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las habilidades comunicativas en la clase de inglés como
lengua extranjera. Una revisión de la literatura*

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La contribución de la inteligencia artificial en la enseñanza de las habilidades comunicativas en la clase de inglés como lengua extranjera. Una revisión de la literatura

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ABSTRACT

This literature review investigates how AI supports communicative skills in EFL education, specifically listening, speaking, reading, and writing. Using 25 peer-reviewed studies of the last five years, the review elucidates the boons, downsides, and teaching consequences of AI integration in language teaching. Thematic analysis was performed on data using color-coding to classify skill-related benefits and drawbacks. AI tools such as Duolingo and ChatGPT were found to increase learner interest, deliver tailored feedback, and encourage motivation, notably in receptive skills, writing, and speaking. Still, shortcomings are missing genuine human connection, too much dependence on technology, adjustment challenges in different environments, and possible effects on imagination and socio-pragmatic ability. The review highlights AI's ability to enhance performance and support autonomy but not to replicate emotional, cultural, and social language learning factors. Therefore, a hybrid teaching approach is best, with AI as a supplemental resource and teachers facilitating human connection. For EFL teachers, this means welcoming AI as a teaching partner, not a substitute, which aids focused skill growth while keeping the human bond central to language learning. Teachers should critically assess AI tools, adapt them for student needs, and create learning that blends tech with real communication.

Keywords: Artificial Intelligence, communicative skills, EFL teaching, language learning, technology integration

RESUMEN

Esta revisión de literatura analiza cómo la IA puede apoyar el desarrollo de las habilidades comunicativas en la enseñanza del inglés como lengua extranjera, concretamente la comprensión auditiva, la expresión oral, la lectura y la escritura. A partir de 25 estudios revisados por pares de los últimos cinco años, el análisis aclara las ventajas, los inconvenientes y las consecuencias pedagógicas de la integración de la IA en la enseñanza de idiomas. Se realizó un análisis temático de los datos, para el que se utilizó un código de colores con el que se clasificaron las ventajas y desventajas relacionadas con las habilidades. Se descubrió que las herramientas de IA, como Duolingo y ChatGPT, aumentan el interés de los estudiantes, ofrecen comentarios personalizados y fomentan la motivación, especialmente en las habilidades receptivas, la escritura y la expresión oral. Sin embargo, entre las desventajas se encuentran la falta de conexión humana genuina, la excesiva dependencia de la tecnología, las dificultades para adaptarse a diferentes entornos y los posibles efectos sobre la imaginación y la capacidad sociopragmática. La revisión destaca la capacidad de la IA para mejorar el rendimiento y apoyar la autonomía del alumnado, pero no para replicar los factores emocionales, culturales y sociales del aprendizaje de idiomas. Por tanto, lo más adecuado es un enfoque de enseñanza híbrido, en el que la IA se utilice como recurso complementario y los profesores se encarguen de facilitar la conexión humana. Para los profesores de inglés como lengua extranjera, esto significa aceptar la IA como un recurso de enseñanza más, no como un sustituto, que contribuye al desarrollo de habilidades específicas sin dejar de lado la interacción humana, que es fundamental para el aprendizaje de idiomas. Los profesores deben evaluar críticamente las herramientas de IA, adaptarlas a las necesidades de los alumnos y crear un aprendizaje que combine la tecnología con la comunicación real.

Palabras clave: inteligencia artificial, habilidades comunicativas, enseñanza del inglés como lengua extranjera, aprendizaje de idiomas

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INTRODUCTION

The rapid advancement of artificial intelligence (AI) has transformed many areas of everyday life, including education, and particularly the teaching of foreign languages. In recent years, there has been a growing interest in using AI-based tools in the English as a Foreign Language (EFL) classroom to enhance communication skills such as listening, speaking, reading and writing. Many foreign language educators are currently engaged in debates regarding the impact of artificial intelligence on the profession, particularly the potential for automation to replace human teachers. This encouraged the authors to conduct a theoretical review of the findings of research in which artificial intelligence has been implemented in foreign language teaching.

This work provides a theoretical review that covers the importance of understanding how these technologies are used, the advantages for learning and teaching they provide, and the challenges teachers and students have when implementing them. Hence, reviewing current publications to discover trends, patterns, and data that can advise further research and practices in the field is vital. This research aimed to analyze AI contributions to teaching communication skills in EFL classes, through a systematic review of studies.

This study was driven by these research questions: first, how does AI help develop communication skills? Secondly, what benefits and limitations have been identified in the reviewed studies? This study involved an extensive review of the literature, with sources taken from Scopus, ERIC, and Google Scholar, among others. The selection of articles was based on inclusion criteria that specified the publication period as being no more than five years prior to the present; studies that concentrate on the utilization of artificial intelligence in the domain of English as a foreign language teaching; and studies that reported results on the integration of artificial intelligence in the teaching of communication skills, which are categorized as follows: listening, speaking, reading and writing.

A total of twenty-five articles were subjected to analysis. Thematic coding was utilized to ascertain the advantages and disadvantages of the utilization of artificial intelligence in relation to each of the communication skills. This review provides a comprehensive overview of the

relevant literature on the subject. The model proposed by George (2008) and Braun and Clarke (2006) was utilized, as it provides a structured framework for the selection, organization and analysis of sources. The analysis was conducted in accordance with the 'color-coding' methodology.

Findings reported that the integration of artificial intelligence (AI) within the development of communication skills in foreign languages offers significant advantages, including personalized learning, immediate feedback and a reduction in anxiety, particularly in the domains of listening, reading, speaking and writing. However, it is important to note that implementation of AI has some limitations. These include a lack of authentic interaction, technological dependence, poor adaptability to individual contexts, and the risk of reducing creativity and originality. The extant literature suggests that, despite the documented improvement in performance and motivation that artificial intelligence can facilitate, it is unable to replace the emotional, cultural and social aspects that are essential to language teaching. It is therefore concluded that AI should be considered a valuable complement within a hybrid approach, where human interaction remains the central axis of the communication process.

Defining Artificial Intelligence

John McCarthy, who is credited with coining the term "Artificial Intelligence" in 1956, defined it as the science and engineering of developing intelligent machines, particularly intelligent computer programs, Sabanovic et al. (2012). Since its inception, the concept of artificial intelligence has undergone significant evolution and expansion, encompassing a multitude of subfields, including machine learning, computer vision, and robotics. The origins of AI can be traced back to the 1950s, when Alan Turing introduced the concept of a 'thinking machine', (Turing, 1950, cited in Muggleton (2014). This concept formed the basis for developing a multidisciplinary research area, which encompasses multiple disciplines. The Turing test, as proposed by Alan Turing in 1950, was designed to determine whether a machine could be considered intelligent. The test involves a human interrogator who interacts with both a human and a machine and must determine which is which. The computer passes the test if the

interrogator cannot tell, after posing some written questions, whether the written response is from a human or a machine. Pannu (2015).

Prior to determining whether AI has been beneficial or detrimental to education, it is essential to gain an understanding of its nature, its operational mechanisms, and its potential applications and techniques. This will facilitate a more informed evaluation of its impact. In this context, Rouhiainen (2018) offers a definition of AI that is worthy of consideration. AI involves machines using algorithms, learning from data, and making human-like decisions. Unlike humans, AI devices do not require rest and can analyze vast amounts of data simultaneously. In machines doing the same tasks as humans, the rate of errors is significantly reduced, Rouhiainen (2018).

