

THE ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN ENHANCING ENGLISH LANGUAGE SKILLS: A *SYSTEMATIC REVIEW*

Amalia Fatihah¹, Sholihah Mutawakillah², Naf'an Torihoran³

^{1,2,3} UIN Sultan Maulana Hasanudin

*Corresponding email: 221230073.amalia@uinbanten.ac.id

Abstrak: Kemajuan pesat kecerdasan buatan (AI) telah memberikan pengaruh yang signifikan terhadap pengajaran bahasa Inggris. Teknologi berbasis AI, seperti pemrosesan bahasa alami (NLP), chatbot, dan sistem tutor cerdas, menciptakan lingkungan belajar yang dinamis dan adaptif untuk mendukung pengembangan keterampilan berbahasa siswa. Namun, diperlukan penelitian lebih lanjut untuk mengevaluasi tantangan serta efektivitas integrasi AI dalam pembelajaran bahasa. Studi ini bertujuan untuk melakukan tinjauan sistematis guna mengeksplorasi bagaimana AI dapat meningkatkan kemahiran dalam berbicara, menulis, membaca, dan mendengarkan bahasa Inggris. Penelitian dari tahun 2020 hingga 2025 dianalisis menggunakan basis data ilmiah seperti Mendeley, ScienceDirect, dan Taylor & Francis Online, dengan mengikuti pedoman Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Dari total 11.768 studi awal, sebanyak 476 artikel memenuhi kriteria seleksi, dan 23 artikel akhirnya dimasukkan sebagai data penelitian. Hasil penelitian menunjukkan bahwa alat berbasis AI mampu meningkatkan kemahiran berbahasa, meningkatkan keterlibatan siswa, dan memberikan pengalaman belajar yang lebih personal. Tutor virtual dan chatbot AI memperkuat keterampilan komunikasi lisan, sementara sistem umpan balik otomatis membantu meningkatkan akurasi dalam menulis. Namun, masih terdapat tantangan yang perlu diatasi, seperti keterbatasan teknologi, masalah etika, serta kesenjangan aksesibilitas. Studi ini menyimpulkan bahwa AI memiliki potensi untuk merevolusi pembelajaran bahasa Inggris dengan menyediakan pengajaran yang dipersonalisasi, efektif, dan interaktif. Penelitian di masa depan perlu difokuskan pada upaya menjembatani kesenjangan teknologi serta mengoptimalkan peran AI dalam pendidikan bahasa guna memaksimalkan manfaatnya bagi pembelajar di seluruh dunia.

Kata kunci: Chatbot AI, kecerdasan buatan, pembelajaran bahasa Inggris.

Abstract: The rapid advancement of artificial intelligence (AI) has greatly impacted English language education. Technologies such as natural language processing (NLP), chatbots, and intelligent tutoring systems offer flexible and adaptive learning environments that support the development of students' speaking, writing, reading, and listening skills. Despite these benefits, further research is needed to evaluate the challenges and effectiveness of AI integration in language learning. This study presents a systematic review of how AI enhances English proficiency. Research published between 2020 and 2025 was analyzed using scholarly databases like Mendeley, ScienceDirect, and Taylor & Francis Online, following PRISMA guidelines. From an initial 11,768 articles, 476 were selected, and 23 were used as primary research data. The findings show that AI-powered tools improve language skills by offering personalized learning experiences and increasing student engagement. Tools such as AI chatbots and virtual tutors help improve spoken communication, while automated feedback systems enhance writing accuracy. However, challenges remain, including technological limitations, accessibility issues, and ethical concerns related to data privacy. Overall, AI has the potential to transform English education through personalized, practical, and interactive learning. Future research should focus on addressing current limitations and optimizing AI's role in language instruction for learners worldwide.

Keywords: AI chatbot, Artificial intelligence, English language learning.

INTRODUCTION

Further development of AI technology will have a major impact on many areas, including education. In the context of English learning, AI offers innovative solutions that can improve language skills (Abimanto, 2023). Advances in natural language processing (NLP) and machine learning have created learning tools and platforms to interact with students, provide real feedback, and adapt courses to meet individual needs. Given the increasing use of artificial intelligence in education, it is important to examine how this technology can enhance learners' learning knowledge (Abusahyon et al., 2023). The technical framework of educational content (TPACK) is related to the integration of technology into education. It emphasizes the importance of mixing technical, pedagogy and content knowledge to create an effective learning environment for students (Carol A. Chapelle, 2017). In the case of English language

teaching (ELT), TPACK encourages educators to leverage AI tools in ways that align with their teaching objectives and students' needs.

One of the most significant obstacles in learning English is a lack of proper engagement and practice for pupils, particularly in speaking and writing abilities. Traditional approaches are frequently insufficient for students to build total language competence (Badriyah et al., 2020). AI solutions include interactive dialogue-based learning systems, chatbots, and adaptive intelligence-based platforms that can give a more immersive and sustainable learning experience. Research by (Widiati et al., 2023) demonstrates that using AI-powered chatbots in English education can significantly boost students' communication and engagement. Furthermore, the integration of Intelligent Tutoring Systems (ITS) enhances personalization in language learning by mimicking human tutors and adjusting the learning content based on the learner's progress and preferences (Fadel et al., 2019). These systems provide real-time adjustments, making the learning experience more targeted and efficient.

Previous research has shown that the use of AI in learning English can strengthen student commitment and provide a more personalized learning experience. Research has shown that AI technology provides direct feedback, identify pronunciation or grammar errors, and create learning strategies tailored to individual needs. For example, research by Chunpeng Zhai and Santoso Wibowo reveals that AI-based dialogue systems can improve students' speaking skills through automated interactions

learning, including speaking, writing, reading, and listening skills. Additionally, (Zhai & Wibowo, 2023). Meanwhile, Jinming Du & Ben Kei Daniel revealed that AI chatbots help students increase their confidence in speaking English (Du & Kei, 2024). Xi Zhang, Jing Sun, and Yiting Deng highlight how AI-based smart classrooms can adaptively enhance the learning experience (X. Zhang et al., 2023). In addition, Sumie Chan, Noble Lo, and Alan Wong examined the effectiveness of AI feedback in university English courses (Atmowardoyo, 2022).

