Coursera Khan Academy

7. Virtual Reality & Augmented Reality: These are technologies that are used to provide a three-dimensional interactive environment where realistic scenarios are created to practice conversation and teach vocabulary with the existing virtual elements provided by these applications, the most famous of which are mondly VR Immerse Me.

8. Learning Analytics: These are algorithms and tools that collect and analyze students' data to understand the learning styles they prefer and determine their strengths and weaknesses. They rely on test procedures and brilliant exercises with grammar and vocabulary and among the most famous platforms. Edmodo Blackboard

9. Self-Assessment Tools: These are tools that allow students to evaluate themselves according to specific criteria and short specific tests. They also provide reports on progress and improvement in the quality of learning. One of the most famous of these platforms is Quiz let and Kahoot.

10. Deep Learning Systems: These are techniques that rely on so-called artificial neural networks. These networks are used to analyze large amounts of educational data in analyzing visual, written, and audio texts. By analyzing that data, common errors can be identified and linguistic models can be developed to improve Quality of learning and improving language understanding (Hu, 2021).
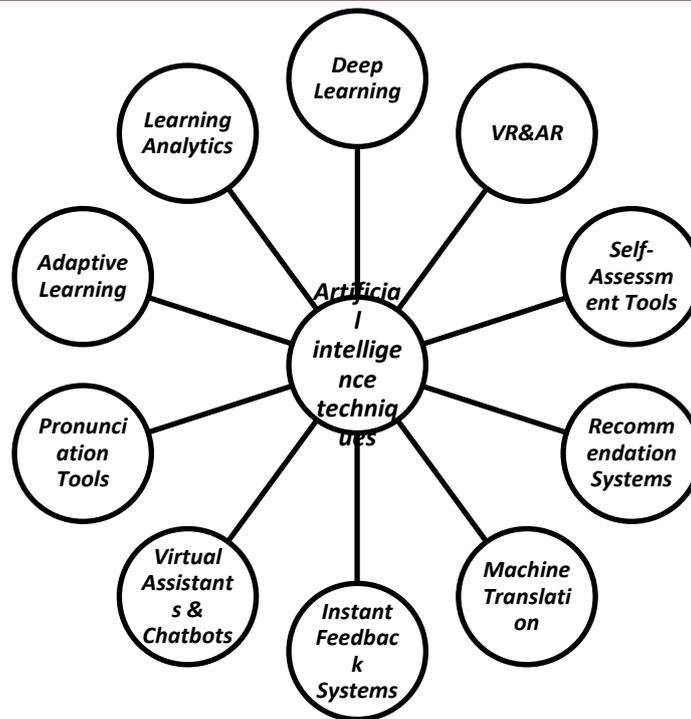
Figure 3: Artificial intelligence techniques used in teaching

3. Method and tools

The methodology of the study, as shown in the applied framework shown in Figure No. (4), was based on a set of steps, which are as follows:
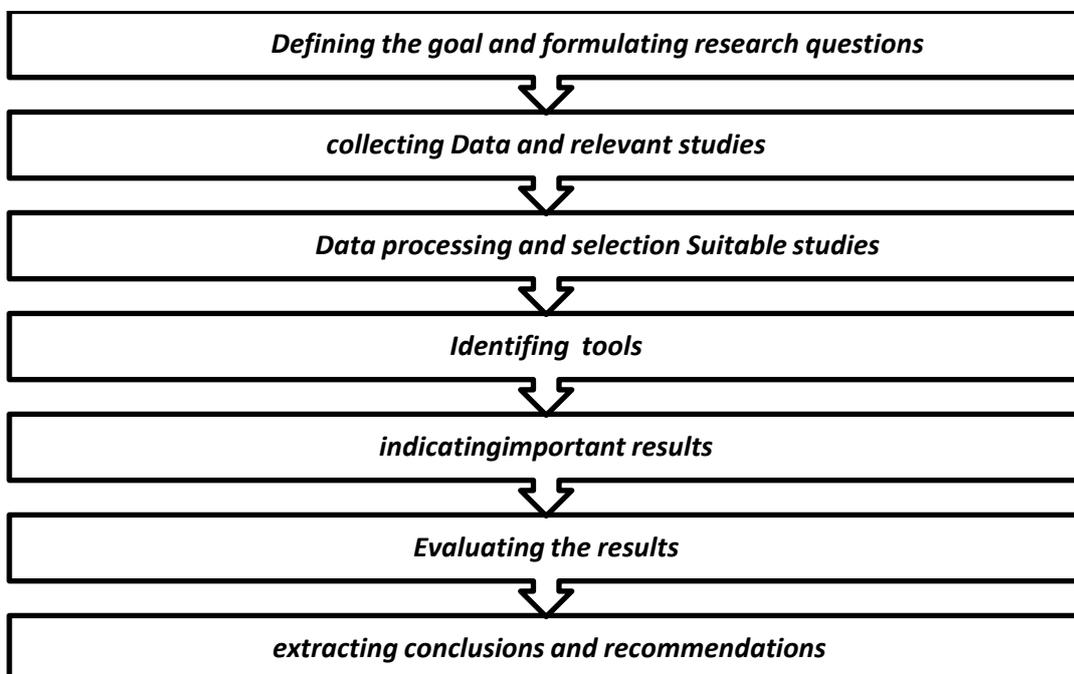