On the other hand, Korteling et al. (2021) defines Artificial intelligence (AI) as a field of computer science that aims to develop systems capable of performing tasks that would otherwise require human intelligence. Such tasks include learning, reasoning, problem solving, perception, and natural language processing. According to the author, the field of AI comprises a multitude of subfields, spanning the general aspects of artificial cognition to the specific applications of data analysis and automation of industrial processes. Haenlein & Kaplan (2019) defines as a system's ability to interpret external data correctly, learn from it, and use that learning to achieve specific goals and tasks through flexible adaptation. According to Sennott & Akagi (2019), AI is the capability of a machine to imitate human intelligence, using its characteristics to solve problems and adapt to a changing environment. Besides, AI is an area of computer science that creates intelligent machines that work and react like humans, using tools like neural networks, machine learning, expert systems, fuzzy logics, and swarm intelligence, as mentioned by Coleman (2020).

Using ICTs in teaching foreign languages

Information and communication technologies, or ICTs, are a collection of technological instruments and assets used for information creation, sharing, storing, and management besides communication. Negoescu & Boștină-Bratu (2016). Rapidly strengthening technology has become an indispensable tool in foreign language teaching, transforming teaching and opening

new learning experiences for students. The incorporation of technology has made learning a foreign language more dynamic and has increased students' motivation and involvement in their own process and has also created conditions for students to be more autonomous in their work and therefore to take a more active role. Teaching foreign languages has become more accessible because of advancements in technology and the availability of the internet, Kizi (2024). Since we cannot imagine our personal or professional lives without computers and other technologies, their use has become essential in every aspect of modern life.

The utilization of information and communication technology (ICT) in language learning presents a multitude of novel opportunities for effective communication, benefiting both educators and learners alike. It not only facilitates the advancement of linguistic abilities but also cultivates a deeper understanding of the effective integration of ICT in enhancing pedagogical practices and learning outcomes, (Yuldashevna & Tuhtayevich, 2020). The integration of technology in the classroom provides a range of benefits for both students and teachers.

Language classrooms usually integrate the use of information technology for both teaching and learning foreign languages. Consequently, many serve as the ideal supplement to attain proficiency and fluency in language learning and instruction. For students interested in succeeding in language learning, the most appealing and successful alternative is language classes incorporating technology help, Yuldashevna & Tuhtayevich (2020).

However, the introduction of new technologies in the classroom presents several challenges and implications for teachers. To effectively utilize these technologies, teachers must adopt a new role that allows them to remain current with the rapid advancements in technology. This enables them to innovate, modernize and deliver high-quality pedagogical instruction. Nagy (2021) states that in the contemporary educational context, teachers are expected to demonstrate a capacity for modernity, which encompasses the ability to design engaging lessons that frequently employ digital technologies and to implement pedagogical strategies

that foster student engagement in novel ways. It is no longer sufficient for educators to be competent and experts in their field.

It is essential that educators consider the full range of factors associated with the integration of technology in the classroom. This encompasses not only the potential benefits and drawbacks of technology-mediated tasks but also the extent to which they align with the objectives of language learning. This includes considerations such as the relevance of the task to the lesson topic, its level of difficulty for students, and the availability of effective learning resources, Nagy, (2021). In this respect, Алисултанова et al. (2020) mention that the quality of the teaching and learning process is determined by the teacher, not by the technology. If information and communication technology are incorporated into the educational system, the position of the teacher could be compromised. But in a system that blends technology and humanism, the relationship between the teacher, students, and technology is solid and significant, (Алисултанова et al.,2020)

In this way, technology should be seen as a complementary tool to traditional teaching methods, which can have a positive impact on students' motivation to learn if it is used for activities that meet their needs and expectations, as stated by Nagy (2021). It is important to note that some students have sensory disabilities (hearing or visual), for whom TCI may present significant challenges to their learning, rather than offering benefits, González (2012).

In conclusion, it is well known that technologies have had a positive impact on language learning, but this means that teachers have a new role to play and must be prepared for these advances in education, always bearing in mind that technology does not do everything, but is only a complement to our teaching performance, it is necessary to be aware of the students' needs and interests. Despite significant advancements in educational methodologies and the integration of new technologies, there are still challenges to be addressed. Institutions need to make a greater commitment to ongoing teacher training. Institutions should give priority to ongoing teacher training in new technologies, with a focus on the didactic aspects as opposed to solely the technical ones. (Betancourt, et.al.2024).

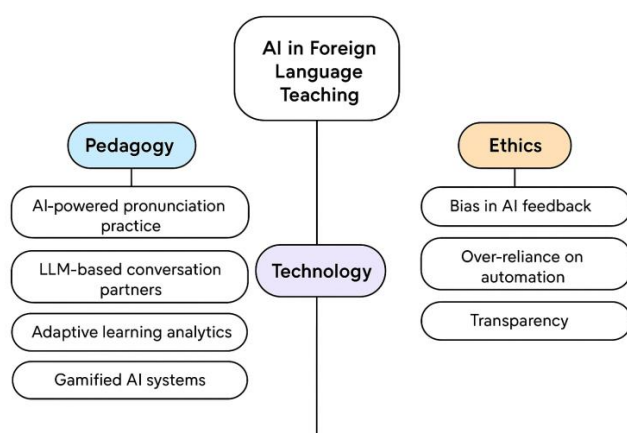
Using artificial intelligence in teaching foreign languages

The field of Artificial Intelligence (AI) has witnessed a notable surge in interest in recent years, with its applications becoming increasingly pervasive across diverse sectors and profoundly impacting the way tasks are executed. In the domain of education, artificial intelligence (AI) has the potential to transform conventional teaching and learning methodologies, especially within the context of English as a Second Language (ESL) classrooms, (Sharifuddin & Hashim,2024).

When discussing the integration of AI in English teaching, it is crucial to consider the relationship between technology, pedagogy, and ethics, (Jefferies et al.,2007). Figure 1 presents a conceptual map summarizing the interaction between these three fundamental areas in the use of AI for teaching foreign languages: Pedagogy, Technology and Ethics. Pedagogy encompasses AI-enhanced teaching strategies; technology provides the foundation that enables the implementation of these strategies in accordance with ethical principles; and ethics establishes the necessary limits and considerations to ensure responsible use. Together, these dimensions form an educational ecosystem in which technological innovation improves learning while promoting equity, transparency, and academic integrity.

Regarding pedagogy, artificial intelligence is transforming foreign language teaching by providing tools that optimize interaction and personalize learning. The future of AI in English language teaching (ELT) looks promising. AI has yielded positive results in ELT in terms of optimizing English language skills, translation, assessment, recognition, attitude and satisfaction, The impact of AI on the field of education is also gaining momentum, not least in the field of English Language Teaching (ELT). AI is a multidisciplinary field that encompasses a range of areas including computer science, cybernetics, information theory, neurophysiology, psychology, philosophy and linguistics, among others, (Sharadgah & Sa'di, 2022).

Figure 1: Interaction between pedagogy, technology and ethics



Note: The figure shows the integration among AI in teaching with the technology and etical considerations. (Jefferies et al.,2007).

