

LEVERAGING ARTIFICIAL INTELLIGENCE FOR ADVANCEMENTS IN LANGUAGE LEARNING AND COMMUNICATION: A SYSTEMATIC REVIEW

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Abstract

This article provides a systematic review of the development, applications, challenges, and current era of technology prowess of artificial intelligence in communication and language learning. In today's globalized world, AI applications in these fields are rapidly advancing, especially in support of cross-cultural communication. Based on a synthesis of 31 selected articles from major academic databases, this study examines AI technologies such as chatbots, large language models, and conversational AIs, which enable adaptive, personalized language learning experiences. The study attaches a Systematic Literature Review approach to capture trends, assess the effectiveness, and address challenges associated with AI in communication and language education. Findings reveal that AI significantly enhances language learning through direct interactions and tailored feedback, although challenges persist, including concerns around academic integrity, potential bias, and data privacy. The study also underscores the need for stronger integration of AI tools within language curricula to ensure sustainable learning. Future AI development is anticipated to prioritize personalized learning, mobile applications, and the seamless incorporation of AI into formal instruction to overcome current limitations and foster innovation in language education.

Keywords: Artificial intelligence, communication, language learning, systematic review, educational innovation.

A. INTRODUCTION

In the digital era, technology has become a primary driver of change across numerous fields, including language education and communication. Artificial Intelligence is increasingly utilized to develop innovative and adaptive language learning methods, aiming to improve language skills more effectively and efficiently (Huang et al., 2023; Luan et al., 2020). Artificial intelligence is capable of processing large volumes of data, understanding individual learning patterns, and adjusting materials to meet the typical needs of each learner. This technology encompasses a range of applications, including virtual assistants, automated translation tools, and AI-based tutoring programs, all of which show the potential to enhance language and communication skills (Zawacki-Richter et al., 2019).

Research indicates that AI implementation in language qualification offers significant benefits. For example, AI applications can accelerate the learning process through personalized learning methods and authorize students to acquire at a pace and in a style that meets their needs (Chen et al., 2021; Kovalenko & Baranivska, 2024). However, despite the numerous advantages, integrating AI into language learning remains suboptimal. Many educational institutions face barriers to implementing this technology, such as limited access to advanced devices, insufficient training for educators, and varying efficacy of AI in different language training contexts (Warschauer et al., 2019).

While there has been a study on AI use in education, there exists a gap in studies focused on comprehensive analyses of AI applications in language learning. Most prior investigations concentrate on a single aspect or specific application without evaluating its broader, long-term clout on the language studying process and outcomes (Chen et al., 2021). Additionally, few studies discuss how AI can be strategically integrated into a more holistic and sustainable language curriculum. This research gap highlights the need for a deeper and more comprehensive analysis of AI's trends, challenges, and potential in language learning, particularly within formal curricula and over the long term.

Thus, this investigation aims to address several critical questions concerning the role of AI in communication and language study. Investigation Questions:

1. What are the trends in AI tools in communication and language studies from 2018 to 2024?
2. What AI applications are used in language learning and communication, and how effective are they in enhancing these skills?
3. What are the main challenges in applying AI in the field of language learning and communication?
4. How can AI be integrated into the language curriculum to support sustainable learning?

By conquering these questions, this investigation aims to offer a valuable outlook to educators, technology developers, and policymakers in understanding AI's more comprehensive role in language learning. This study also seeks to identify collaborative needs between AI developers and educational institutions to create more inclusive and sustainable language learning methods.

B. RESEARCH METHOD

This investigation applies a Systematic Literature Review (SLR) method to examine the task of AI in communication and language studies. SLR was chosen because it enables researchers to recognize, evaluate, and interpret all connected studies on a research topic, providing a comprehensive overview of current trends, challenges, and opportunities (Kitchenham, 2004; Petticrew & Roberts, 2006). The SLR process in this study involved the following steps:

1. Study Selection Criteria

Exclusion and Inclusion criteria were established to ensure that only relevant studies were included. The inclusion criteria were as follows (a. Articles published between 2018 and 2024. b. Articles discussing the application of AI in communication and language learning. c. Articles available in English or Indonesian). Exclusion criteria included (a. Articles lacking specific discussions on AI implementation in language education. b. Articles that are brief reviews, opinions, or without empirical data).

2. Literature Search

A literature search was conducted across major academic databases, specifically Google Scholar and Scopus, in October 2024. Keywords used in the search included *artificial intelligence*, *language learning*, *communication*, *AI in language education*, and *AI in communication*. Boolean operators (AND, OR) were employed to ensure the comprehensive identification of relevant publications (Booth, Sutton, & Papaioannou, 2016). This search yielded 117 articles from Scopus and 234 from Google Scholar, totaling 351 articles.

