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The Effectiveness of AI Chatbots in Foreign Language Learning: A Systematic Literature Review

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Abstract

The use of artificial intelligence in foreign language learning has increased, particularly through AI chatbots that provide interactive communication and personalized learning support. This study aimed to examine the effectiveness of AI chatbots in foreign language learning through a Systematic Literature Review. A total of 30 articles published between 2021 and 2026 were reviewed to identify their effects on language skills, learner motivation, engagement, and learning experiences. The findings indicate that AI chatbots support foreign language learning, particularly in writing, grammar, and vocabulary development. Immediate feedback and opportunities for independent practice also contribute to learner motivation and engagement. However, the effectiveness of AI chatbots varies across language skills, with mixed findings in speaking and listening activities. Several challenges were identified, including inaccurate responses, technical limitations, plagiarism, overdependence on technology, and ethical concerns. These challenges highlight the importance of using AI chatbots appropriately in educational settings. The findings suggest that AI chatbots are most beneficial when integrated into learning activities as complementary tools rather than replacements for teachers or conventional language instruction. Their effective implementation requires appropriate pedagogical strategies, teacher guidance, and attention to ethical considerations. In conclusion, AI chatbots have the potential to improve foreign language learning experiences when used purposefully and supported by suitable instructional approaches.

Keywords : AI Chatbots, Foreign Language Learning, Systematic Literature Review, Language Skills, Learner Engagement.

Abstrak

Penggunaan kecerdasan buatan (*artificial intelligence*) dalam pembelajaran bahasa asing telah meningkat pesat, khususnya melalui *chatbot* AI yang menyediakan komunikasi interaktif dan dukungan pembelajaran yang terpersonalisasi. Penelitian ini bertujuan untuk menguji

efektivitas *chatbot* AI dalam pembelajaran bahasa asing melalui *Systematic Literature Review* (Tinjauan Pustaka Sistematis). Sebanyak 30 artikel yang diterbitkan antara tahun 2021 hingga 2026 ditelaah untuk mengidentifikasi dampaknya terhadap keterampilan berbahasa, motivasi pembelajar, keterlibatan (*engagement*), dan pengalaman belajar. Temuan menunjukkan bahwa *chatbot* AI mendukung pembelajaran bahasa asing, terutama dalam pengembangan keterampilan menulis, tata bahasa (*grammar*), dan penguasaan kosa kata. Umpan balik yang cepat serta kesempatan untuk berlatih secara mandiri turut berkontribusi dalam meningkatkan motivasi dan keterlibatan pembelajar. Kendati demikian, efektivitas *chatbot* AI bervariasi di berbagai keterampilan berbahasa, dengan hasil yang beragam pada aktivitas berbicara (*speaking*) dan menyimak (*listening*). Beberapa tantangan turut teridentifikasi, meliputi ketidakakuratan respons, keterbatasan teknis, isu plagiarisme, ketergantungan berlebih pada teknologi, dan masalah etika. Tantangan-tantangan ini menegaskan pentingnya penggunaan *chatbot* AI secara tepat dalam lingkungan pendidikan. Temuan penelitian ini menyarankan bahwa *chatbot* AI memberikan manfaat paling optimal ketika diintegrasikan ke dalam kegiatan pembelajaran sebagai alat pelengkap, bukan sebagai pengganti peran guru atau pengajaran bahasa konvensional. Implementasi yang efektif memerlukan strategi pedagogis yang tepat, bimbingan guru, serta perhatian terhadap pertimbangan etis. Kesimpulannya, *chatbot* AI memiliki potensi besar untuk meningkatkan pengalaman belajar bahasa asing apabila digunakan secara terarah dan didukung oleh pendekatan instruksional yang sesuai.

Kata Kunci: Chatbot AI, Pembelajaran Bahasa Asing, Systematic Literature Review, Keterampilan Berbahasa, Keterlibatan Pembelajar.