This study aims to systematically review AI's role in enhancing English language proficiency, distinguishing itself from previous research. The primary objective is to explore how AI is applied in various aspects of English language his research seeks to identify both the advantages and limitations of AI technology in supporting language acquisition. To strengthen the analysis, this study employs two theoretical frameworks: the Technological Pedagogical Content Knowledge (TPACK) framework and ITS. TPACK helps understand how AI integrates pedagogical strategies, technological tools, and content objectives in ELT (Carol A. Chapelle, 2017). It also illustrates how AI can personalize and adapt learning processes to meet students' individual needs (Fadel et al., 2019). These framework conditions provide a lens for examining how AI technology affects student commitment, autonomy and learning outcomes.

This study aims to provide educators and policymakers with informed strategies to enhance language competence by analyzing the application of these frameworks within AI-based English learning environments. Furthermore, this research analyzes existing literature on AI use in English learning across different countries and examines the factors influencing its adoption. To achieve this, the research addresses three key questions: How is AI research characterized in undergraduate universities? What factors highlight the benefits of AI in English language teaching (ELT)? Moreover, which language skills rely most on AI in ELT?

METODE

1. Description of Sample

This study follows the guidelines of Preferred Items for Systematic Review and Meta-analysis (PRISMA) in its search strategy (Moher et al., 2009). It uses specific keywords that the author chose based on the subject matter of the systematic literature review's title. The search terms used were student, improving English, and artificial intelligence. Several

scholarly journal databases, such as Taylor & Francis Online, ScienceDirect, and Mendeley, were searched. Articles that meet the inclusion criteria and were published within the last five years—between 1 January 2020 and 28 February 2025—are the focus of this study.

2. Procedure

A preliminary search was conducted with a list of terms the author had created. The selection process used to assess the relevance of the articles discovered during the first search: a) read the title; if it seems pertinent, the citations will be entered into specialized software (Mendeley Desktop 1.19.8), and duplicates will be viewed using the Mendeley Tools tool before being removed to leave only one copy; b) reading the abstract: the article will be removed from the study if it does not contain enough information following the inclusion criteria; c) reading the article in its entirety: assess and examine the chosen articles to decide which one should be included in the systematic review. They will be excluded if the studies do not meet the exclusion criteria.

3. Study Selection Criteria

Examine This study looks at the most recent empirical research using the following inclusion criteria: 1) Articles found on Taylor & Francis Online, ScienceDirect, Mendeley, 2) Articles released within the last five years, specifically from 2020 to 2025, 3) Articles featuring student populations and students, 4) This article is written in English, and 5) the articles are unique and fully accessible. The following are the exclusion criteria: 1) high school students who participated in the study, 2) some undergraduate students who participated, and 3) This paper reviews the literature.

RESULT AND DISCUSSION

1. Result

Rangkaian Several pertinent publications on the subject of "The Role of Artificial Intelligence (AI) Technology in Enhancing English Language Skills" were found after a thorough search across three online research platforms (Mendeley, Taylor & Francis, and ScienceDirect). The most recent search found 11,768 more study reports out of the 11,768 papers in the prior review. Twenty-five full-text papers were considered appropriate for additional review following the screening procedure, which included eliminating 10,356 articles using AI-based filtering, 627 articles judged irrelevant based on their titles, and 158 articles whose abstracts did not fulfill the inclusion criteria. The selection process for this article is shown in the Prisma flow diagram (Figure 1). This adheres to the systematic checks and meta-analysis (Prism) 2020 (Moher et al., 2009).

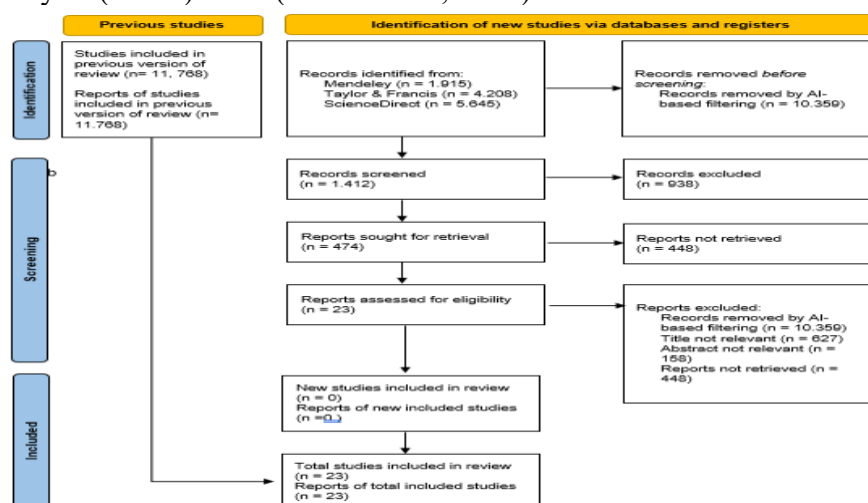


Figure 1. PRISMA Flowchart of the selection process.

Description of the Selected Studies

Following a systematic literature search, 23 studies published between 2020 and 2025 were identified and selected for analysis. These studies employed various research approaches, including randomized controlled trials (RCTs) (Davy Tsz Kit et al., 2022; Srinivasan & Murthy, 2021), experimental studies (Aryadoust et al., 2024; Pack et al., 2024; Y. Zhang et al., 2024), longitudinal studies (Ericsson & Johansson, 2023), case studies (Davy Tsz Kit et al., 2022; Denston et al., 2024; Kangasharju et al., 2022), qualitative research (Abusahyon et al., 2023; Arefian et al., 2024; Widiati et al., 2023), quantitative research (Alkamel & Alwagieh, 2024; Ni & Cheung, 2023), and mixed-methods research (Ali et al., 2023; Davy Tsz Kit et al., 2022; Kohnke et al., 2025; Ma et al., 2024).

