



ARTIFICIAL INTELLIGENCE IN LANGUAGE EDUCATION: CHALLENGES, OPPORTUNITIES, AND FUTURE PROSPECTS

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ABSTRACT

This article will examine the role of artificial intelligence in language learning, its current capabilities, what changes are anticipated in the future, and of course, the challenges that currently exist. Artificial intelligence has been around for a short time, but it has been developing quickly in recent years, bringing about many changes, particularly in the field of education, including language learning. The study analyzed the scientific literature and examined the impact of AI technologies on language learners. Artificial intelligence-based tools and platforms have introduced adaptive learning methods, personalized learning, and real-time feedback, making language acquisition more convenient and effective. While students have the opportunity to learn their lessons with the help of AI based individual approach, work on pronunciation and accent, and have 24/7 chat capabilities, they still lack a live teacher. Overuse of technology limits cultural context and reduces live interaction with human teachers. Although AI is helpful, human teachers are still necessary. Will AI eventually replace human teachers entirely? AI algorithms can be unpredictable, so interactions between AI and humans must be balanced. By reviewing current developments and future trends, this study helps people learn more about how AI can be used to effectively teach languages, while also being aware of its limitations. The study highlights the importance of using AI as a complement to, rather than a complete replacement for, traditional language teaching in order to ensure an acceptable and ethically sound learning experience for all learners.

Introduction: AI technologies show great promise for improving language acquisition and raising productivity in educational settings, and the introduction of generative AI tools has important ramifications for academia in general and language education in particular. "Students recognized the potential for personalized learning support, writing and brainstorming assistance, research and analysis capabilities." (Chan & Hu, 2023). But these developments have also spurred heated discussions regarding the possible drawbacks of generative AI for language instruction. "This qualitative case study, chosen for its ability to provide an in-depth exploration of the nuanced effects of AI on the foreign language learning process within its real-world educational context, aimed to utilize ChatGPT in foreign language education, addressing a gap in existing research by offering insights into the potential, benefits, and drawbacks of this innovative approach. The findings suggest that ChatGPT positively affects students' learning experiences, especially in writing, grammar, and vocabulary acquisition, and enhances motivation and engagement through its versatile and accessible nature in various learning activities." (Karataş et al., 2024). Although artificial intelligence has such advantages, it also has several negative effects. "I have the knowledge, I have the lived experience, I'm a good student, I go to all the tutorials and I go to all the lectures and I read everything we have to read but I kind of felt I was being penalised because I don't write eloquently and I didn't feel that was right" ('Essay Witch', a student in New Zealand who used AI tools for their assignments, cited in Heyward, 2022). "With the students not being physically present, assessing their level of knowledge on a subject presents different challenges than those traditionally encountered in face-to-face teaching." (Alegre & Berbegal-Mirabent, 2021a). Artificial intelligence cannot fully understand all cultural and related contexts, and sometimes it is observed that it sometimes gives incorrect translations or answers. In the future, artificial intelligence, through current improvements and constant updates, will radically change the language learning process, making it more convenient and effective. "This research aims to investigate the potential impact of AI on education through review and analysis of the existing literature across three major axes: applications, advantages, and challenges." (Kamalov et al., 2023b). "Objective: The objective of this article is to provide practical examples of the utilization of ChatGPT for educational purposes in the context of teaching." (Mondal et al., 2023). Teachers should use ChatGPT with caution because the content it generates may contain errors or scientific inaccuracies, but these examples, which are based on real-world experiences and observations, demonstrate the potential of AI to improve educational practices.

Literature review

Generative AI can create individual lesson plans based on students' levels and needs, AI chatbots and voice assistants can help students practice real-life conversations, and AI apps like Grammarly or QuillBot can help students correct grammar mistakes and improve their writing. "This study aims to evaluate the role of AI in enhancing language learning processes, focusing on its capability to support personalized and adaptive learning experiences." (AlAqlobi et al., 2024). AI always helps to analyze and explain in more depth the topics they do not understand. AI-based voice assistants, chatbots that allow students to practice 24/7, real-time translation and context-sensitive learning systems make language learning much more intuitive and easy. "ChatGPT is a state-of-the-art language model (a variant of OpenAI's Generative Pretrained Transformer (GPT) language model) designed to generate text that can

be indistinguishable from text written by humans.” (Rudolph et al., 2023b). The examples below are just a few of the current opportunities that AI offers. But it still needs some tweaks and improvements to expand and refine its capabilities. So that we might continue to see its potential without any shortcomings in the future.