The inclusion of artificial intelligence in education, especially in foreign language teaching, raises ethical considerations. These include ensuring fair assessment processes, minimizing human involvement and avoiding excessive dependence on AI (Wexell Machado & Canese, 2024). The implementation of AI has raised concerns among teachers about being replaced by it. At this respect Sarnovska & Rybinska (2024) states that there are concerns about unanticipated risks arising from rapid advances in AI due to the power it has on improvement students' engagement and language proficiency, that is why, it is important to combine its use with human critical judgement to ensure it enhances rather than replaces the role of the instructor. When considering the ethical and social implications of AI in language teaching, a thorough analysis must be conducted and preventive measures implemented (Sarnovska & Rybinska, 2024). One such measure is the responsible use of AI by students, which presents a challenge for teachers in the classroom. Given the advances in AI, it may be difficult for teachers to assess students' true knowledge.

In conclusion, the convergence of pedagogy, technology and ethics forms the core of a comprehensive approach to foreign language teaching mediated by artificial intelligence. Pedagogy ensures that AI tools respond to clear and adaptive educational objectives; technology provides the necessary infrastructure to implement these strategies; and ethics guarantees that this advancement occurs in an equitable, transparent, and bias-free manner. A

more comprehensive examination of these pedagogical, technological, and ethical issues, as proposed by Jefferies et al. (2007), could lead to higher success rates. Events that make us question the ethics of education can weaken its reputation and change our view of it. Therefore, studying the relationship of ethics and education, and the ties between technology, pedagogy, and ethics is beneficial to everyone. The intersections between technology, pedagogy, and ethics can lead to higher success rates in the use of technology in education.

METHODOLOGY

This theoretical review adopted a qualitative approach to identify and categorize the specific contributions of artificial intelligence to each communicative skill in foreign language education. Relevant peer-reviewed articles were organized in an Excel grid according to the four macro-skills: listening, speaking, reading and writing. A color-coding technique was employed to highlight the types of benefits reported in each study, enabling visual and thematic synthesis of the data. This method enabled patterns and recurrent themes to be identified, as well as skill-specific contributions, across the literature. Saldaña (2021) firms that color coding can enhance thematic clarity and support the organization of qualitative data in early analysis stages. Creswell and Poth (2018) recommend visual tools such as color coding as part of thematic organization in qualitative research.

Findings

Based on research, a broad range of AIs proved successful for every skill examined, following an in-depth review of 25 articles on AI's use in foreign language teaching. The AI and communication skills are demonstrated in this table. In the field of applied artificial intelligence, a wide variety of systems have been found to be useful in enhancing core competencies. The reviewed studies highlighted the widespread use of artificial intelligence for various purposes, particularly for improving listening, reading, speaking and writing skills. Examples of useful systems include Duolingo, ChatGPT, Babbel, QuillBot, Grammarly and DeepL.

Table 1. Communicative skills and AI implemented

Communicative Skill	AI tool implemented
Listening	Intelligent Learning Systems Speech Recognition Technology YouTube Music AI Multimodal AI (visual + auditory) AI Feedback Platforms
Speaking	Duolingo, hello talk, Babbel, speechling, chat GPT, bussu, Lingodeer, Mondly, Speaky and Tandem.
Reading	Chat GPT – Duolingo – Babbel – Memrise - Rosetta Stone - Reading Comprehension – GRE Test Prep & Practice (App and Web) - Reading - TOEFL® Prep Tests - Speed Reading — brain training
Writing	Quill Bot, Grammarly, Chat GPT, Deep L, Perplexity AI, Essay Write, OpenAI's, Lex.page, Bing AI, Jenni AI, StoryAI.

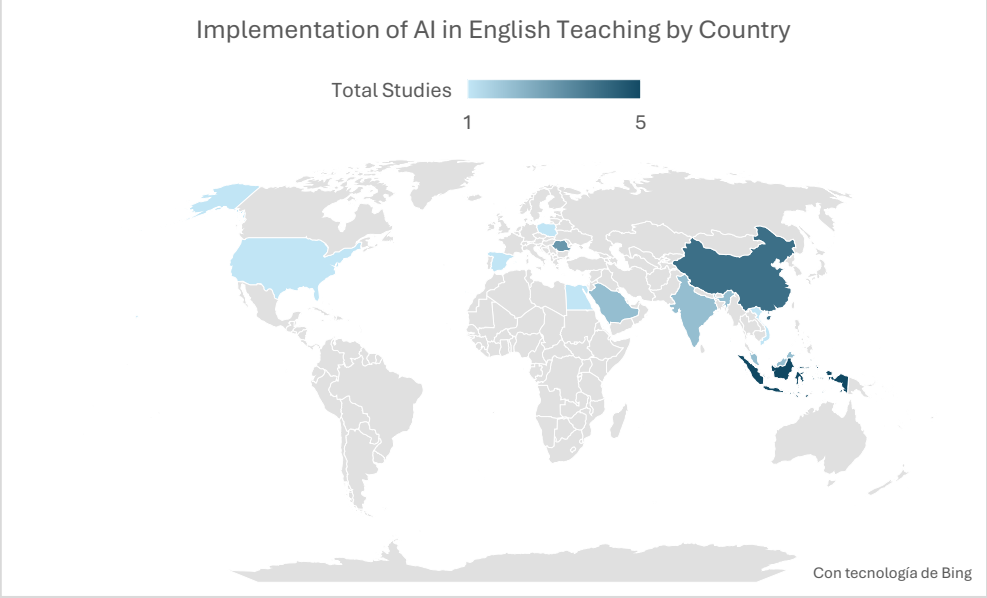
Note: the table shows the most significant AIs implemented in the reviewed articles.

The table provides a comprehensive overview of the range of AI tools implemented to support the development of each of the four main communicative skills in language learning. Findings indicate that ChatGPT, Duolingo and Babbel are the most frequently cited artificial intelligence (AI) tools across a range of communicative skills. ChatGPT is classified into three distinct communicative skills: speaking, reading, and writing. This categorization underscores its versatility as a generative language model and an interactive practice tool. Duolingo and Babbel are each included in two categories, reflecting their continued relevance as comprehensive, multi-skill language learning platforms. This recurrence suggests that these three tools play a central role in the integration of AI for language learning, supporting more than one communicative skill and offering adaptable functionalities for different learning contexts.

According to the studies reviewed it was observed a growing and diverse interest in the use of artificial intelligence in teaching English as a foreign language. The literature review found that there is global interest in this field, however this interest is not equally spread. Countries such as

China and the United States have strong technological infrastructure and have invested in educational innovation, which could explain their leadership in terms of the number of studies. Despite their status as developing countries, Indonesia and Vietnam are investing in digital education as part of their educational modernization policies.