Various instruments were used across these studies to evaluate the effectiveness of AI in English language learning. Thematic analysis was applied in qualitative research (Ali et al., 2023; Arefian et al., 2024; Widiati et al., 2023) to explore teachers' and students' perceptions of AI integration in education. Experimental and quantitative studies utilized standardized evaluation tools such as student performance assessments (Ni & Cheung, 2023; Y. Zhang et al., 2024) and essay quality evaluations (Chan et al., 2025; Pack et al., 2024). Additionally, survey-based research employed structured questionnaires, including a reliability-tested instrument (Cronbach's $\alpha = 0.805$) (Alkamel & Alwagieh, 2024), to examine students' perspectives on AI's role in enhancing writing skills.

The study designs varied depending on the research objectives. RCT studies (Chan et al., 2025; Srinivasan & Murthy, 2021) compared AI-generated feedback with traditional instructor feedback on writing assignments. Experimental studies (Aryadoust et al., 2024; Pack et al., 2024) evaluated the reliability of AI-based essay grading and its impact on listening and writing skills. Case studies (Davy Tsz Kit et al., 2022; Denston et al., 2024; Kangasharju et al., 2022) used semi-structured interviews to examine teachers' and students' experiences with AI-assisted language learning tools.

Characteristics of the Selected Studies

This assessment consisted of 23 studies focusing on the use of AI technology (artificial intelligence) to improve English skills. AI-powered chatbots, conversational AI systems, adaptive learning platforms, intelligent tutoring systems, AI-generated feedback, and AI-supported writing tools were one of many AI applications investigated in these studies. This study assessed the effectiveness, benefits, and difficulties of integrating AI into English lessons.

Students from primary, lower secondary, and upper secondary schools and English as a Foreign Language (EFL) learners participated in these studies. Numerous countries, including India, Sweden, China, Indonesia, Hong Kong, Finland, Portugal, Saudi Arabia, and Singapore, participated in the study, offering a range of viewpoints on how AI may affect English language acquisition.

Participants came from various academic backgrounds; kids were enrolled in bilingual education programs, regular English language classes, and technology-enhanced learning initiatives. A few studies also examined how students perceived AI's contribution to language development, including vocabulary learning, speaking, writing, and listening. These studies thoroughly grasp AI's efficacy in promoting English language competency at the school level by concentrating on students from various educational levels.

Global Implementation of AI in English Language Learning

The integration of artificial intelligence (AI) into English learning has gained dynamics all over the world, and is found in countries with different adoption levels. In India, Sweden, China, Hong Kong, Finland, and Singapore, AI has been incorporated into adaptive learning,

intelligent tutoring, and AI-driven platforms to enhance students' English language skills. These applications include AI-powered chatbots, conversational AI systems, AI-generated feedback, digital storytelling tools, and AI-based writing assistants, all aimed at improving students' reading, writing, speaking, and listening abilities (Aryadoust et al., 2024; Ericsson & Johansson, 2023; Kohnke et al., 2025; Srinivasan & Murthy, 2021). AI has been integrated into intelligent classrooms in China to provide personalized learning experiences and enhance students' cultural literacy and engagement (Y. Zhang et al., 2024). Additionally, AI-driven ITS have been developed to improve students' reading comprehension and pronunciation (Ni & Cheung, 2023). Similarly, Hong Kong and Singapore have explored AI-generated listening tests and mobile AI learning applications, positively impacting vocabulary retention, student engagement, and learning motivation (Aryadoust et al., 2024; Song et al., 2023).

In Indonesia, AI adoption in English language education is still emerging. Studies indicate that adaptive AI learning strategies can improve English proficiency by enhancing writing fluency, lexical diversity, and content organization (Batauban et al., 2023; Widiati et al., 2023). However, challenges such as limited infrastructure, digital literacy gaps and the need for teacher training remain obstacles to widespread implementation of AI.(Widiati et al., 2023).

Predictors of AI Success in English Language Learning

Several important factors affect the effectiveness of artificial intelligence (AI) in learning English. Learner motivation is extremely important as AI-controlled tools can improve commitment by creating interactive and personalized experiences. Studies indicate that students using AI-assisted instruction, such as conversational AI and AI-generated feedback, often show higher motivation and engagement than traditional learning settings (Chan et al., 2025; Ni & Cheung, 2023).

The adaptability of AI systems also determines their success. AI-driven writing assistants and intelligent tutoring systems use Natural Language Processing (NLP) to adapt learning content to individual needs and make language acquisition more efficient. Research suggests that AI-based personalized learning systems significantly improve student performance, particularly in writing and speaking skills (Aryadoust et al., 2024; Ericsson & Johansson, 2023).

Finally, effective pedagogical integration is extremely important for successful language education. AI should be used more as a supplement to traditional lessons than alternatives. Appropriate teacher training and digital capabilities are required to maximize AI potential in the classroom (Arefian et al., 2024; Widiati et al., 2023). However, accessibility, ethical concerns, and technological infrastructure must be addressed to ensure equitable AI adoption in language learning (Ali et al., 2023; Alsadoon, 2021).

Table 1. Summary and characteristics of the final studies selected

No	Authors, Years, Country	Mean Characteristics	Variable	Study Design	Measure	Findings
1.	Venkat Srinivasan, Hemavathi Murthy, 2021, India	1 million children and 15,000 teachers from 5,000 government schools	AI-based literacy intervention, reading and comprehension improvement	Randomized control-treatment assessment (RCT)	Learning outcomes based on AI-assisted literacy programs	AI-based tech boosted reading by 20–40%, helped teachers, and showed scalable potential.
2.	Elin Ericsson, Stefan Johansson,	22 lower secondary students (ages	Conversational AI, speaking practice, student experience	Longitudinal study (4 months)	Self-reported experiences, engagement, motivation	Conversational AI boosted speaking skills, increased engagement, and