3. Screening and Selection Process

The articles were screened based on titles and abstracts to eliminate irrelevant studies. In the first stage, 200 articles were excluded for not meeting the inclusion criteria. The remaining 152 articles were fully evaluated, and 31 articles met all criteria, progressing to the synthesis stage. The selection execution was held independently by two researchers, with disagreements resolved through joint discussion (Petticrew & Roberts, 2006).

4. Data Extraction and Analysis

Data extracted from the selected articles included:

- a. Research objectives and focus
- b. Methods used in each study
- c. Types of AI applications used in language and communication learning
- d. Key findings, including challenges and potential benefits
- e. Implications for language curriculum development

Descriptive analysis was applied to identify patterns and trends in AI implementation for language learning and communication. Results were organized into relevant categories such as machine translation, virtual tutoring, and adaptive systems (Kitchenham, 2004).

5. Synthesis and Presentation of Findings

Findings are synthesized based on the main results, categorized by AI application types and their impacts on language learning. These results are compared with existing literature to provide a deeper perspective on AI's contributions to language education. Additionally, the study evaluates implementation challenges, such as limited access to technology and insufficient teacher training, and offers recommendations for further development in this area (Tranfield et al., 2003).

Through these steps, this SLR intends to supply a comprehensive compendium of AI's standing in language studies, serving as a reference for researchers, educators, and technology makers seeking to perfect AI's application in education.

C. FINDINGS AND DISCUSSION

1. Application of AI in communication and language learning between 2018-2024

In capturing the trend of AI tools in communication and language studies between 2018-2024, it was carried out among others several key themes and developments can be identified from the abstracts:

Table 1. Application of AI in language learning and communication

Trend	Details	Citations
Increased Research	Rise in publications, major contributions from China and the USA	Jaleniauskiene et al. (2023); Rahman et al. (2024); Lubis et al. (2024)
Popular AI Applications	ITS, chatbots, MALL, LLMs	Huang et al. (2023); Ji et al. (2023); Ma et al. (2024); Zhai & Wibowo (2022); Cherednichenko et al. (2024)
Focus Areas in Language Learning	Skill development, personalization, feedback	Lubis et al. (2024); Huang et al. (2023); Quyet et al. (2024); Li (2021); Xia et al. (2024)
Emerging Technologies	Virtual/augmented reality, social robots	Jaleniauskiene et al. (2023); Derakhshan et al. (2025)
Challenges and Considerations	Ethical concerns, teacher-AI collaboration	Ji et al. (2023); Ma et al. (2024); Yang & Kyun (2022)

These tendencies spotlight the transformative position of AI in language studies and accentuate the need for ongoing research and ethical considerations to harness its potential fully.

a. Trends AI in Language Learning and Communication (2018-2024)

The findings indicate that the application of AI technology in language studies, particularly for cross-cultural communication, is becoming increasingly important as global interactions rise. Globalization drives the growing use of AI to support intercultural dialogue and deeper communication. AI facilitates personalized feedback and direct interactions with both native and non-native speakers of the target language, enriching the language studies experience for learners (Jaleniauskiene et al., 2023).

Research shows that the application of AI in language teaching is still in its early stages, but interest in the topic is growing, revealing significant potential for further study (Rahman et al., 2024). While the utilization of AI has proven effective in enhancing language skills, there is a need to optimize communication abilities and collaborative design within AI-supported technologies (Lubis et al., 2024). In the Asian context, the application of AI technology is on the rise, reflecting considerable interest from academics in the region (Huang et al., 2023; Ji et al., 2023).

b. Key AI Technologies in Language Learning and Communication

AI technologies supporting language learning include chatbots, large language models (LLMs), generative AI tools, and conversational AI specifically designed to assist with language acquisition. These technologies provide adaptive and personalized learning experiences tailored to students' linguistic and cultural backgrounds, allowing for a more individualized approach to learning (Ma et al., 2024). Popular AI tools such as Grammarly and ChatGPT have been widely adopted, even for foreign language learning among high school students, indicating broad acceptance of these technologies in language education (Derakhshan et al., 2025).

c. Evolution of AI Applications in Language Learning and Communication (2018-2024)

The number of articles discussing how AI may help with language acquisition has skyrocketed in the last few years. Researchers are increasingly interested in the efficacy of AI applications in language instruction and their execution techniques (Rahman et al., 2024). The utilization of AI for language studies, especially in Asia, has seen substantial development, highlighting a growing scientific focus in the region (Huang et al., 2023; Ji et al., 2023). Further studies emphasize the roles of communication AI and educators in each phase of language studies, suggesting that AI can contribute to enhancing learner intelligence while reducing teachers' workload through more efficient classroom management (Ma et al., 2024).