Figure 2: Distribution of AI studies in English language instruction across countries

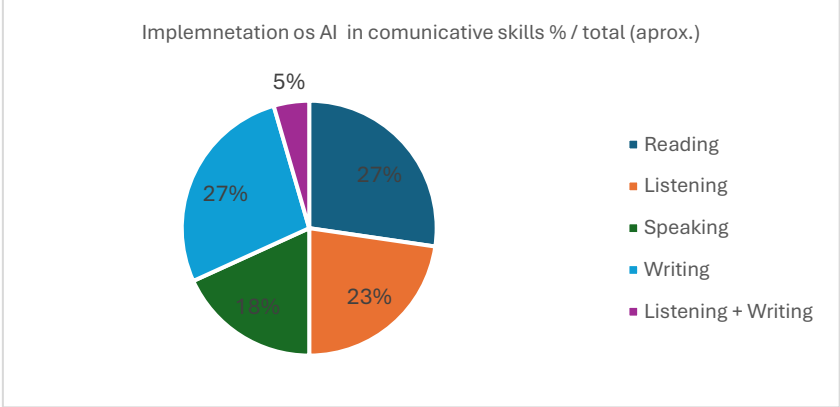


The graphic illustrates the distribution of AI studies in English language instruction across countries. The highest number of studies was conducted in Indonesia, with a total of five studies, followed by China with four, and Romania with three. Spain, Egypt, Poland, Vietnam and the United States offer one study apiece, while Saudi Arabia, India and Malaysia each offer two. The data indicates a global exploration of AI in English instruction, with a particular emphasis on Southeast Asia and Eastern Europe. The observed variation in study numbers may be attributed to differences in research interests, technological advancements, and educational objectives across different regions.

Figure 3 shows the distribution of skills targeted by AI-supported English language instruction reveals a predominant focus on reading and writing, each representing approximately 27% of the total studies analyzed. The second most prevalent response, with 23% of the responses, was listening, while speaking accounted for 18%. A smaller proportion of the research (5%) combines listening and writing skills in an integrated manner. The findings suggest that

receptive skills, particularly reading and listening, are slightly more emphasized in AI-driven language instruction, although writing also maintains a forceful presence. The relatively lower percentage for speaking may be indicative of the current limitations of AI in handling spontaneous verbal interaction

Figure 3: Implementation of AI in Communicative skills.



Regarding the population involved in the studies, it was determined that most of these implementations have been conducted at higher education level, specifically in undergraduate programs such as humanities, linguistics and engineering. 48% (12 studies), the participants were students from a range of different undergraduate programs. 12% (3 studies) reported population of students enrolled in engineering programs, while 20% (5 studies) the population were with students enrolled in language and linguistics programs. To a lesser extent, the implementation has also occurred in high schools with adolescents, accounting for 20% of the studies.

Table 2. Target population

Population participating	Number of studies	% score
University students, mixed population	12	48%
School students (general)	3	12%
Technical / Engineering students	3	12%
Eleventh grade students	2	8 %
Applied linguistics and languages programs undergraduates	5	20 %

Note: the table shows the number of studies reviewed and the percentage of populations that participated.

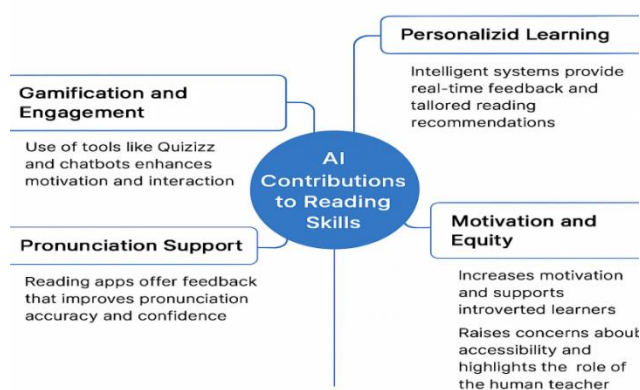
The implementation of artificial intelligence for each of the skills focused on papers reviewed

The following section presents the findings from the implementation of artificial intelligence in each of the communicative skills of English. A synopsis is provided for each skill, highlighting the advantages and disadvantages according to the research reports.

Implementing AI in teaching reading skills

A review of the existing literature on the use of artificial intelligence to support reading skills in foreign language education has been conducted to identify the four main thematic contributions that are presented in figure N. 4.

Figure 4. AI in teaching reading skills



Initially, the use of gamified platforms such as Quizizz has been demonstrated to enhance learner engagement and motivation through conversational interactions. The use of AI chatbots for conversational practice has been shown to build confidence and fluency, providing realistic experience. Artificial Intelligence (AI) also provides feedback on pronunciation which demonstrated to result in substantial enhancements in students' pronunciation accuracy and confidence. (Pradnyadewi & Kristiani, 2021). As stated by Jin (2024), the integration of AI into reading instruction has the potential to enhance the performance of specific skills, as well as to address issues of learner diversity and equity. The use of AI tools has been shown to boost student motivation and engagement in language learning, leading to improved oral proficiency. Intelligent learning systems have been shown to offer personalized learning and real-time feedback, thus fostering reading fluency and comprehension (Tleuzhanova et al., 2023). The

creation of intelligent learning systems enables students to receive real-time feedback and personalized learning recommendations, thereby enhancing their pronunciation, fluency and grammatical correctness (Tleuzhanova et al., 2023). In research conducted by Madhavi Et al. (2023) that focused on reading, the authors affirm that AI applications also contributed to improved pronunciation, suggesting cross-skill reinforcement

Although the studies analyzed have identified certain benefits, researchers have also highlighted potential disadvantages for students participating in these implementations. One limit of AI is its inability to offer varied answers or adjust to different learning methods. The absence of feedback on aspects such as rhythm and intonation suggests that improvements are needed in these areas. (Madhavi et al., 2023). Jin (2024) emphasizes wider problems like learner motivation and accessibility challenges, and the need to integrate AI tools while keeping human teachers involved.

Jin (2024) demonstrated, students indicated a preference for the maintenance of a human teacher's presence in the learning process. The author emphasizes the importance of providing support for a diverse range of learners, including those of an introverted character. However, it is imperative to emphasize the necessity of considering individual motivation and learning styles to optimize the efficacy of this technology (Jin, 2024).

Implementing AI in teaching Listening skills

Ghoneim and Elghotmy (2021) discovered that a program incorporating artificial intelligence (AI) significantly enhanced the listening performance of learners of English as a foreign language (EFL), observing enhancements in responding to gap-filling, true/false, and open-ended comprehension tasks. The provision of a feedback-rich environment has also been demonstrated to encourage greater student responsibility and autonomy in the learning process. Furthermore, intelligent learning systems have the capacity to adapt to the needs of students. The study by Tleuzhanova et al. (2023) emphasizes the utilization of intelligent systems that adapt audio content to the learner's proficiency level, thereby fostering long-term listening comprehension and retention.

Xiao's (2025) study similarly underscores the emotional advantages of AI. Learners in the AI group reported a reduction in listening anxiety and an enhancement in their sense of flow, largely due to the safe, non-judgmental nature of AI environments. This environment fosters risk-taking and active exploration, which are crucial for developing listening proficiency. A study conducted by Jin (2024) found that the use of AI-based tools in secondary school settings had a positive effect on motivation levels for participating in listening activities. This enhancement can be attributed to the interactive and visual nature of these tools. In a similar way, the integration of gamification elements in listening practice, as evidenced in the study by Tleuzhanova et al. (2023), underscores the efficacy of incorporating playful components through artificial intelligence in enhancing attitudes towards listening and facilitating incidental learning.

Research has highlighted the importance of artificial intelligence (AI) tools in enhancing learner engagement and motivation, particularly among students who demonstrate minimal interest in listening tasks at the beginning of a course. In the study conducted by Rahman and Mustofa (2022), it was reported that learners who were exposed to YouTube Music as a teaching medium exhibited heightened levels of interest and increased engagement. These findings suggest that this may result in enhanced performance in comparison to those utilizing conventional methods.