	(2023). Sweden	13-14) in Sweden				reduced anxiety with personalized feedback.
3.	Xi Zhang, Jing Sun, Yiting Deng	Powered AI classrooms improve English language and literature learning.	AI-enhanced intelligent classroom, English language learning effectiveness	Conceptual study and experiment implementation of AI in classrooms	SMART analysis framework for AI-powered teaching	AI enhances personalized learning, cultural literacy, and engagement, with teachers key to effective integration.
4.	John Maurice Gayed, May Kristine Jonson Carlon, Angelu Mari Oriola, and Jeffrey S. Cross (2022). Japan.	EFL learners using AI KAKU writing assistant	AI writing assistant, writing proficiency, cognitive load	Counter-balanced experiment	Writing fluency, lexical diversity	AI KAKU enhanced lexical diversity and fluency, reduced cognitive load, and supported learners with structured feedback.
5.	Mohammed Abdulkareem A. Alkamel, Nasim Amin Saleh Alwagieh, 2024, Yemen	Yemeni EFL university students, predominantly female (77.1%), from various academic levels	Perceptions, benefits, and challenges of using ChatGPT for academic writing	Quantitative research using descriptive statistics and thematic analysis	Survey with 24 statements	ChatGPT is seen positively for boosting writing fluency, accuracy, and coherence, though concerns include plagiarism, originality, and off-topic responses.
6.	J. K. M. Ali, M. A. A. Shamsan, T. A. Hezam, A. A. Mohammed	46 English language teachers from diverse pedagogical backgrounds	Teachers' perceptions of ChatGPT in ELT (English Language Teaching)	Qualitative research with in-depth thematic analysis	Teacher interviews on ChatGPT integration into ELT	ChatGPT supports personalized learning and engagement but raises concerns about overreliance, reduced creativity, and curriculum alignment.
7.	Sumie Chan, Noble Lo, Alan Wong, (2024). Hong Kong	First-year university students in Hong Kong enrolled in an English-language course	AI-generated vs traditional student engagement and writing improvement	Randomized controlled trial (RCT)	AI-generated vs. instructor feedback comparison	AI-generated feedback helped students improve their essays and increase motivation and engagement, though emotional reactions to the feedback were mixed.
8.	Marzuki, Utami Widiati, Diyenti Rusdin,	Four EFL teachers from three universities	AI writing tools' impact on content and organization of student writing	Qualitative case study	Semi-structured interviews with EFL teachers	AI tools enhanced student writing, particularly in content and organization, but

	Darwin, Inda Indrawati, (2023). Indonesia					teachers expressed concerns about over-reliance and its impact on critical thinking.
9.	Arja Kangasharju, Liisa Ilomäki, Minna Lakkala, Auli Toom, 2022, Finland	61 lower secondary students (aged 13.2 years)	AI-supported writing, poetry generation, writing fluency	qualitative and quantitative log data analysis	Number of edited versions, use of poetic structures and features	AI-assisted poetry writing boosted student engagement and confidence, encouraging experimentation with poetic forms and leading to better-quality final pieces through frequent revision.
10.	Davy Tsz Kit Ng, Wanying Luo, Helen Man Yi Chan, Samuel Kai Wah Chu, 2022, Hong Kong	82 primary school students	AI literacy, digital storytelling, inquiry-based learning	Case study with knowledge tests and interviews	AI knowledge application, creativity in digital storytelling	Digital storytelling effectively enhanced AI literacy and language skills in primary students. Students demonstrated the ability to apply AI concepts in real-world scenarios.
11.	Vahid Aryadoust, Azrifah Zakaria, Yichen Jia, 2024, Singapore	listening tests for learners of various proficiency levels	AI-generated test items, listening proficiency, prompt engineering	Experimental study with linguistic analysis of test items	Text complexity, topic variation, and semantic overlap in test items	AI (ChatGPT-4) effectively generated listening scripts with varied linguistic complexity.
12.	Elin Ericsson, Stefan Johansson, (2023). Sweden	22 lower secondary students (aged 13–14) in Sweden	Conversational AI, speaking practice, student engagement	Longitudinal study	Student engagement, motivation, feedback effectiveness	AI dialogue systems improved fluency, confidence, and motivation, reducing speaking anxiety. Feedback was helpful but needs refinement.
13.	Lucas Kohnke, Di Zou, Fan Su, 2025, Hong Kong	First-year university students in an English for Academic Purposes (EAP) course	Generative AI (GenAI), personalized learning, language skills improvement	Mixed-methods study (surveys and interviews)	Grammar, vocabulary, writing skill development using AI tools (e.g., Grammarly, Quillbot)	AI tools enhanced grammar, vocabulary, and writing skills. Personalized feedback was appreciated, but overreliance is a concern. Best used as a supplement.
14.	Austin Pack, Alex Barrett, Juan Escalante, (2024). USA	119 ESL learners' essays evaluated by AI models	Automated essay scoring (AES), AI reliability, writing skill assessment	Experimental study comparing AI and	Validity, reliability, and scoring consistency	GPT-4 showed high reliability in essay scoring with slight fluctuations. AI grading saved

				human scoring	across AI models	time and ensured consistency but raised ethical concerns.
15.	Qing Ma, Peter Crosthwaite, Daner Sun, Di Zou, 2024, 41 Hong Kong, Australia, and China.	Focused on defining and validating the concept of ChatGPT literacy among language teachers.	ChatGPT literacy benefits, limitations, prompts, and evaluation.	Quantitative Likert-scale surveys and qualitative thematic analysis.	Confirmatory factor analysis (CFA) and thematic analysis of responses from 492 language teachers.	A validated six-construct framework for ChatGPT literacy was established. ChatGPT was integrated across teaching phases, from material preparation to assessment.
16.	Stuart Marshall Bender, (2024). Australia	Integration of ChatGPT in English education and digital literacy	AI literacy and ChatGPT awareness	Discussion-based research; literature review & theoretical analysis	Analysis of digital literacy frameworks and curriculum development	Emphasizes the need for AI literacy among students to prepare for future contexts; addresses ethical concerns like plagiarism and bias
17.	Yidi Zhang, Margarida Lucas, Pedro Bem-haja, Luís Pedro, 2024, Portugal	Use of AI-generated videos in foreign language learning	Learning outcomes (ease of use, usefulness, attitude, intention, concentration)	Experimental; linear mixed models & path analysis	Engagement and test scores (AI-video vs. paper-based materials)	AI videos benefit low pre-test scorers; paper materials are better for high scorers
18.	Alfred W. T. Lo, (2025). United Kingdom	Self-regulatory learning (SRL) in bilingual education (CLIL)	SRL strategies, motivational beliefs, metacognitive awareness.	Vignette-based microanalytic study.	Qualitative content analysis from 108 Hong Kong junior secondary students	Students used varied strategies; self-efficacy shaped their approaches. Some struggled with regulation, showing the need for targeted CLIL support.
19.	Mohammad Hossein Arefian, Irem Çomoğlu, Kenan Dikilitaş, 2024, Iran, Turkey, Norway	ChatGPT in EFL teacher professional development	ChatGPT-driven Collaborative Reflective Practice (CRP), a community of practice	Transcendental phenomenology approach.	Thematic analysis of discussions, observations, and interviews (8 teachers).	ChatGPT-supported CRP enhanced teacher reflection and growth, especially in under-resourced settings.
20.	Aohua Ni, Alan Cheung, 2022, China	Students' willingness to continue using AI-powered ITS in English learning	Continuance intention, perceived usefulness/enjoyment, tech anxiety	Extended TAM with structural equation modeling	Survey data from 528 senior secondary students.	Usefulness and price value boosted intention; anxiety lowered it. Key factors in the adoption of AI for learning.