INTRODUCTION

The development of artificial intelligence (AI) has introduced new opportunities for language education, particularly through AI-based chatbots. In foreign language learning, chatbots enable learners to interact with technology through text or voice-based conversations and provide additional opportunities for language practice (Ji et al., 2024a). Their interactive nature makes them increasingly relevant as learning tools that can complement conventional language instruction.

AI chatbots offer several potential benefits, including opportunities to practice language skills, receive feedback, and participate in learning activities beyond the classroom. In English as a Foreign Language (EFL) contexts, AI-based tools have been used to support vocabulary development, grammar, pronunciation, speaking, and other language-related activities (Kemelbekova et al., 2024). Similarly, chatbot technology in Indonesian language learning for foreign learners has been reported to support interaction, motivation, accessibility, flexibility, and independent learning (Yulhasni, 2025). These findings suggest that chatbots can provide additional learning opportunities that accommodate learners' needs and learning conditions.

Another potential benefit of AI chatbots is their ability to provide immediate responses and feedback during learning activities. Previous research has reported improvements in writing quality, vocabulary range, syntactic variety, grammar, and learner engagement following chatbot use (Iswari et al., 2024). AI chatbots can also function as writing assistants,

intelligent tutors, and automated evaluation tools, potentially supporting independent learning and learner motivation (Fachriyah et al., 2026). Their accessibility and flexibility may further enable learners to practice language skills outside regular classroom activities.

However, the effectiveness of AI chatbots may vary across language skills and learning contexts. Previous findings indicate positive outcomes in writing, grammar, and vocabulary, while results in speaking and listening activities are more varied (Iswari et al., 2024). The use of AI in EFL classrooms has also been associated with improvements in oral communication and learner motivation (Kemelbekova et al., 2024). These differences indicate that the effectiveness of chatbots needs to be examined across various language skills rather than assumed to be equally beneficial in every aspect of language learning.

The successful integration of AI chatbots also depends on the roles of learners and teachers. Although chatbots can provide automated interaction and feedback, learners still need to evaluate AI-generated information critically and use it appropriately. Teacher guidance is therefore important to help learners recognize the limitations of AI-generated responses and ensure that chatbot activities remain aligned with learning objectives (Ji et al., 2024). The integration of chatbots should consequently consider the relationship between technology, learners, and teachers.

Despite their potential benefits, AI chatbots present several challenges. Inaccurate responses, technological limitations, excessive dependence on AI, and concerns about privacy and academic integrity may affect their use in education. Research on ChatGPT in English as a Second Language and English as a Foreign Language education has also discussed concerns regarding the accuracy of AI-generated information, privacy, and academic integrity (Lo et al., 2024). Plagiarism and the need for appropriate teacher guidance are additional considerations. Therefore, AI chatbots should be treated as complementary learning tools rather than replacements for teachers and established instructional practices (Iswari et al., 2024; Ji et al., 2024).

Although previous studies have investigated AI chatbots in different language-learning contexts, their findings vary in terms of learning outcomes, language skills, learner experiences, and implementation challenges. Some studies report positive effects on language development and learner engagement, while others identify limitations in particular skills and learning situations. These differences highlight the need to systematically synthesize existing evidence to obtain a broader understanding of the effectiveness of AI chatbots in foreign language learning.

Therefore, this study aims to examine the effectiveness of AI chatbots in foreign language learning through a Systematic Literature Review (SLR). Specifically, it reviews previous research on the influence of AI chatbots on language skills, learner motivation, engagement, and learning experiences. This study also identifies the benefits, limitations, and patterns of effectiveness associated with chatbot use. The findings are expected to provide a clearer understanding of how AI chatbots can be integrated appropriately into foreign language learning while maintaining teacher involvement and considering pedagogical and ethical aspects.