d. Challenges and Limitations of AI in Language Learning and Communication

Several challenges connected with the utilization of AI in language teaching include potential biases, content authenticity, academic integrity, privacy, and security concerns. Although the utilization of AI in English language learning is highly popular, it remains somewhat spontaneous and lacks support from teachers and schools, indicating a need for better integration of AI into the learning process (Derakhshan et al., 2025). Additionally, there are concerns about the environmental impact of intensive AI technology use (Rahman et al., 2024).

e. Future Development and Innovations in AI for Language Learning and Communication

The future of language learning and intercultural communication is likely to be influenced by advancements in AI technology, particularly in areas like personalized learning, mobile-based learning, chatbot applications, and intelligent tutoring systems (Huang et al., 2023; Ji et al., 2023). Studies also highlight the importance of further investigations in productive dialogue and communication, as well as the implementation of language learning models that combine AI with formal teaching to create more effective pedagogical designs (Lubis et al., 2024).

Overall, these inventions demonstrate that the application of AI in language studies and communication is quickly evolving. The integration of advanced AI tools, such as chatbots, LLMs, and conversational AI, offers great potential for enhancing language learning quality. However, challenges such as academic integrity and AI integration in education still need to be addressed. In the future, developments in personalized learning and the use of AI integrated with formal teaching could open new avenues for innovation in language education.

2. AI Applications in Language Learning and Communication

AI technologies have been increasingly integrated into language learning and communication, offering various applications that enhance language skills effectively. Here are some key applications and their effectiveness:

1. Virtual Speaking Tools: AI applications create immersive environments for language practice, using realistic sound effects and multidimensional characters to enhance speaking skills (Özbay et al., 2023).
2. Personalized Learning: AI-driven applications like Speeko provide personalized and interactive language practice, significantly improving speaking proficiency and willingness to communicate (WTC) among learners (Shafiee Rad, 2024).
3. Cross-Cultural Communication: Systems like the Cross-Cultural Intelligent Language Learning System (CILS) adapt to learners' linguistic and cultural backgrounds, improving both language proficiency and intercultural competence (Xia et al., 2024).
4. AI Voice Chatbots: These tools are effective in enhancing conversational skills and reducing conversation-related anxiety, as demonstrated in studies involving Vietnamese undergraduate students (Duong & Suppasetserree, 2024).
5. Interactive Assessments: AI dialogue systems, such as the Multidimensional Approach Culture, Humor, and Empathy Bot (MACHE-Bot), engage learners with culturally relevant humor and empathy, boosting engagement and motivation (Zhai et al., 2024).
6. Drama-Based Learning: The AI-Enhanced Video Drama Maker app integrates drama activities with AI to improve writing and speaking skills through creative expression and real-world communication (Liu et al., 2024).

Effectiveness:

1. Improved Proficiency: AI applications have shown significant improvements in speaking proficiency, WTC, and overall language skills (Shafiee Rad, 2024; Duong & Suppasetserree, 2024).
2. Enhanced Engagement: Personalized and adaptive learning experiences increase learner engagement and motivation (Xia et al., 2024; Zhai et al., 2024).
3. Cultural Sensitivity: AI tools that incorporate cultural elements enhance intercultural competence and communication skills (Xia et al., 2024; Zhai et al., 2024).

Overall, AI applications in language learning are highly effective in enhancing various language skills and providing personalized, interactive, and culturally sensitive learning experiences (Shafiee Rad, 2024; Xia et al., 2024; Duong & Suppasetserree, 2024; Zhai et al., 2024).

The integration of AI technology in language learning signifies a significant shift toward more interactive, personalized, and culturally sensitive learning experiences, addressing the communication needs of the global era (Özbay et al., 2023; Xia et al., 2024). Findings regarding the success of tools such as Virtual Speaking Tools in creating real conversation environments, along with AI-based applications like Speeko, which tailor content to individual skill levels and preferences, demonstrate AI's capacity to enhance speaking skills and communication motivation (Shafiee Rad, 2024).

Moreover, applications like the Cross-Cultural Intelligent Language Learning System (CILS) and AI chatbots specifically designed for fear-free communication focus on linguistic aspects while also fostering intercultural competency. It highlights AI as a facilitator that not only simplifies language mastery but also enriches intercultural communication skills, which are crucial in an increasingly connected world (Duong & Suppasetserree, 2024).