21.	Reem Alsadoon, 2021, Saudi Arabia	AI-powered chatbot for EFL vocabulary learning	Tool effectiveness (dictionary, images, L1 translation, concordancer)	Experimental Study	Tool usage frequency and vocabulary retention	The dictionary was most preferred and effective; L1 translation led to better long-term retention.
22.	Yanjie Song, Yun Wen, Yin Yang, Jiabin Cao, 2022, Hong Kong, Singapore	Virtual Go Mode in the mobile app (VocabGo) for primary vocabulary learning	Engagement (curiosity, concentration, internal interest, control)	Exploratory study.	Surveys, focus groups, and learning logs (15 primary students).	High engagement in curiosity and interest; control issues due to tech problems.
23.	Amanda Denston, Rachel Martin, Gail Gillon, John Everatt, (2024). New Zealand	Vocabulary and phonological awareness in bilingual	Phonological awareness, vocabulary, literacy skills	Exploratory case study (pre/post framework)	Phoneme tasks, vocabulary assessment	Significant improvement in both groups with evidence of cross-linguistic transfer

2. Discussion

This review synthesizes findings from 23 studies on the role of AI in enhancing English language skills—speaking, writing, reading, and listening—through tools like chatbots, conversational systems, adaptive platforms, intelligent tutoring systems, AI-generated feedback, and video learning (Chan et al., 2025; Kohnke et al., 2025; Srinivasan & Murthy, 2021; Y. Zhang et al., 2024). These tools have positively impacted on learner engagement, fluency, and comprehension across diverse educational settings. AI applications in speaking and writing have reduced student anxiety and cognitive load, improved fluency and coherence, and enabled real-time feedback, although overreliance raises concerns about originality and critical thinking (Alkamel & Alwagieh, 2024; Widiati et al., 2023; Gayed et al., 2022; Pack et al., 2024; Ma et al., 2024). In reading and listening, AI-enhanced materials and intelligent systems increased comprehension and vocabulary retention, especially for lower-proficiency learners, despite technical and infrastructural challenges (Y. Zhang et al., 2024; Ni & Cheung, 2022; Song et al., 2023; Davy Tsz Kit et al., 2022; Denston et al., 2024). The integration of AI supports creativity, personalization, and reflection, but successful implementation depends on pedagogical alignment, infrastructure, and digital literacy (Ali et al., 2023; Widiati et al., 2023; Batauban et al., 2023).

Interpretation of Findings in the Context of Previous Studies

The review of 23 studies reveals a consistent trend in AI's ability to enhance English language proficiency across speaking, writing, reading, and listening skills, with each study contributing unique insights into AI's applications and effectiveness. An AI-based multisensory learning platform in Indian government schools improved reading and comprehension by 20–40% through interactive exercises and real-time feedback. However, rural students face challenges due to limited internet access (Srinivasan & Murthy, 2021). In Swedish secondary schools, conversational AI systems enhanced speaking fluency and reduced anxiety, with students appreciating individualized feedback but noting AI's lack of emotional depth for advanced learners (Ericsson & Johansson, 2023). In China, an AI-powered intelligent classroom system improved cultural literacy and engagement through adaptive learning, emphasizing the importance of teacher guidance in maximizing AI's impact (X. Zhang et al., 2023). In Japan, the AI KAKU writing assistant enhanced EFL learners' writing fluency and

lexical diversity by reducing cognitive load, enabling focus on higher-level writing tasks (Gayed et al., 2022). Yemeni EFL university students using ChatGPT showed improved academic writing fluency and coherence, although concerns about plagiarism and overreliance highlighted the need to develop critical thinking skills (Alkamel & Alwagieh, 2024).

Teachers in ELT noted ChatGPT's potential for enhancing personalized learning but warned against overuse that could suppress creativity (Ali et al., 2023). A randomized controlled trial in Hong Kong showed that AI-generated feedback significantly improved essay revisions and motivation, though students reported that the feedback was sometimes too general, requiring human input (Chan et al., 2025). In Indonesia, AI writing tools like ChatGPT and Quillbot improved EFL students' writing organization and quality, but educators were concerned about students' reliance on AI to structure ideas (Widiati et al., 2023). AI-supported poetry writing in Finland made the writing process more engaging and less intimidating, with frequent revisions resulting in higher-quality output (Kangasharju et al., 2022). In Hong Kong primary schools, AI-enhanced digital storytelling activities improved language skills and AI literacy while fostering creativity and critical thinking (Davy Tsz Kit et al., 2022).

In Singapore, AI-generated listening tests using ChatGPT-4 effectively varied linguistic complexity, though ethical concerns about test validity due to semantic overlap in items remained (Aryadoust et al., 2024). Generative AI tools like Grammarly improved grammar, vocabulary, and writing skills, but students' overreliance raised concerns about weakening independent editing abilities (Kohnke et al., 2025). In the USA, AI-based essay scoring for ESL learners using GPT-4 proved reliable and time-saving, though ethical concerns about fairness in grading persisted (Pack et al., 2024). A ChatGPT literacy framework validated across 41 countries demonstrated enhanced language instruction, especially in assessment phases (Ma et al., 2024). In Australia, AI literacy in English education was emphasized, with ChatGPT supporting digital literacy but raising plagiarism concerns (Bender, 2024).