LITERATURE REVIEW

AI and Generative AI Tools in Foreign Language Education

Artificial intelligence (AI) in language education has developed from computer-assisted language learning (CALL) into systems using natural language processing. Kotsoni (2025) explains that generative AI can help identify the underlying causes of learners' mistakes, while Zhainash & Guldona (2026) identify tools such as chatbots, speech recognition, automated writing evaluation, and text generation for English as a Foreign Language (EFL) education. Language-learning applications such as Rosetta Stone, Babbel, and Duolingo also use algorithms to personalize learning activities (Shahnoza, 2024).

Recent studies have explored AI tools for specific educational purposes. Blagodarna (2026) compares general-purpose AI models with source-based tools such as NotebookLM to address the risk of inaccurate information. Shan et al. (2024) developed CFLingo to support Chinese language learning and help instructors monitor student interactions. Yang (2025) developed an AI-based framework combining dynamic assessment, virtual and augmented reality, and context-aware instruction. Meanwhile, Chen (2025) examined generative AI in inquiry-based learning.

Effectiveness of AI on Language Skills

Research suggests that AI-assisted instruction can improve language-learning outcomes. In a 16-week study involving 120 undergraduate students, Zhainash & Guldona (2026) reported an improvement of 0.90 IELTS bands in the experimental group, compared with 0.23 in the control group. Writing and speaking showed the largest gains, at 1.20 each. Similarly, Yang (2025) found benefits across eight language and cognitive indicators, with the greatest reported effect for speaking and the smallest for reading.

Qualitative findings also indicate potential benefits. Chen (2025) reported perceived improvements in reading comprehension, translation, writing, and vocabulary. Shan et al. (2024) found that adaptive feedback and progressive tasks supported student performance. In addition, Arif et al. (2025) reported that 80% of 15 international students learning Chinese perceived improvements in listening comprehension, while 75% felt more confident speaking.

However, AI does not always produce the same results across languages and skills. Arif et al. (2025) noted that speech recognition may be less accurate when processing Mandarin tones. Anabelg et al. (2026) found that although all 27 A2-level German education students used AI, 70% felt their writing had become stiff. This suggests that improved learning outcomes do not necessarily mean stronger independent language-production skills.

Motivation, Engagement, and Emotional Experience

AI chatbots may also support learner motivation and reduce anxiety. Zhainash & Guldona (2026) reported high ratings for immediate feedback (M = 4.52), motivation (M = 4.27), and reduced anxiety about speaking errors (M = 3.97). Kotsoni (2025) describes AI as a low-pressure environment that encourages communication. Chen (2025) also identified rapid feedback, personalized learning, and increased interest, while Arif et al. (2025) found that 85% of participants considered chatbot interactions engaging.

Learner characteristics can influence these experiences. Bao & Du (2026) , surveying 269 undergraduate students after a 12-week English course, found that AI literacy predicted foreign language enjoyment, which was associated with classroom participation. Students with

higher enjoyment also showed greater engagement (M = 4.51 versus 3.68), although the authors cautioned that the structural model had inadequate fit.

Similarly, Qin et al. (2026) followed 536 first-year students and found that a growth mindset was associated with lower boredom through AI self-efficacy and AI literacy rather than through a direct effect. These findings highlight the importance of helping learners use AI confidently and evaluate its outputs critically.

The Role of Teachers and Pedagogical Design

Teacher involvement remains essential to effective AI integration. Fuchs (2026) described the use of ChatGPT to prepare syllabi, vocabulary lists, materials, and communicative activities for a university Russian course. However, the outputs required several rounds of revision because the system lacked specific curriculum information. Fuchs therefore supports human–AI co-teaching rather than replacing teachers with AI.

Yang (2025) emphasizes teachers' roles as learning designers and facilitators, while Chen (2025) highlights the need to guide and supervise students' AI use. Zhainash & Guldona (2026) view teachers as mentors, and Kotsoni (2025) stresses teacher training and AI literacy. Blagodarna (2026) likewise presents AI as a tool to strengthen, rather than replace, educators. Effective implementation therefore requires teachers to select appropriate tools, align activities with learning objectives, verify AI-generated content, and guide responsible use.