Despite the advantages, studies also report disadvantages associated with implementing AI. For instance, some studies suggest that AI-generated voices may sound unnatural, thereby affecting language comprehension. Jin's (2024) findings implicitly address this issue by highlighting the need to make digital resources more human-like. There are also limitations in contextual feedback. While AI can correct pronunciation or comprehension errors, Chakravarthy & Sunitha, (2023). caution that it cannot replace a teacher's ability to provide personalized, culturally relevant explanations. Finally, Tleuzhanova et al. (2023), in a study conducted in Kazakhstan and Romania, highlight that technological dependence and access disparities in rural or underserved areas can hinder the effective use of these tools due to connectivity issues.

García-Peñalvo (2023) expresses concerns regarding the over-reliance on AI tools. The issue of placing excessive reliance on AI technologies is a matter of grave concern, as it has the potential to hinder the development of fundamental skills essential for intellectual pursuits. This apprehension bears resemblance to those expressed during the early days of the pandemic, when concerns regarding the validity of e-learning were voiced. The development of digital literacy skills is imperative, not only in relation to AI tools but also in the context of a wide range of online platforms. The propagation of false information and disinformation may be enhanced if information is not cross-checked. The employment of AI techniques in this context has the potential to compromise the principles of open knowledge by leading to breaches in authorship and attribution, resulting from improper citations in outputs. The validity of learning and the potential for educational standards to deteriorate are subjects of debate in the context of this study, as posited by García-Peñalvo (2023).

Implementing AI in teaching Speaking

The integration of artificial intelligence (AI) within the domain of language education has been demonstrated to provide numerous benefits, including the capacity to augment oral fluency. The use of AI-based tools for language practice has been shown to enhance confidence in students by avoiding the perception of judgmental feedback. Chu et al. (2021) posit the hypothesis that students enhance their fluency by engaging with conversational agents. Conversely, students receive automated and personalized feedback, with tools such as Speech Recognition providing real-time correction for pronunciation and intonation. In accordance with the findings of Xie et al. (2023), students receive immediate feedback on phonological errors. In a similar study, autonomous practice in controlled environments has been shown to reduce anxiety in situations involving human interaction (Smith et al., 2022).

Yuan (2022) emphasize that students generally prefer to practice speaking alone. In terms of pronunciation development, the use of artificial intelligence enables students to compare their pronunciation with that of native speakers. Madhavi et al. (2023) posit that artificial intelligence (AI) facilitates enhanced pronunciation through the provision of automated feedback

mechanisms, thereby assisting students in refining their auditory perception. The apps such as Duolingo, Elsa Speak and Hello English are positively viewed in terms of their convenience and effectiveness in improving pronunciation, confidence and vocabulary. Ahmad et al. (2025). Nurmayasari (2024) in an investigation into the efficacy of Speak.google as a tool to assist EFL students in the acquisition of English language proficiency posits that the application of Speak.google provides instantaneous feedback and alternative responses, thereby facilitating the development of English language skills in EFL students. Speak.google assists EFL students in acquiring proficiency in pronunciation and word meanings. It is asserted that it represents a promising avenue for the development of AI technology with the potential to facilitate the enhancement of English language proficiency among EFL students.

As Macias et al. (2024) demonstrate in their research, the extant literature on the subject under discussion highlights the multifarious impacts of artificial intelligence (AI) on language learning, particularly in terms of enhancing speaking skills. The following factors have been identified as contributing to improved fluency and accuracy in students: conversational practice with chatbots; pronunciation feedback; intelligent learning systems; motivation and engagement; and access to technology.

In a study conducted by Zou et al. (2023) indicate that artificial intelligence (AI) in speaking assessment programs is perceived as effective in enhancing the speaking skills of English as foreign language (EFL) learners. Participants expressed confidence in their improved speaking skills, attributing this enhancement to the constructive feedback they received from these programs. The results demonstrated significant improvements in mean assessments of speaking skills across pre- and post-tests. Specifically, there was noticeable improvement in oral fluency, grammatical accuracy, pronunciation, oral rhythm, idea organization skills, reading aloud and spontaneous speaking skills. Authors suggested that AI speaking assessment programs could provide more varied textual feedback and practical suggestions to help EFL learners develop their speaking skills. Xu & Ismail (2024) discovered that the utilization of

artificial intelligence (AI) to provide feedback on pronunciation resulted in substantial enhancements in students' pronunciation accuracy and confidence.

Conversely, studies have demonstrated that the utilization of AI is accompanied by disadvantages and limitations in authentic interaction. It is important to note that AI responses may lack spontaneity or real variability. Li et al. (2022) posit that, in certain instances, AI conversations do not present sufficient challenges to students. The risk of technological dependence is also highlighted.

Excessive use of artificial intelligence has the potential to reduce the human interaction necessary for strengthening socio-pragmatic skills. They argue that excessive use of AI has the potential to diminish the human interaction necessary to strengthen these skills. (Lai et al.,2023). Students may encounter several challenges that could hinder the effectiveness of the feedback process. These may include technical difficulties, issues with accent recognition or environmental noise. Ahmad et al. (2025) also noted that there are several challenges including AI in teaching speaking, including issues with connectivity, cost considerations, and the necessity for increased interactions with native speakers.

According to the findings of the Macias et al (2024) study, the key challenges identified were in the provision of support for diverse learners and limitations related to technology. Xu & Ismail (2024) offer a valuable insight regarding using AI in teaching speaking such as the absence of feedback regarding aspects such as rhythm and intonation, highlighting the necessity for further enhancements in this area.

Implementing AI in teaching Writing

Writing is one of the toughest skills because it requires careful attention to detail and strict adherence to strict norms. These rules include the use of grammar, coherence, cohesion, and word choice. To ensure that readers understand the intended message, students must choose the term that best conveys meaning. The main idea, the information in each paragraph, and the researcher's reasoning should all make sense. In writing, grammar is also quite important. Using proper grammar is essential to guaranteeing the reader's comprehension and coherence,

Sa'adah (2020). Cely (2015) mentions that writing is known to engage profound cognitive processes, thus classifying it as a complex and challenging task. Primarily, by facilitating communication and unveiling thought processes for examination, it fosters critical reflection and learning. The author also states that teaching writing in the EFL classroom is time-consuming and requires effort, and sometimes teachers are unable to complete it since they must adhere to the institution's syllabus. Cely (2015).

However, recent research has shown that technology may also serve as a facilitator, making it easier to improve some language abilities, especially writing. Research indicates that the usage of AI in the classroom has greatly enhanced students' academic writing abilities. Students have also been motivated and effectively engaged in the writing process, resulting in the production of precise, coherent, and well-written compositions that demonstrate proper grammar and the acquisition of new vocabulary. Nevertheless, it is important to acknowledge the challenges and limitations that have been identified. According to the results, advanced high school or college students have mostly used these resources, especially when it comes to academic writing.

It has been demonstrated that students encounter challenges in the writing process, including a lack of imagination, paucity of original ideas, burstiness and perplexity, (Krajka & Olszak, 2024). Recent research has demonstrated the potential benefits of integrating artificial intelligence into academic writing processes, particularly in situations where students encounter difficulties in generating ideas, (Krajka & Olszak, 2024; Rosdiana et al., 2024; Syarifah & Fakhruddin, 2024). AI writing assistants, such as ChatGPT, have been found to facilitate the ideation process by generating ideas, (Syarifah & Fakhruddin, 2024; Ely & Rezvani, 2024). AI can also save students' time when it comes to finding references, choosing titles, and brainstorming ideas, among other advantages in academic writing processes, Rosdiana et al. (2024).