In Portugal, AI-generated short videos improved engagement and reading comprehension among lower-proficiency learners, while higher-level students preferred text-based materials for their depth (Y. Zhang et al., 2024). In the UK, AI tools supported self-regulatory strategies in bilingual CLIL settings, though learners still needed targeted support for self-regulation (Lo, 2025). Collaborative, reflective practice driven by ChatGPT enhanced EFL teachers' professional development in Iran, Turkey, and Norway, particularly in resource-scarce environments (Arefian et al., 2024). In China, students' intention to continue using AI-powered ITS was influenced by perceived usefulness, although technology anxiety created barriers (Ni & Cheung, 2023). AI-powered chatbots improved EFL learners' vocabulary retention in Saudi Arabia, with dictionary-based features proving the most effective (Alsadoon, 2021). A mobile app's Virtual Go Mode in Hong Kong and Singapore enhanced primary students' vocabulary learning, though technical issues hindered performance for some users (Song et al., 2023). In New Zealand, an AI-supported phonological awareness program improved bilingual children's literacy skills and demonstrated cross-linguistic transfer effects (Denston et al., 2024). Lastly, AI dialogue systems like MACHE-Bot that incorporated humor and empathy significantly boosted motivation and interactional competence among EFL university students. However, AI's lack of spontaneous conversational skills limited its effectiveness for advanced learners (Zhai & Wibowo, 2023). These studies underscore AI's potential to transform English language learning through personalized, interactive, and adaptive approaches while highlighting the importance of pedagogical integration and human oversight to address limitations in emotional depth and critical thinking development.

Strengths and Limitations Compared to Previous Studies

This systematic review provides a broader global overview of AI in English language learning, addressing primary to tertiary education levels rather than focusing solely on

university contexts (Chan et al., 2025). One of its main strengths is the comparison of AI adoption in different countries, which reveals inequalities in access, infrastructure, and teacher readiness (Widiati et al., 2023). In India, for example, AI interventions significantly improved reading ability (Srinivasan & Murthy, 2021). However, similar progress is hindered in regions with limited technological support (Alsadoon, 2021). The review also highlights that successful AI use in education depends on reliable infrastructure and structured implementation (Batauban et al., 2023). Moreover, AI-enhanced classrooms can reduce learning gaps when well-guided (X. Zhang et al., 2023). Pedagogically, AI tools with empathetic and humorous dialogue have been shown to increase motivation (Zhai & Wibowo, 2023). Writing tools like ChatGPT help improve fluency, but human support is still needed to strengthen critical thinking (Alkamel & Alwagieh, 2024). Additionally, conversational AI can help reduce speaking anxiety, and personalized learning is most effective when guided by teachers (Ali et al., 2023; Ericsson & Johansson, 2023). Including various methods—experimental, qualitative, and RCTs—adds depth and reliability to the findings (Aryadoust et al., 2024). AI was also found effective in boosting creativity in activities like poetry writing and storytelling and improved literacy skills at the primary level (Davy Tsz Kit et al., 2022; Kangasharju et al., 2022).

Despite these strengths, the review has some limitations. It relies on secondary data, which makes it hard to draw direct cause-effect conclusions compared to primary research (Ni & Cheung, 2023). Contextual factors like curriculum and policy can influence AI's effectiveness (X. Zhang et al., 2023). Another issue is AI's lack of emotional and cultural sensitivity, which limits its ability to support socio-emotional learning (Zhai & Wibowo, 2023). Academic integrity concerns arise when students over-rely on AI tools for writing, resulting in reduced originality and critical thinking (Widiati et al., 2023). AI-generated feedback can also be too generic or repetitive, limiting its usefulness (Kohnke et al., 2025). Ethical concerns are raised regarding the fairness and transparency of AI assessments (Pack et al., 2024). Overdependence on AI may reduce teacher creativity and autonomy (Arefian et al., 2024). Technical limitations, such as poor semantic accuracy, also affect learning outcomes (Song et al., 2023). Finally, the successful integration of AI in multilingual settings still requires targeted pedagogical strategies to ensure inclusivity (Denston et al., 2024).

Global AI Implementation in English Language Learning

The implementation of AI in language education varies widely all over the world. Industrialised countries such as the US, China and Japan are heavily investing in AI-controlled education, the use of natural language (NLP) processing, and machine learning machine learning and technology to improve language lessons (ERÜMIT et al., 2024). The United States, for instance, has integrated AI curricula into K-12 education through the AI4K12 initiative, focusing on AI literacy. Similarly, China has implemented AI-based learning systems to facilitate language acquisition, while Japan has developed AI-driven assessment tools to improve pronunciation and grammar accuracy.

Conversely, developing countries such as Indonesia, India, and Brazil are in the early stages of adopting AI in education. Research in Indonesia indicates that AI-assisted learning tools can potentially enhance students' language proficiency (Abimanto, 2023). However, significant challenges persist, including limited infrastructure, low levels of digital literacy, and insufficient teacher training. Comparative analyses highlight disparities in AI adoption strategies globally. For example, countries like Canada, Germany, and South Korea have incorporated AI curricula emphasizing digital literacy, while others, such as Russia and Turkey, lack structured AI-based educational programs (ERÜMIT et al., 2024). Additionally, nations like the U.K. and Australia have explored AI integration in education but lack standardized nationwide AI curricula, underscoring the need for cohesive approaches to AI-driven language instruction.

Challenges and Limitations of AI in Language Learning

Despite its benefits, AI presents several challenges to education that must be addressed to optimize their effectiveness. Ethical concerns such as data protection, algorithm bias and accessibility remain urgent issues in AI-controlled learning environments (Ali et al., 2023). AI systems risk perpetuating social inequalities if they are not adequately regulated (Selwyn, 2024). Additionally, AI algorithms often reflect biases in training data, leading to unfair assessments and potentially reinforcing existing disparities (Borenstein & Howard, 2021).