Challenges and Ethical Concerns

Despite its benefits, AI use may create dependence and limit independent skill development. Anabelg et al. (2026) found that 60% of participants used AI for almost all assignments, while 65% felt anxious about writing without AI. Zhainash & Guldona (2026) also identified concerns about dependence on AI for grammar correction. Kotsoni (2025) discusses cognitive laziness, limited understanding of cultural nuances, and unequal access to AI resources.

Other concerns involve accuracy and contextual relevance. Arif et al. (2025) reported that 65% of participants considered AI inadequate for cultural immersion and contextual learning. Blagodarna (2026) highlights hallucinations, while Shan et al. (2024) discuss inaccurate information, bias, and plagiarism. Yang (2025) identifies infrastructure gaps, insufficient teacher training, and ethical challenges. Chen (2025) further emphasizes the importance of developing critical AI literacy.

These concerns show that AI chatbots require supervision. Learners should verify generated information, use AI responsibly, and remain actively involved in learning. Institutions and teachers must also consider privacy, academic integrity, equitable access, and the suitability of AI-generated content.

Synthesis and Research Gap

Overall, the reviewed studies suggest that AI chatbots can support foreign language learning through immediate feedback, personalized assistance, and independent practice. They may also improve motivation and engagement. Positive outcomes have been reported particularly in productive skills such as writing and speaking (Yang, 2025; Zhainash & Guldona, 2026). However, outcomes vary according to language characteristics, tool design, and learning context (Arif et al., 2025).

The literature also identifies risks, including excessive dependence, inaccurate outputs, unequal access, and insufficient ethical guidance. Teacher involvement and AI literacy remain important for responsible implementation (Anabelg et al., 2026; Bao & Du, 2026; Qin et al., 2026). Therefore, effectiveness should be evaluated not only through learning outcomes but also through learner experiences, independent skill development, and teaching practices.

Existing studies have limitations, including small samples, single-institution settings, short study periods, and reliance on self-reported data (Arif et al., 2025; Chen, 2025; Shan et al., 2024). Other studies are mainly theoretical or practice-oriented (Blagodarna, 2026; Fuchs, 2026; Kotsoni, 2025; Shahnoza, 2024). Differences in languages, tools, and educational contexts also make direct comparisons difficult.

Consequently, a systematic synthesis is needed to clarify the benefits and limitations of AI chatbots in foreign language learning. This review examines their effectiveness across language skills, their influence on learner motivation and engagement, and the pedagogical and ethical considerations surrounding their use.

METHOD

This study employs a *Systematic Literature Review* (SLR) approach to identify, examine, and synthesize previous research on the effectiveness of Artificial Intelligence (AI) chatbots in foreign language learning. This approach enables researchers to systematically review previous findings, identify research patterns, and examine the benefits and challenges of AI chatbot implementation (Du & Daniel, 2024). Previous systematic reviews have evaluated the use of AI chatbots in English language learning, particularly in speaking practice (Du & Daniel, 2024). Other studies have examined chatbot use in foreign language learning, including language skill development and learners' perceptions (Polakova & Klimova, 2024). In addition, research has investigated the use of chatbots in reading instruction, particularly in relation to reading anxiety and reading performance (Zheng, 2024). Building on these studies, this review aims to analyze the effectiveness of AI chatbots in foreign language learning, focusing on language skills, learning experiences, and challenges associated with their implementation.

Literature Search Strategy

This study used the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA) framework to guide the identification, screening, and selection of relevant articles. PRISMA provides guidance for transparently reporting the process of conducting a systematic review. The literature search was conducted on September 30, 2026, using Harzing's Publish or Perish application, with Google Scholar as the data source. The keywords included "AI chatbot," "chatbot," "ChatGPT," "foreign language learning," "English as a Foreign Language (EFL)," "English as a Second Language (ESL)," and "language education."