In the academic writing process, the following stages are of relevance: planning and outlining, drafting, redrafting and revising, editing and proofreading. The purpose of these stages is to ensure that the final product is of the highest quality. Findings have demonstrated that all phases of the writing process are possible by using AI. According to Rosdiana et al. (2024), a

case study involving students in the English Language Study Program in Nigeri showed that artificial intelligence (AI) facilitated the writing process from topic selection to brainstorming, writing, disasters, editing, and post-publication evaluations, and that students produced high-quality work. The integration of technology in the teaching of English has been demonstrated to enhance learner engagement and align with global educational trends. This integration is therefore considered an indispensable part of modern pedagogy, Rosdiana et al. (2024).

In the learning writing process, learners usually exhibit a tendency to write in a consistent style, characterized by similar sentence lengths and patterns. This tendency results in monotonous and uninteresting writing. In 2024, a Polish study investigated how AI tool training affected applied linguistics students' writing, measuring irruption and perplexity levels. Comparing pre- and post-test results, most students' post-treatment writing demonstrated slightly longer sentences. Moreover, the data indicated a post-treatment increase in complex sentence production among over half of the students. Researchers found that AI techniques improved students' ability to generate complex words. Krajka & Olszak (2024).

Tran (2024) discovered that most learners expressed agreement with the enhancement of their academic writing proficiency at discourse, sentence and word/phrase levels. Evidently, students have made a substantial enhancement. It is imperative that sentences are concise and straightforward, incorporating a limited number of subjects and verbs. In the context of essay writing, subordinate, coordinate and relative clauses were employed with minimal frequency by students. This outcome suggests that there has been a marked improvement in the students' academic writing proficiency. Substantial progress has been made in terms of coherence, cohesion and lexical resources, as well as knowledge accumulation. However, the author warns that it is inevitable that human beings will become dependent on technology, particularly in relation to artificial intelligence. Furthermore, given the capacity of AI to think, humans are inherently disposed of to generate ideas, which can, in turn, result in a diminution of efficiency.

According to Syarifah& Fakhruddin (2024) AI-driven applications such as ChatGPT, StoryAI, Quillbot and Jenny AI provide grammar and style analysis, enabling students to identify errors

and improve sentence structure and readability. Thus, significant gains in writing quality, organization and clarity can be achieved by using AI, as well as increased student engagement and motivation thanks to AI assistants. AI writing aides like ChatGPT assist students by generating ideas, providing writing prompts and suggesting improvements. Additionally, the process of writing begins with students' own words and guides the process of self-expression through drafting and conferring, just like real writers do, with the aim of producing published works for an imagined or actual target audience.

According to Dong (2023), using an AI-powered writing tool had a positive impact on students' writing proficiency, enhancing the teaching process in an EFL classroom setting. The tools provide real-time feedback, identifying errors and suggesting corrections, helping promote student engagement and increasing efficiency. The AI-powered writing tool was found to enhance the teaching process by providing timely and personalized feedback, promoting student engagement and increasing efficiency. These findings have important implications for educators seeking new and innovative approaches. (Dong (2023)

The extant literature suggests QuillBot AI can help in the form of suggestions for modifications to sentences and enhancements to sentence structure. Students can identify and correct errors in their writing, thereby refining their writing to make it more precise. This resource has been found to be of particular benefit to students experiencing difficulties in articulating their ideas in their own words, helping them to express themselves more clearly and concisely. (Amyatun & Kholis, 2023) QuillBot can help students to rephrase sentences and paragraphs while retaining the original meaning, thus promoting originality and better writing skills, Amyatun, R.L., & Kholis, A. (2023)

Despite the significant benefits and advantages identified in the studies examined, there are risks and ethical implications that must be considered. In their study, Ely, S. J. and Rezvani Rad, M. (2024) found that, despite the advantages, AI can provide students with misleading information and outdated data. AI can hinder creativity and misinterpret students' intentions. According to the authors, AI-generated text cannot capture the nuances, context and subjective

nature of writing. This means that AI responses have a distinct voice that is separate from that of the individual. The authors warn of the ethical implications of AI in education and emphasize the need for careful study of these implications.

DISCUSSION

Language teaching is an intrinsically social and communicative process that requires human interaction to develop not only linguistic accuracy, but also communicative, cultural, and emotional competences. While Artificial Intelligence (AI) can effectively support specific skills such as pronunciation, vocabulary, or grammar practice, it cannot replace the motivation, empathy, and personal bonds that sustain meaningful learning. Communication is a profound human act, influenced by emotional, cultural, and social factors that AI cannot replicate. These dimensions require context, authenticity, and the personal connection that only human interaction can provide. Teachers therefore remain essential as mediators who interpret learners' needs, foster inclusive and motivating environments, and guide the learning process beyond technical skill-building.

Although AI significantly contributes to the advancement of communicative competences, overreliance on technology risks the dehumanization of the learning process. In AI-mediated environments, students may lose opportunities to negotiate meaning, handle misunderstandings, and engage in authentic conversational exchanges all of which are critical to foreign language acquisition. The teacher's role evolves into that of a social and cultural facilitator, designing collaborative activities, intercultural exchanges, and real-world projects that encourage students to use language in authentic contexts. The most effective approach is therefore a hybrid or blended model, where AI tools complement traditional methods, supporting targeted skills while preserving face-to-face interaction, group work, and personalized guidance. This balance ensures that learners benefit from AI's efficiency and adaptability without losing the human connection that remains at the heart of language education.

For EFL teachers, the growing presence of AI in language education calls for critical reflection: How much should we rely on AI in our teaching? Are we truly prepared to integrate these tools effectively? Beyond the excitement of technological innovation, educators must consider the pedagogical value, ethical implications, and long-term impact of AI on learning. Responsible use requires aligning AI with clear instructional goals, ensuring it complements rather than replacing human interaction, and being mindful of learners' diverse needs and contexts. Teachers should see AI not as a shortcut, but as a resource to enhance, not diminish, the quality of teaching one that is integrated with professional judgment, continuous training, and an unwavering commitment to keeping human connection at the center of language education. Finally it is important to mention that in the contexts in Colombia there are progress in creating equal opportunity policies to improve citizens' proficiency in English as a foreign language, however, there is still concern about low linguistic competency students still have, according to Betancourt & de Sarmiento (2024). There are now higher expectations about the employment of AI as a tactic to inspire and improve students' foreign language skills and opportunities and challenges for teachers.

CONCLUSIONS

With AI, education builds better communication skills through personalized learning. However, using AI in language instruction is difficult, requiring good teaching design, teacher training, and an assessment of its effect on real communication skills. Consequently, the question arises: how far can AI enhance teaching/learning without replacing human interaction in language? However, researchers were motivated to study how AI influences student motivation and improves English communication.