Figure 4: shows the [[lied framework of the study (by author)

1. Defining the goal and formulating research questions:

The aim of the study was determined, which is the effect of using artificial intelligence techniques on the quality of learning and improving the efficiency of teaching the English language, formulating research questions related to the study, as well as identifying the research problem related to the technical and material challenges of using intelligence techniques in the learning and teaching process.

2. Data collection and relevant studies:

Several sources were used to collect data and studies related to it to search from different databases using specific keywords such as "Artificial Intelligence", "English Language Teaching", and "English Language Learning", with the search scope being limited to the time period from 2015 to 2024.

3. Data processing and selection Suitable studies:

A group of diverse studies and articles were collected and reviewed, including more than 300 articles and studies. Then selection criteria and exclusion criteria were applied for the studies that will be relied upon. The most important selection criteria are the reliability of the study and the number of documentations that has been done for this study and that the study is part of the reference for the current research. These criteria where Exclusion is studies with poor reliability, poor documentation, and studies that did not meet the criteria set for the current study. Then, the 20 most highly reliable and highly documented studies were selected, which are shown in Table (1) Identify tools

The tools were identified, and the most important of these tools are online databases Google Scholar, PubMed ،Scopus ،Web of Science, PubMed ،Scopus also Pro Quest, EBS Cohost, to search for articles and university dissertations, and JSTOR: To access specialized academic resources

4. Data analysis:

The most important results indicated by the studies that dealt with the subject in all its aspects were extracted and those results were analyzed to determine the extent of the impact of the use of artificial intelligence techniques on improving the quality of learning and methods of teaching the English language, the most important obstacles and challenges that faced the use of artificial intelligence techniques in learning the English language, and the solutions that were provided. And recommendations to overcome these obstacles. (Milad, M., & Fayez, F. 2024 & Abdullah, & Hussein, 2015).

4. Finding and Discussion

In this section, the most important main results reached will be presented and discussed

٣.٠. **Findings**

1. Improving language skills: Research suggests that integrating AI into learning can significantly enhance learners' language skills, including speaking, listening, reading, and writing skills. For example, (Sharadjah and Saadi 2022) explain the role of AI in improving translation, improving assessment, and enhancing learner satisfaction. It is also striking that (Junaidi 2020) found that students using the AI tool showed significant improvement in their speaking ability compared to the control group.

2. Information-based learning: AI innovation helps generate personalized learning experiences based on each test taker or student. Studies such as (Motlaj 2023), advocates for AI-based personalized learning and suggests engaging technologies such as automatic speech recognition and natural language understanding to create a more personalized learning experience for each learner.

3. Increase engagement: Immersive technologies such as virtual reality increase student engagement and practical language use.(Bonner 2023) assert that virtual reality provides learners with realistic

environments to experience language, leading to increased interactivity and engagement in language learning.

4. Improving Vocabulary Learning (Hsu 2023) recommend that learners who use AI-assisted vocabulary tools show significant differences in vocabulary retention and use compared to traditional methods. This is consistent with the findings of (Guan 2024), who summarized multiple studies suggesting that AI significantly improves learning outcomes in all aspects of language.

5. Challenges and ethical considerations: Although there are benefits to using AI, a number of studies also provide insight into the challenges of integrating AI into English language teaching. Issues related to data privacy and algorithmic bias are discussed by (Abisheva 2024), highlighting the necessity of ethics. Lack of faculty training: For these AI tools to be effective, teachers must be adequately trained in these technologies. (Tliuzhanova 2024) note that although students perform better with AI, the benefit of AI depends on teachers being trained and prepared to use such tools effectively.

4.2. Discussion

This indicates a potential paradigm shift in using AI to facilitate English language teaching. AI-powered personalized learning has made this more important than traditional methods would have allowed. Moreover, the fact that the use of AI is positively associated with better outcomes for learners highlights the need to integrate these technologies into the curriculum) M Pitychoutis, 2024). However, the successful deployment of AI in English language teaching also entails some challenges. The use of these technologies also raises ethical concerns regarding data privacy and bias, making it essential that teachers have the skills to use them effectively. Therefore, professional development programs that develop teachers' AI knowledge are essential to reap the benefits of these innovations (Almutairi, 2020). Finally, although AI promises a

next-generation educational solution for teaching English, we need to understand the ethical implications of using it and how it can help us in the future, but to that end; we need to ensure that teachers are adapted to this new technology (Bin, & Mandal, 2019).

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