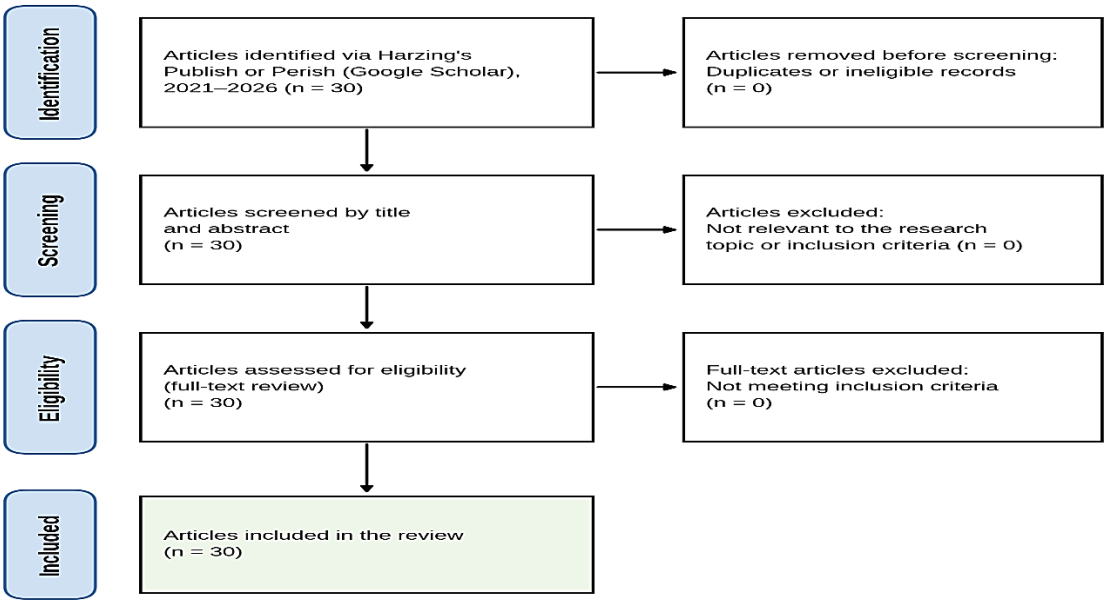
The search focused on articles published between 2021 and 2026. The articles were screened according to predetermined inclusion criteria, including publication period, language, relevance to the research topic, article type, research focus, and full-text availability. The inclusion criteria are presented in Table 1.

Table 1. Article Inclusion Criteria

Criteria	Inclusion
Publication Period	Articles published between 2021 and 2026.
Language	Articles written in Indonesian or English.
Subject	Studies examining the use of AI chatbots in foreign or second language learning.
Article Type	Empirical research articles employing quantitative, qualitative, or mixed-methods approaches.
Research Focus	Studies examining AI chatbot effectiveness in language skills, motivation, engagement, learning autonomy, learner perceptions, or implementation challenges.
Text Availability	Full-text articles that are accessible and available for examination.

Based on the search and selection process, 30 articles were included in the review. The titles, abstracts, and full texts were examined to assess their relevance to the research objectives and compliance with the inclusion criteria. The selected articles were then analyzed to identify findings related to the effectiveness of AI chatbots in foreign language learning. The article selection process is illustrated in Figure 1.

Figure 1. PRISMA Flow Diagram



RESULTS AND DISCUSSION

Improvements in Language Skills

Across the 30 reviewed articles, AI chatbots were associated with improvements in language skills, learner motivation, flexible learning, and independent study. However, their effectiveness varied according to the language skill, learner characteristics, and instructional context.

AI chatbots can support writing, grammar, and vocabulary through explanations, sentence practice, and immediate feedback. (Ahmad et al, 2025) reported that AI technologies, including chatbots, grammar correction tools, speech recognition, and machine translation, can support pronunciation, listening comprehension, vocabulary acquisition, and writing development. (Wijaya et al 2025)also highlighted how Natural Language Processing (NLP) can make foreign language learning more personalized, interactive, and adaptive. In addition, (Klimova et al 2024) found that university students viewed ChatGPT as a potentially useful tool for foreign language learning.