The digital divide further complicates the adoption of AI, especially in low-income countries with limited access to AI-powered educational tools (Chima Abimbola Eden et al., 2024). This gap risks widening educational inequalities, emphasizing the need for global education policies that prioritize AI literacy. Furthermore, generative AI offers innovative learning experiences, but requires clear policies to mitigate risks such as misinformation and overreliance (Denny P, Gulwani S, Heffernan N, Käser T, Moore S, Rafferty A, 2023). The critical challenge is to consider these challenges that AI supports fair and effective language education around the world.

Implications for Future Research and Educational Policy

The findings of this study have important implications for education policy and future research. First, political decision-makers need to prioritize AI integration as a complementary alternative to traditional teaching methods. AI can improve language learning, but it cannot be completely replaced by human interaction, especially when speaking or writing. Second, significant investments in teacher training and education infrastructure are extremely important to optimize the benefits of AI. Countries with well-developed teacher training programs, such as China and South Korea, have achieved great success in AI adoptions compared to those without structured AI education guidelines.

Finally, future research should consider a hybrid AI human education model in which AI provides real-time feedback and educators provide personalized support. The struggle between accessibility and ethical concerns should also be a research priority to ensure that AI-controlled education is the same and integrated. By filling the gap between AI skills and educational needs, AI becomes a transformative tool in learning the world of English.

CONCLUSION

This study systematically examined the role of Artificial Intelligence (AI) in improving English language skills, specifically focusing on speaking, writing, reading, and listening abilities. Based on the analysis of 23 studies, the findings indicate that AI-driven tools—such as chatbots and AI-generated feedback systems—significantly enhance English language learning. These technologies facilitate personalized and adaptive learning experiences, foster student engagement, and address individual learning needs.

AI tools have proven particularly effective in improving speaking fluency, pronunciation accuracy, and building learners' confidence in spoken English. The results also highlight AI's transformative potential in English education. With features such as real-time feedback, interactive exercises, and customized learning pathways, AI provides innovative solutions to longstanding challenges in language learning.

However, the study also identifies key obstacles to effective implementation. These include technological limitations, unequal access to resources, and ethical concerns such as data privacy and the responsible use of AI. Addressing these issues is essential to ensure equitable and effective integration of AI in diverse educational settings. To truly revolutionize English education, AI integration must emphasize inclusion and accessibility, supported by robust infrastructure and comprehensive teacher training. Future initiatives should focus on

combining AI tools with traditional teaching methods to maximize benefits while accounting for limitations. In doing so, AI can become a powerful tool for enhancing language proficiency among learners worldwide.

REFERENCES

- Abimanto, D. (2023). *Efektivitas Penggunaan Teknologi AI Dalam Pembelajaran Bahasa Inggris*. 2(2), 256–266.
- Abusahyon, A., Alzyoud, A., Alshorman, O., & Al Absi, B. (2023). AI-driven Technology and Chatbots as Tools for Enhancing English Language Learning in the Context of Second Language Acquisition: A Review Study. *International Journal of Membrane Science and Technology*, 10, 1209–1223. <https://doi.org/10.15379/ijmst.v10i1.2829>
- Ali, J. K. M., Shamsan, M. A. A., Hezam, T. A., & Mohammed, A. A. Q. (2023). Impact of ChatGPT on Learning Motivation: *Journal of English Studies in Arabia Felix*, 2(1), 41–49. <https://doi.org/10.56540/jesaf.v2i1.51>
- Alkamel, M. A. A., & Alwagieh, N. A. S. (2024). Utilizing an adaptable artificial intelligence writing tool (ChatGPT) to enhance academic writing skills among Yemeni university EFL students. *Social Sciences and Humanities Open*, 10(April), 101095. <https://doi.org/10.1016/j.ssaho.2024.101095>
- Alsadoon, R. (2021). Chatting with AI Bot: Vocabulary Learning Assistant for Saudi EFL Learners. *English Language Teaching*, 14(6), 135. <https://doi.org/10.5539/elt.v14n6p135>
- Arefian, M. H., Çomoğlu, I., & Dikilitaş, K. (2024). Understanding EFL teachers' experiences of ChatGPT-driven collaborative reflective practice through a community of practice lens. *Innovation in Language Learning and Teaching*, 1–16. <https://doi.org/10.1080/17501229.2024.2412769>
- Aryadoust, V., Zakaria, A., & Jia, Y. (2024). Investigating the affordances of OpenAI's large language model in developing listening assessments. *Computers and Education: Artificial Intelligence*, 6(July 2023), 100204. <https://doi.org/10.1016/j.caeai.2024.100204>
- Atmowardoyo, H. (2022). An Analysis of Students' Difficulties in Listening Comprehension at Senior High School. *Journal of Excellence in English Language Education*, 1(4).
- Badriyah, B., Nafan, T., & Rahmawati, E. (2020). Students' problems of reading comprehension during online learning in the period of covid-19 pandemic. *The 2nd International Conference on English Language Education (ICONELE)*.
- Batauban, M., Rohkmah, D., & Budiasatno, J. (2023). v o l Personalized Pathways to Proficiency : Exploring the Synergy. *Journal of Applied Sciences and Technology*, 17, 60–66.
- Bender, S. M. (2024). Awareness of Artificial Intelligence as an Essential Digital Literacy: ChatGPT and Gen-AI in the Classroom. *Changing English: Studies in Culture and Education*, 31(2), 161–174. <https://doi.org/10.1080/1358684X.2024.2309995>
- Borenstein, J., & Howard, A. (2021). Emerging challenges in AI and the need for AI ethics education. *AI and Ethics*, 1(1), 61–65. <https://doi.org/10.1007/s43681-020-00002-7>
- Carol A. Chapelle. (2017). *The Handbook of Technology and Second La* (1st ed.). Wiley.
- Chan, S., Lo, N., & Wong, A. (2025). Leveraging generative AI for enhancing university-level English writing : comparative insights on automated feedback and student engagement. *Cogent Education*, 12(1). <https://doi.org/10.1080/2331186X.2024.2440182>
- Chima Abimbola Eden, Onyebuchi Nneamaka Chisom, & Idowu Sulaimon Adeniyi. (2024). Integrating AI in education: Opportunities, challenges, and ethical considerations. *Magna Scientia Advanced Research and Reviews*, 10(2), 006–013. <https://doi.org/10.30574/msarr.2024.10.2.0039>
- Davy Tsz Kit, N. G., Luo, W., Chan, H. M. Y., & Chu, S. K. W. (2022). Using digital story writing as a pedagogy to develop AI literacy among primary students. *Computers and*