However, "the emergence of large-scale language models such as ChatGPT has presented unprecedented challenges and opportunities in foreign language education." (Yang, 2024b). "Let me add that the primary disruptive technology of the moment is generative artificial intelligence (GenAI), which presents many opportunities as well as considerable risks and challenges to conventionally oriented institutionally located instructed language learning." (Thorne, 2024). Some cases of artificial intelligence addiction can also be observed in students. They may lose their ability to learn independently and may not be able to use their own knowledge due to excessive use of AI and hesitations. Sometimes, AI-powered tools also make mistakes, like wrong answers to the questions about cultural context, sarcasm, translation, outdated information and this causes confusion for the students. AI users may also ask for help with homework or simply copy ready-made answers, noting that no one can guarantee that they will use AI-powered tools only for learning. As a result, it is difficult to determine the true level of knowledge when checking students' assignments. "By addressing these issues and constraints, AI learning systems have the potential to become even more powerful and impactful tools for language learning, and their integration plays a crucial role in designing more effective and efficient learning user experience solutions." (De La Vall & Araya, 2023b). "By understanding students' perceptions and addressing their concerns, policymakers can create well-informed guidelines and strategies for the responsible and effective implementation of GenAI tools, ultimately enhancing teaching and learning experiences in higher education." (Chan & Hu, 2023).

The sophistication of AI-powered systems has lately increased to such an extent that almost no human intervention is required for their design and deployment. When decisions derived from such systems ultimately affect humans' lives (as in e.g. medicine, law or defense), there is an emerging need for understanding how such decisions are furnished by AI methods. This study analyzes the transformative potential of combining artificial intelligence (AI) with immersive technologies, specifically virtual reality (VR) and augmented reality (AR), to elevate educational outcomes significantly. The synergy of AI and immersive technologies presents a unique opportunity to enhance students' motivation, memory retention, and comprehension of complex subjects, creating a distinct and impactful learning experience. As immersive learning evolves, Virtual Reality (VR) and Augmented Reality (AR) technologies will immerse students in artificial language environments. "Articles were sourced from academic databases such as Google Scholar, ResearchGate, Scopus using targeted search terms including "AI and learning speaking," "AI and learning writing," and "AI and improving listening. Specific AI tools like Virtual Reality (VR) applications, automated writing feedback systems, and chatbots were analyzed for their effectiveness in enhancing speaking, writing, and grammar skills." (Mohebbi, 2024).

AI-powered VR chat rooms could offer new ways to learn languages. In addition, artificial intelligence allows for the teaching of multiple languages in parallel. AI can create individual lessons in multiple languages at the same time, depending on the level of the student. "Also, the use of AI for data analysis based on instructed frameworks for large language models

could play a major role in helping researchers analyze large datasets collected about language acquisition if the AI tools are used skillfully and responsibly.” (AlAqlobi et al., 2024). The cooperation of AI and human teachers makes the learning process more effective - teachers can individually approach students based on AI analysis and explain in more depth the topics they do not understand. AI-based voice assistants, chatbots that allow students to practice more, effective, context-sensitive learning systems make language learning much more intuitive and easy. “Specifically, the paper identifies three areas of likely future disruption in service experiences that may benefit from immediate attention: extra-sensory experiences, hyper-personalized experiences and beyond-automation experiences.” (Buhalis et al., 2019). So, AI makes the learning process more effective, personalized and convenient. If learners use AI tools correctly, their language learning process will be significantly accelerated. However, it is important to consider the limitations of AI and combine it with human teaching methods. It should be used in harmony with human teachers, cultural context and independent learning. “In this study, a systematic review was conducted to explore the role of Artificial Intelligence (AI) in language learning, drawing insights from 18 peer-reviewed articles published between 2009 and 2024.” (Mohebbi, 2024).

Methodology

This study is based on a theoretical analysis of existing literature on artificial intelligence in language learning. It describes the current capabilities of artificial intelligence in language learning, its shortcomings and what improvements can be achieved with it in the future. Although no primary data was collected, the study is based on an analysis of existing research, scientific literature, and journal articles published to date. Phrases such as AI in language, AI-based technology, Artificial Intelligence in language learning, AI as tutor, future prospects of AI in education were used as search terms. The selected sources were obtained from academic databases such as Google Scholar, ResearchGate, and Scopus, covering publications from 2009 to 2024. The research was written using thematic analysis and the selected sources were analyzed in the following main areas. Personalization of the learning process using AI - Adaptive learning; AI advantages - 24/7 availability, pronunciation correction, feedback; challenges of AI - sometimes lack of cultural context, incorrect translations; future prospects - integration of AI and VR/AR technologies; but the combination of AI and human tutors is particularly emphasized. The article is based on a theoretical literature review, and only academic articles in English were selected, and studies in other languages were not analyzed. In the future, it will be possible to study the effectiveness in more depth using experimental tests and real practical results.