Furthermore, the application of AI-based interactive assessments, such as MACHE-Bot, which incorporates humor and empathy, and the AI-Enhanced Video Drama Maker that supports learning through drama, showcases the potential of AI to strengthen motivation through affective and creative approaches (Zhai et al., 2024; Liu et al., 2024). AI functions not only as an assessment tool but also as a facilitator of expression and engagement, enabling students to utilize language skills in an authentic social atmosphere.

Thus, the utilization of AI in language studies impacts a broader spectrum beyond merely developing linguistic skills; it also influences motivation and psychological readiness for

communication, especially in cross-cultural contexts. These findings indicate the importance of a holistic learning approach, where AI plays a mediating role in building adaptive and sustainable communication competencies (Xia et al., 2024; Shafiee Rad, 2024; Duong & Suppasetseree, 2024).

3. Challenges in Implementing AI in language learning and communication

1. Human-Centered Design: AI models are probabilistic and require human-centered design methodologies to ensure reliable and safe user experiences, especially for individuals with speech and language difficulties (Dangol et al., 2024).
2. Collaboration Between AI and Humans: There is limited evidence of effective teamplay between human teachers and conversational AIs, which is crucial for reducing teacher workload and enhancing classroom orchestration (Ji, Han, & Ko, 2023).
3. Early Development Stage: The field is still in its infancy, with a need for more empirical study on AI applications in reading, listening, speaking, and writing (Ma, Ismail, & Han, 2024).
4. Academic Integrity and Content Authenticity: Concerns about academic integrity, content authenticity, and potential biases in AI systems need to be addressed (Ma et al., 2024).
5. Privacy and Security: Privacy and security issues are significant due to an absence of appropriate regulatory frameworks to address these issues (Chen, Tu, & Lan, 2023; Ma et al., 2024).
6. Cultural Sensitivity: AI systems must be planned with cultural sensitivity to prevent biases and ensure effective cross-cultural communication (Xia, Shin, & Kim, 2024; Karakas, 2023).
7. Technological Skepticism: Educators remain skeptical about the meaningful impact of AI on language skills, which can hinder adoption (Alshumaimeri & Alshememry, 2024).
8. Student Interaction: Students often face difficulties interacting with AI systems, which can affect their learning experience (Lin & Mubarak, 2021).

These challenges highlight the need for ongoing research, development of regulatory frameworks, and collaboration between AI developers and educators to incorporate AI into language learning and communication effectively.

The combination of AI in language studies and communication faces various challenges that require in-depth attention to achieve optimal adoption and outcomes. One of the main challenges is the importance of a human-centered design. As a probabilistic system, AI requires a design approach that considers user needs, especially for those with language difficulties, to ensure a safe and reliable user experience (Dangol et al., 2024). Moreover, the collaboration between AI and humans remains limited, both in terms of effectiveness and efficiency. The lack of empirical evidence regarding this collaboration has implications for increasing the workload of teachers, who could benefit from better class orchestration through AI (Ji, Han, & Ko, 2023). Additionally, since AI applications for listening, speaking, reading, and writing skills are currently in the first phases of development, more comprehensive research is needed to ensure better implementation in the future (Ma, Ismail, & Han, 2024).

Beyond operational challenges, there is fundamental attention related to academic integrity, data security, and cultural sensitivity in the use of AI. Concerns regarding privacy security and a lack of adequate regulations can hinder the integration of AI in educational contexts (Chen, Tu, & Lan, 2023; Ma et al., 2024). Furthermore, AI systems that are not designed with sufficient cultural sensitivity may be prone to bias, thereby obstructing effective cross-cultural communication (Xia, Shin, & Kim, 2024; Karakas, 2023). Skepticism among educators regarding the significant impact of AI on students' language skills also hampers broader AI adoption (Alshumaimeri & Alshememry, 2024). Similarly, limited student interaction with AI systems can diminish their learning experience (Lin & Mubarak, 2021).

Therefore, ongoing research, the development of adequate regulatory frameworks, and stronger collaboration between AI developers and educators are crucial to address these

challenges. This way, the compounding of AI in language learning can provide maximum and sustainable benefits.