- Education: Artificial Intelligence*, 3(October 2021), 100054.
<https://doi.org/10.1016/j.caeai.2022.100054>
- Denny P, Gulwani S, Heffernan N, Käser T, Moore S, Rafferty A, S. A. (2023). *Generative AI for Education (GAIED): Advances, Opportunities, and Challenges*.
- Denston, A., Martin, R., Gillon, G., & Everatt, J. (2024). A better start to literacy for bilingual children in New Zealand: findings from an exploratory case study in te reo Māori and English. *International Journal of Bilingual Education and Bilingualism*, 27(8), 1085–1098. <https://doi.org/10.1080/13670050.2024.2338102>
- Du, J., & Kei, B. (2024). Computers and Education : Artificial Intelligence Transforming language education : A systematic review of AI-powered chatbots for English as a foreign language speaking practice. *Computers and Education: Artificial Intelligence*, 6(January), 100230. <https://doi.org/10.1016/j.caeai.2024.100230>
- Ericsson, E., & Johansson, S. (2023). English speaking practice with conversational AI: Lower secondary students' educational experiences over time. *Computers and Education: Artificial Intelligence*, 5(April), 100164. <https://doi.org/10.1016/j.caeai.2023.100164>
- ERÜMIT, A. K., CEBECİ, Ü., ÖZMEN, S., & KALYONCU, F. (2024). *Comparative Analysis of the Studies of Countries on AI Teaching*. June. https://www.researchgate.net/profile/Furkan-Kalyoncu-2/publication/381115818_Comparative_Analysis_of_the_Studies_of_Countries_on_AI_Teaching/links/665dbc15479366623a3a7715/Comparative-Analysis-of-the-Studies-of-Countries-on-AI-Teaching.pdf
- Fadel, C., Holmes, W., & Bialik, M. (2019). *Artificial Intelligence In Education: Promises and Implications for Teaching and Learning*. Independently published.
- Gayed, J. M., Carlon, M. K. J., Oriola, A. M., & Cross, J. S. (2022). Exploring an AI-based writing Assistant's impact on English language learners. *Computers and Education: Artificial Intelligence*, 3(January), 100055. <https://doi.org/10.1016/j.caeai.2022.100055>
- Kangasharju, A., Ilomäki, L., Lakkala, M., & Toom, A. (2022). Lower secondary students' poetry writing with the AI-based Poetry Machine. *Computers and Education: Artificial Intelligence*, 3(January). <https://doi.org/10.1016/j.caeai.2022.100048>
- Kohnke, L., Zou, D., & Su, F. (2025). Exploring the potential of GenAI for personalised English teaching: Learners' experiences and perceptions. *Computers and Education: Artificial Intelligence*, 8(January), 100371. <https://doi.org/10.1016/j.caeai.2025.100371>
- Lo, A. W. T. (2025). The educational affordances and challenges of generative AI in Global Englishes-oriented materials development and implementation: A critical ecological perspective. *System*, 130. <https://doi.org/10.1016/j.system.2025.103610>
- Ma, Q., Crosthwaite, P., Sun, D., & Zou, D. (2024). Exploring ChatGPT literacy in language education: A global perspective and comprehensive approach. *Computers and Education: Artificial Intelligence*, 7(August), 100278. <https://doi.org/10.1016/j.caeai.2024.100278>
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Journal of Clinical Epidemiology*, 62(10), 1006–1012. <https://doi.org/10.1016/j.jclinepi.2009.06.005>
- Ni, A., & Cheung, A. (2023). Understanding secondary students' continuance intention to adopt AI-powered intelligent tutoring system for English learning. *Education and Information Technologies*, 28(3), 3191–3216. <https://doi.org/10.1007/s10639-022-11305-z>
- Pack, A., Barrett, A., & Escalante, J. (2024). Large language models and automated essay scoring of English language learner writing: Insights into validity and reliability. *Computers and Education: Artificial Intelligence*, 6(April), 100234. <https://doi.org/10.1016/j.caeai.2024.100234>
- Selwyn, N. (2024). On the Limits of Artificial Intelligence (AI) in Education. *Nordisk Tidsskrift*

- for *Pedagogikk Og Kritik*, 10(1), 3–14. <https://doi.org/10.23865/ntpk.v10.6062>
- Song, Y., Wen, Y., Yang, Y., & Cao, J. (2023). Developing a 'Virtual Go mode' on a mobile app to enhance primary students' vocabulary learning engagement: an exploratory study. *Innovation in Language Learning and Teaching*, 17(2), 354–363. <https://doi.org/10.1080/17501229.2022.2047693>
- Srinivasan, V., & Murthy, H. (2021). Improving reading and comprehension in K-12: Evidence from a large-scale AI technology intervention in India. *Computers and Education: Artificial Intelligence*, 2(December 2020), 100019. <https://doi.org/10.1016/j.caeai.2021.100019>
- Widiati, U., Rusdin, D., & Indrawati, I. (2023). The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective. *Cogent Education*, 10(2). <https://doi.org/10.1080/2331186X.2023.2236469>
- Zhai, C., & Wibowo, S. (2023). Computers and Education : Artificial Intelligence A systematic review on artificial intelligence dialogue systems for enhancing English as foreign language students' interactional competence in the university. *Computers and Education: Artificial Intelligence*, 4(September 2022), 100134. <https://doi.org/10.1016/j.caeai.2023.100134>
- Zhang, X., Sun, J., & Deng, Y. (2023). Design and Application of Intelligent Classroom for English Language and Literature Based on Artificial Intelligence Technology Design and Application of Intelligent Classroom for English. *Applied Artificial Intelligence*, 37(1). <https://doi.org/10.1080/08839514.2023.2216051>
- Zhang, Y., Lucas, M., Bem-haja, P., & Pedro, L. (2024). The effect of student acceptance on learning outcomes: AI-generated short videos versus paper materials. *Computers and Education: Artificial Intelligence*, 7(August), 100286. <https://doi.org/10.1016/j.caeai.2024.100286>