Result

This study analyzes existing scientific literature on the impact of artificial intelligence (AI) on the language learning process. This article examines in language learning and has shown the following results. AI-powered personalized learning tools enable learners to identify and address their weaknesses at any time, providing adaptive learning experiences. It is possible to create a structured language environment for language learning through additional interactive quizzes, questions and answers, and conversations outside of the general lesson. When other language learners cannot find a partner for live communication, they can use AI personalized tools and receive feedback at the end of the conversation to learn about their weaknesses and mistakes. I-based platforms such as ChatGPT, Grammarly, and Duolingo are

among the most widely used language learning tools, offering multilingual support and enhancing learners' writing, pronunciation, and communication skills. Platforms are helping language learners improve their writing, pronunciation, and communication skills. Over-reliance on AI tools may lead to challenges such as incorrect responses, limited cultural awareness, and a lack of emotional connection. Therefore, human instructors remain essential for providing context, nuanced feedback, and interactive learning experiences. A user can achieve success in language learning by striking a balance between live lessons and seeking help from AI tools. Live lessons should also be valued.

Discussion

Although its role and limitations in the learning process need to be clearly defined, artificial intelligence can be a useful tool for developing and facilitating language acquisition. The research findings also indicate that AI can produce more effective results when used in conjunction with human teachers. AI tools can be used for independent learning, task completion, and the effective explanation of complex concepts and real-life communication with the assistance of humans. In the future, chatbots and virtual assistants will continue to develop, improving natural conversational capabilities. AI tools can answer any question, which may not be very helpful for people who are just starting to learn a language because they lack imagination and sometimes AI cannot compare them with correct answers when giving incorrect answers. More research and practical testing are required to adapt AI technologies to human learning processes. AI algorithms are currently being optimized to better understand the tone, dialect, and cultural context of different languages, and with ongoing updates and additional features, artificial intelligence will also present its perfect version in the coming years. When combined with VR/AR (virtual reality and augmented reality), it can create a lively communication environment for students.

Conclusion

The findings of this study indicate that artificial intelligence (AI) has a significant and positive impact on language learning, enhancing personalization, efficiency, and accessibility. AI tools empower students to enhance their learning experience by offering adaptive learning, instant feedback, and self-paced study opportunities. Tools such as ChatGPT, Grammarly, and Duolingo can help students develop their writing, pronunciation, and grammar skills. Since AI-based learning tools are not yet perfect, students cannot completely abandon human teachers and learn only through artificial intelligence. However, through live lessons and AI personalized systems, independent learning, tasks, training, and additional activities can be achieved faster and more effectively than ever before. Among AI-powered applications, ChatGPT stands out as one of the most advanced and widely used tools. However, it has notable limitations, such as difficulties in comprehending dialects, sarcasm, and cultural nuances. Studies show that AI has limitations in understanding cultural context and creating a lively communication environment. Therefore, the most effective approach is a combination of AI technologies and human teachers. While AI is effective in repetitive tasks and grammar analysis, human teachers are important for developing communication and critical thinking. It can answer all questions, but in the medical field, for example, it is limited to giving advice. Also, such tools can be a good partner in language acquisition through voice chat, and they can significantly help in correcting speech defects. It would not hurt to know some facts to get answers to user questions, so as not to cause confusion. Even when artificial intelligence is

fully developed in the future, it may not be completely dominant in some areas, including education. Just as there is a need for human teachers today, it is necessary to adapt the human learning process with AI technologies in the future. The integration of AI with VR/AR technologies is anticipated to create an immersive and interactive language learning environment, offering real-time engagement and lifelike communication experiences. With the further improvement of AI algorithms, the possibilities of adapting to the complexity of different languages, cultural context, and individual learning needs will expand. Regardless of how advanced AI and its applications become, human expertise will remain indispensable in education, particularly in fostering critical thinking, creativity, and contextual understanding. Empirical research and practical tests should be conducted to increase the effectiveness of AI technologies in the future. Education professionals, policymakers, and AI developers should work to optimize the integration of AI into the learning process.

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