The accelerated development of Artificial Intelligence (AI) has generated significant transformations in the teaching of English as a Foreign Language (EFL), offering new opportunities to enhance communicative skills in listening, speaking, reading, and writing. This review found a predominance of research focused on reading and writing (27%), where AI tools provide immediate feedback and adaptive materials that facilitate comprehension. Notable

progress was also reported in listening and speaking through automated feedback, speech recognition, and conversational assistants, leading to measurable improvements in pronunciation and fluency. However, the findings highlight persistent challenges, including the lack of authentic human interaction, occasional misinterpretations of speech, and the pedagogical gap between technological advancement and effective classroom application.

The literature reviewed reflects a growing but uneven global interest in AI integration. Most studies have been conducted in technologically advanced contexts such as China and the United States, while emerging economies like Indonesia and Vietnam are adopting AI as part of educational modernization policies. Most implementations (80%) occur in higher education, particularly in undergraduate programs in humanities, linguistics, and engineering while secondary education accounts for only 20% of the studies. This distribution suggests that AI adoption in EFL remains more accessible to contexts with better infrastructure and resources.

Ultimately, AI should be seen as a powerful complement, not a replacement, for human-centered language teaching. The evidence confirms that while AI can improve specific skills through automation and personalization, it cannot replicate the cultural, emotional, and social dimensions inherent to language learning. Therefore, the most effective approach is a hybrid model that combines technological innovation with face-to-face interaction, collaborative work, and the teacher's role as a cultural and communicative mediator. For EFL educators, this raises key questions about readiness, responsible use, and the pedagogical strategies required to harness AI's benefits while safeguarding the human connection at the heart of language education.

BIBLIOGRAPHIC REFERENCES

Ahmad, Y., Mumtaz, U., & Riaz, S. (2025). Investigating the influence of Duolingo, Elsa Speak, and Hello English mobile applications on students' attitudes and speaking skills. *Review Journal of Social Psychology & Social Works*, 3(1), 640–669.
<https://doi.org/10.71145/rjspv3i1.131>

- Алисултанова, Э. Д., Исаева, М. З., & Болтиев, Д. У. (2020). Преподавание и изучение иностранных языков с использованием ИКТ. Вестник ГГНТУ. Гуманитарные и социально-экономические науки, 16(4), 60–66.
<https://doi.org/10.34708/GSTOU.2020.39.99.008>
- Amyatun, R. L., & Kholis, A. (2023). Can Artificial Intelligence (AI) like QuillBot AI assist students' writing skills? Assisting learning to write texts using AI. ELE Reviews: English Language Education Reviews.
- Betancourt, B. L. C., & de Sarmiento, M. O. (2024). Colombia towards bilingualism: Policies, achievements, failures, and challenges. *Kurdish Studies*, 12(2), 1277–1294.
- Betancourt, B. L. C., Jiménez, A. B., de Sarmiento, M. O., Jiménez, O. L. G., Gutiérrez, J. S. C., Rodríguez, L. F., & Joya, F. (2024). Professors of Foreign Language Degree Programs in Colombia: Review of their Didactic and Technological Competencies. *Evolutionary Studies in Imaginative Culture (ESIC)*. 2024, Vol 8.2, S2.
- Cely Betancourt, B. L. (2015). Writing: A profitable but negated skill in English classes in undergraduate programs. *The Grove - Working Papers on English Studies*, 22.
<https://doi.org/10.17561/grove>.
- Chu, M., Jia, H., Gutierrez-Chico, J. L., Maehara, A., Ali, Z. A., Zeng, X., ... & Tu, S. (2021). Artificial intelligence and optical coherence tomography for the automatic characterisation of human atherosclerotic plaques: AI and OCT for plaque characterisation. *EuroIntervention*, 17(1), 41. [10.4244/EIJ-D-20-01355](https://doi.org/10.4244/EIJ-D-20-01355). PMID: [33528359](https://pubmed.ncbi.nlm.nih.gov/33528359/); PMCID: [PMC9724931](https://pubmed.ncbi.nlm.nih.gov/PMC9724931/).
- Coleman, J. (2020). AI and our understanding of intelligence (pp. 183–190).
https://doi.org/10.1007/978-3-030-55180-3_15
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.

- Dong, Y. (2023). Revolutionizing Academic English Writing through AI-Powered Pedagogy: Practical Exploration of Teaching Process and Assessment. *Journal of Higher Education Research*. <https://doi.org/10.32629/jher.v4i2.1188>
- Ely, S. J., & Rezvani Rad, M. (2024). Examining the opportunities and challenges of using artificial intelligence for engineering technical writing courses. Paper presented at 2024 ASEE Annual Conference & Exposition, Portland, Oregon. <https://doi.org/10.18260/1-2—47381>
- García-Peñalvo, F. J. (2023). La percepción de la Inteligencia Artificial en contextos educativos tras el lanzamiento de ChatGPT: disrupción o pánico. *Education in the Knowledge Society (EKS)*, 24, e31279. <https://doi.org/10.14201/eks.31279>
- González, P. D. J. (2012). Uso de las nuevas tecnologías en la enseñanza de lenguas extranjeras. *Revista de lenguas para Fines Específicos*, 18, 183–212. <https://ojsspdclupgc.es/ojs/index.php/LFE/article/view/42>
- Ghoneim, N., & Elghotmy, H. (2021). Using an artificial intelligence based program to enhance primary stage pupils' EFL listening skills. 324-1, (83)83, *المجلة التربوية لكلية التربية بسوهاج*. [10.21608/edusohag.2021.140694](https://doi.org/10.21608/edusohag.2021.140694)
- Haenlein, M., & Kaplan, A. (2019). A brief history of artificial intelligence: On the past, present, and future of artificial intelligence. *California Management Review*, 61(4), 5–14. <https://doi.org/10.1177/000812561986>
- Jefferies, P., Carsten-Stahl, B., & McRobb, S. (2007). Exploring the relationships between pedagogy, ethics and technology: Building a framework for strategy development. *Technology, Pedagogy and Education*, 16(1), 111–126. <https://doi.org/10.1080/14759390601168122>
- Jin, M. (2024). Leveraging artificial intelligence for enhanced English reading instruction in senior high school. *Academic Journal of Management and Social Sciences*, 7(3), 29–32.

- Chakravarthy, C. K., & Sunitha, V. (2023). THE USE OF MOBILE APPS TO ENHANCE READING SKILLS OF LANGUAGE LEARNERS: A REVIEW. *Human Research in Rehabilitation*, 13(1). DOI: 10.21554/hrr.042303
- Kizi, N. M. (2024). The use of information technology in teaching foreign languages. *International Journal of Pedagogics*.
- Korteling, J. E., van de Boer-Visschedijk, G. C., Blankendaal, R. A., Boonekamp, R. C., & Eikelboom, A. R. (2021). Human versus artificial intelligence. *Frontiers in Artificial Intelligence*, 4, 622364. <https://doi.org/10.3389/frai.2021.622364>
- Krajka, J., & Olszak, I. (2024). "AI, will you help?" How learners use artificial intelligence when writing. *XLinguae*, 17(1), 34–48. <https://doi.org/10.18355/XL.2024.17.01.03>
- Li, J., Meng, Y., Wu, X., Wu, Z., Jia, J., Meng, H., ... & Wang, Y. (2022). Inferring speaking styles from multi-modal conversational context by multi-scale relational graph convolutional networks. In *Proceedings of the 30th ACM International Conference on Multimedia* (pp. 5811-5820).
- Lai, T., Xie, C., Ruan, M., Wang, Z., Lu, H., & Fu, S. (2023). Influence of artificial intelligence in education on adolescents' social adaptability: The mediatory role of social support. *Plos one*, 18(3), e0283170. <https://doi.org/10.1371/journal.pone.0283170>
- Madhavi, G. M., Bashyam, N., Rajesh, D., Kalyan Chakravarthy, C., Ravichand, M., & Munagala, M. (2025). Advancing language proficiency: The transformative power of machine learning in English language skills development. In A. Bajaj, A. Abraham, K. R. Madhavi, & O. Castillo (Eds.), *Proceedings of the 15th International Conference on Soft Computing and Pattern Recognition (SoCPaR 2023)* (pp. xxx–xxx). Springer. https://doi.org/10.1007/978-3-031-81086-2_32
- Macías, A. M. D., Solano, D. O. A., Perero, L. M. P., Panimboza, J. A. R., & Lucas, C. (2024). The potential of artificial intelligence to improve speaking skills in a second language (English) fluently. *Ciencia Latina: Revista Multidisciplinar*, 8(3), 3826–3836.