4. Integrate AI into language curricula to support sustainable learning, and several strategies can be employed based on the insights from the abstracts

1. Personalized Learning:
 - a. AI tools like ChatGPT can supply personalized learning impressions by tailoring content to individual learner needs to increase engagement and motivation through immediate feedback and assistance (Alshahrani, 2023a; Alshahrani, 2023b; Almulla & Ali, 2024).
 - b. AI-assisted gamification in language learning apps can further personalize the learning journey by fostering a more engaging and enjoyable experience and aligning challenges and rewards with user progress (Kherazi & Bourray, 2024).
2. Enhancing Engagement and Motivation:
 - a. AI chatbots can significantly boost student engagement and self-directed learning by offering real-time support and feedback, which helps maintain student interest and motivation (Alshahrani, 2023a; Alshahrani, 2023b).
 - b. Intelligent personal assistants (IPAs) like Siri can serve as conversation partners, promoting incidental language learning through social and recreational activities (Godwin-Jones, 2023).
3. Automating Administrative Tasks:
 - a. AI can self-acting routine administrative tasks and authorize educators to focus more on teaching and less on administrative duties, thereby improving overall educational accessibility and inclusivity (Alshahrani, 2023a; Alshahrani, 2023b).
4. Addressing Ethical and Practical Concerns:
 - a. It is crucial to recognize ethical implications, such as bias mitigation and privacy, when integrating AI into language education. Responsible AI use ensures that technology complements rather than replaces human educators (Singha, Singha, & Jasmine, 2024; Muñoz-Basols, Craig, Lafford, & Godev, 2023).
5. Supporting Teacher Development:
 - a. AI can support teacher learning by providing resources and virtual teaching environments, enhancing their ability to deliver effective and sustainable education (Ma, Dong, & Yang, 2023).
6. Promoting Critical Thinking:
 - a. AI tools can be used to foster critical thinking and reflective reasoning in students, essential skills for navigating AI-based tools in language learning (Muñoz-Basols et al., 2023).

By leveraging these strategies, AI can be efficiently incorporated into language curricula to support sustainable learning, enhancing both student and teacher experiences while promoting long-term educational benefits.

Integrating AI into language curricula to support sustainable learning requires strategies tailored to students' needs and learning environments. One of the key strategies is personalized learning, where AI tools like ChatGPT provide experiences customized to the individual needs of students. The use of content that aligns with students' interests, along with instant feedback, not only enhances learning motivation but also makes the experience more engaging (Alshahrani, 2023a; Alshahrani, 2023b; Almulla & Ali, 2024). Additionally, AI-based gamification in language learning applications can be tailored to students' progress, providing challenges and rewards that encourage active engagement (Kherazi & Bourray, 2024). This approach not only increases students' connection to the material but also enables them to learn independently, aided by supporting technologies such as AI chatbots that offer real-time assistance and learning support (Alshahrani, 2023a; Alshahrani, 2023b).

Furthermore, AI positions a crucial role in administrative tasks that often burden educators, freeing up their time to focus on teaching. It supports better accessibility and inclusivity in education (Alshahrani, 2023a; Alshahrani, 2023b). However, the integration of AI must also consider ethical aspects, such as mitigating bias and safeguarding student privacy, which are noteworthy to ensure that AI supports, rather than replaces, the role of educators (Singha, Singha, & Jasmine, 2024; Muñoz-Basols et al., 2023). In supporting teachers' professional development, AI can serve as a training tool that enables educators to access resources and virtual teaching environments, thereby enhancing their effectiveness in providing sustainable education (Ma, Dong, & Yang, 2023). Moreover, the use of AI in language curricula also fosters critical thinking among students, a vital skill that helps them use AI-based tools reflectively and strategically (Muñoz-Basols et al., 2023). These strategies provide a foundation for the blending of AI in language studies that not only strengthens the experiences of students and educators but also builds a sustainable educational framework for the future.

D. CONCLUSION

In today's digital era, the app and tools of artificial intelligence (AI) in language studies demonstrate significant advancements and offer immense potential to enhance communication skills. Findings from the analysis of AI trends in communication and language studies between 2018 and 2024 indicate that AI not only supports language skill development but also enriches the learning experience through more personalized and culturally sensitive approaches. AI applications such as virtual speaking tools, voice chatbots, and intelligent language learning systems are capable of creating environments that facilitate real interaction and cross-cultural communication. However, the implementation of AI in language studies also faces defiance, such as the need for human-centered design, effective collaboration between AI and educators, and concerns regarding academic integrity and data privacy. Stronger cooperation between AI developers and educators is necessary to address these challenges and ensure effective and sustainable applications.

Strategies for integrating AI into language curricula, such as personalized learning, increased student engagement, and automation of administrative tasks, can enhance both learning and teaching experiences. With the right approach, AI can serve not only as a facilitator for language mastery but also as a promoter of sustainable learning and the development of adaptive communication competencies.

Overall, the utilization of AI in language learning paves the way for more inclusive and responsive educational innovations that meet students' needs in an era of globalization. The success of AI amalgamation in language studies heavily relies on continued research, the development of regulatory frameworks, and a commitment to considering ethical aspects in the use of this technology.

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