Nevertheless, the benefits are not equally consistent across all language skills. (Toscu, 2025) identified positive outcomes in writing, speaking, listening, grammar, and vocabulary, while emphasizing limitations in AI-supported instruction. Overall, chatbots can provide useful additional practice, but their effectiveness depends on the skill being developed and how the tools are used.

Learner Motivation, Engagement, and Learning Experiences

Conversational interaction, immediate responses, and flexible access to assistance may make foreign language learning more engaging. Learners can practice at their own pace and revisit difficult material outside the classroom.

(Klimova et al 2024) reported that university students were interested in using ChatGPT for foreign language education. The tool helped them complete assignments, understand materials, locate references, and develop writing skills, although concerns about information accuracy remained. Habib & Salma 2026) also highlighted the potential of AI chatbots to create a low-pressure environment for spoken English practice, potentially improving willingness to communicate and speaking self-efficacy while reducing language anxiety.

These findings suggest that immediate feedback and flexible practice can encourage participation. However, positive perceptions and increased engagement do not necessarily demonstrate long-term improvements in language proficiency.

Self-Regulated and Independent Learning

AI chatbots may support self-regulated learning by helping learners identify difficulties, set goals, monitor progress, and reflect on their performance. (Genma & Zulfikasari 2026) reported improvements in self-regulated learning and English learning outcomes among 42 vocational high school students using ChatGPT. Their mean score increased from 66.00 in the pretest to 89.29 in the posttest, with a reported Cohen's *d* of 1.788. Although this indicates a large effect in that study, its one-group pretest–posttest design limits the conclusions that can be drawn.

(Hou & zhou 2025) identified three phases of self-regulated learning in AI-supported foreign language education: forethought, performance, and self-reflection. Planning and motivational beliefs were positively associated with performance and directly influenced self-

reflection, although the relationship between performance and self-reflection was not statistically significant.

Together, these findings suggest that chatbots can support independent practice. However, learners still need to evaluate AI-generated responses, monitor their progress, and develop problem-solving skills rather than rely entirely on automated assistance.

Limitations and Challenges of AI Chatbots

Despite their benefits, AI chatbots present challenges involving inaccurate responses, contextual limitations, excessive dependence, ethical concerns, and unequal access to technology.

(Klimova et al 2024)highlighted concerns about incorrect information and potential misuse of personal data. (Alatas et al., 2024) also reported that students experienced difficulties evaluating the accuracy of ChatGPT-generated information. (Habib & Salma 2026) noted that chatbot feedback may not always be accurate, context-sensitive, or appropriate for learners' levels. Unstructured use may also weaken engagement over time, while speaking improvements depend partly on task design and human interaction.

(Ahmad et al 2025)identified accessibility limitations, algorithmic bias, and ethical concerns in AI-supported English language teaching. (Ivanytska et al 2024)likewise emphasized plagiarism, discrimination, and academic integrity risks. Therefore, effective implementation requires appropriate learning objectives, reliable feedback, digital literacy, and teacher guidance. Chatbots should complement, not replace, teachers and human communication.

The Effectiveness of AI Chatbots Across Language Skills and Learning Contexts

The findings suggest that chatbot effectiveness depends on the learning activity and target skill. Writing, grammar, and vocabulary may benefit from text-based interaction, corrections, explanations, and repeated practice. This is consistent with (Wijaya et al 2025),who emphasized the role of NLP in interactive and adaptive language learning, and (Toscu, 2025) who identified positive language-learning outcomes alongside methodological and instructional limitations.

Speaking and listening require additional consideration because effective communication involves interpreting meaning, understanding spoken language, and responding appropriately to context. (Habib & Salma 2026) emphasized the importance of structured tasks, actionable feedback, and opportunities for human interaction in speaking activities.Thus, chatbots are most useful when their features are aligned with clear pedagogical objectives and purposeful language practice.