- Muggleton, S. (2014). Alan Turing and the development of artificial intelligence. *AI Communications*, 27(1), 3–10. <https://doi.org/10.3233/AIC-1305>
- Nagy, T. (2021). Using technology for foreign language learning: The teacher's role. *Central European Journal of Educational Research*, 3(2), 23–28. <https://doi.org/10.37441/cejer/2021/3/2/9347>
- Negoescu, A., & Boștină-Bratu, S. (2016). Teaching and learning foreign languages with ICT. *Scientific Bulletin*, 21(1), 21–27. <https://doi.org/10.1515/bsaft-2016-0032>
- Nosirhon-Kizi, N. M. (2024). The use of information technology in teaching foreign languages. *International Journal of Pedagogics*, 4(01), 81-85. <https://doi.org/10.37547/ijp/Volume04Issue01-15>
- Nurmayasari, D. (2024). Leveraging artificial intelligence technology: Introducing speak.google as a digital speaking assistant for EFL students. *Strategy: Jurnal Inovasi Strategi Dan Model Pembelajaran*, 4(1), 14–18. <https://doi.org/10.51878/strategi.v4i1.2927>
- Pannu, A. (2015). Artificial intelligence and its application in different areas. *Artificial Intelligence*, 4(10), 79–84.
- Pradnyadewi, D. A., & Kristiani, P. E. (2021). Use of Quizizz in improving students' reading skill. *The Art of Teaching English as a Foreign Language*.
- Rahman, I. A., & Mustofa, M. (2022). YouTube music as an innovative teaching media to improve students' listening mastery. *Jurnal Paedagogy*, 9 (1), 8-16. <https://doi.org/10.33394/jp.v9i1.4402>
- Rosdiana, S., Nurcolis, M. A., & Fauzan, M. H. (2024). The use of artificial intelligence in teaching writing skills. *EDUCASIA*, 9(1), 45–56. <http://dx.doi.org/10.21462/educasia.v9i1.251>
- Rouhiainen, L. (2018). Artificial intelligence: 101 things you must know today about our future (Vol. 1). Lasse Rouhiainen.
- Sabanovic, S., Milojevic, S., & Kaur, J. (2012). John McCarthy [history]. *IEEE Robotics & Automation Magazine*, 19(4), 99–106. <https://doi.org/10.1109/MRA.2012.2221259>

- Sa'adah, A. R. (2020). Writing skill in teaching English: An overview. *EDUCASIA: Jurnal Pendidikan, Pengajaran, dan Pembelajaran*.
- Saldaña, J. (2021). *The coding manual for qualitative researchers*.
- Sarnovska, N., & Rybinska, Y. (2024). Ethical and social issues related to the use of artificial intelligence in university foreign language education. *Collection of Scientific Papers «ΛΟΓΟΣ»*, 351–353. <https://doi.org/10.36074/logos-01.03.2024.076>
- Sennott, S. C., Akagi, L., Lee, M., & Rhodes, A. (2019). AAC and artificial intelligence (AI). *Topics in Language Disorders*, 39(4), 389–403. <https://doi.org/10.1097/TLD.0000000000000197>
- Sharadgah, T. A., & Sa'di, R. A. (2022). A systematic review of research on the use of artificial intelligence in English language teaching and learning (2015–2021): What are the current effects? *Journal of Information Technology Education: Research*, 21.
- Sharifuddin, N. S., & Hashim, H. (2024). Benefits and challenges in implementing artificial intelligence in education (AIED) in ESL classroom: A systematic review (2019–2022). *International Journal of Academic Research in Business and Social Sciences*, 14(1), 146–164. <http://dx.doi.org/10.46886/IJARBSS/v14-i1/9394>
- Syarifah, E. F., & Fakhruddin, A. (2024). Exploring students' experience in using AI to assist their writing. *Journal of English Language Learning*. <https://doi.org/10.31949/jell.v8i1.10028>
- Tran, T.D. (2024). AI Tools in Teaching and Learning English Academic Writing Skills. *Proceedings of the AsiaCALL International Conference*. <https://doi.org/10.54855/paic.23413>
- Tleuzhanova, G. K., Tentekbayeva, Z., Jantassova, D., & Kitibayeva, A. (2024). The impact of artificial intelligence on English language teaching in the context of formal and informal higher education. *National Center for Higher Education Development*. <https://doi.org/10.59787/2413-5488-2024-48-4-126-134>

- Wexell-Machado, L., & Canese, V. (2024). Métodos de apropiación de la inteligencia artificial en la enseñanza de idiomas y sus consideraciones éticas. *Lengua y Sociedad*, 23(2), 1021–1046. <http://dx.doi.org/10.15381/lengsoc.v23i2.29268>
- Xie, Y., Wu, S., & Chakravarty, S. (2023, October). AI meets AI: Artificial intelligence and academic integrity-A survey on mitigating AI-assisted cheating in computing education. In *Proceedings of the 24th annual conference on information technology education* (pp. 79-83). <https://doi.org/10.1145/3585059.3611449>
- Xiao, Y. (2025). The impact of AI-driven speech recognition on EFL listening comprehension, flow experience, and anxiety: A randomized controlled trial. *Humanities and Social Sciences Communications*, 12(1), 1–14.
- Xu, B., & Ismail, H.H. (2024). The Impact of Artificial Intelligence-Assisted Learning Applications on Oral English Ability: A Literature Review. *International Journal of Academic Research in Progressive Education and Development*. <http://dx.doi.org/10.6007/IJARPED/v13-i4/23352>
- Yuan, Y. (2022). Quantitative analysis of Chinese classroom teaching activity under the background of artificial intelligence. *Education and Information Technologies*, 27(8), 11161-11177. <https://doi.org/10.1007/s10639-022-11080-x>
- Yuldashevna, Z. D., & Tuhtayevich, H. I. (2020). The use of ICT in foreign language learning and teaching. *Journal of Critical Reviews*, 7, 765–767. <https://doi.org/10.31838/jcr.07.05.156>
- Zou, B., Du, Y., Wang, Z., Chen, J., & Zhang, W. (2023). An investigation into artificial intelligence speech evaluation programs with automatic feedback for developing EFL learners' speaking skills. *SAGE Open*, 13(3). <https://doi.org/10.1177/21582440231193818>