Personalized Feedback and Motivation as Supporting Factors

AI chatbots can provide repeated explanations and immediate feedback, potentially supplementing teachers' limited time for individual assistance. (Ahmad et al 2025) identified personalized learning and reduced teacher workload as potential benefits of AI technologies in English language teaching. (Klimova et al 2024) also discussed ChatGPT's potential to support flexible learning and assistance tailored to students' needs.

Motivation may further encourage learners to participate in language practice.(Alatas et al., 2024) highlighted difficulties in evaluating ChatGPT's accuracy, while (Habib & Salma 2026) discussed the potential of chatbots to reduce pressure during speaking practice.

However, enjoyment and motivation do not guarantee learning achievement. Activities should have clear objectives and assess whether learners can apply their knowledge independently in new situations.

AI Chatbots and the Development of Learner Autonomy

Chatbots may develop learner autonomy when students use them to plan, monitor, and evaluate learning. (Genma & Zulfikasari 2026) provided evidence of potential improvements in self-regulated learning and English outcomes, while (Hou & Zou 2025)examined the connected processes of planning, learning activity, and reflection.

For example, learners can set vocabulary goals, request explanations and practice questions, complete exercises, and evaluate mistakes. Such activities encourage active participation in learning. However, accepting AI-generated answers without verification may weaken independent problem-solving. Learners should therefore check information, explain their reasoning, revise their work, and gradually reduce their reliance on automated assistance.

Ethical Considerations and the Role of Teachers

Responsible AI use requires attention to accuracy, academic integrity, privacy, accessibility, and the continuing role of teachers. AI-generated responses may contain errors or misunderstand cultural and situational contexts, so learners must evaluate information critically.

(Ivanytska et al 2024)emphasized the need to balance AI's educational opportunities with plagiarism, discrimination, and academic integrity risks. (Ahmad et al 2025) also identified accessibility, algorithmic bias, and ethical issues in AI-supported language education.

Teachers remain essential for establishing objectives, selecting activities, evaluating AI-generated material, and guiding responsible use. Students should treat chatbots as learning partners rather than unquestionable sources. Educational institutions should also provide guidance on academic citation, privacy, and evaluating AI-generated information.

Implications and Research Limitations

AI chatbots should be integrated into activities with clear learning objectives and selected according to learners' needs. Chatbot practice should be combined with teacher feedback, peer interaction, and independent language production. Learners also need sufficient AI literacy to assess the accuracy and limitations of generated responses.

The reviewed studies differ in research design, participants, educational settings, AI tools, and outcome measures. Some examine perceptions, while others measure language performance or self-regulated learning; therefore, their findings are not directly equivalent. Positive perceptions do not necessarily indicate measurable or lasting improvements in proficiency.

Some studies also involve small samples, specific institutions, or short-term outcomes, limiting generalizability. Further research should examine long-term outcomes, differences among language skills, feedback reliability, and the conditions that produce sustained improvements.

Overall, AI chatbots can contribute to foreign language learning when supported by appropriate instructional design and teacher guidance. Their effectiveness depends on technology, learner engagement, and human support. They should be regarded as

complementary tools that expand learning opportunities while preserving independent thinking and meaningful human communication.

CONCLUSION

This systematic literature review of 30 articles indicates that AI chatbots can support foreign language learning, particularly in writing, grammar, and vocabulary development. They can also enhance learner motivation, engagement, and independent practice through immediate feedback and personalized assistance. However, their effectiveness varies across language skills, and challenges such as inaccurate responses, overdependence, plagiarism, and ethical concerns remain. Therefore, AI chatbots should complement rather than replace teachers and conventional instruction. Their effective implementation requires appropriate pedagogical design, teacher guidance, critical evaluation of AI-generated information, and responsible use by learners. Future research should examine long-term learning outcomes and differences across languages and educational contexts.

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