

## **A Review Of Recent Studies On Artificial Intelligence (Ai) In English Language Learning And Its Implications For Applied Linguistics**

**Ahmed Hamad Kareem**

*Assistant Lecturer, Department of English Language, College of Education for Humanities*

*Email: [ahmedhamad@uokirkuk.edu.iq](mailto:ahmedhamad@uokirkuk.edu.iq)*

*ORCID ID: [0009-0006-1488-8508](https://orcid.org/0009-0006-1488-8508)*

**Ali Hasan Ali**

*Assistant Lecturer, Department of English Language, College of Education for Humanities*

*Email: [alihassan@uokirkuk.edu.iq](mailto:alihassan@uokirkuk.edu.iq)*

*ORCID ID: [0009-0007-7485-7380](https://orcid.org/0009-0007-7485-7380)*

**Abstract:** *The rapid development of artificial intelligence (AI) has significantly transformed language learning and teaching practices across the world. Recent advances in AI technologies have created new possibilities for improving English language education and supporting both learners and teachers in diverse learning environments. This review examines recent research on the integration of AI in English language education, with particular attention to its pedagogical benefits, technological applications, and emerging challenges. AI-based tools such as intelligent tutoring systems, automated writing evaluation programs, chatbots, and speech recognition technologies provide learners with personalized feedback, adaptive learning environments, and increased opportunities for autonomous language practice. These technologies enable learners to practice language skills at their own pace and receive immediate feedback, which can enhance engagement, motivation, and overall language proficiency. In addition, AI-driven platforms assist teachers in monitoring student progress, identifying learning difficulties, and designing more effective instructional strategies. Despite these advantages, several challenges remain, including technological limitations, data privacy concerns, ethical issues, and the potential reduction of meaningful human interaction in the learning process. Therefore, this review critically evaluates existing studies on AI-assisted language learning, identifies important gaps in the current literature, and discusses key implications for future research in applied linguistics as well as for language pedagogy in the evolving era of artificial intelligence.*

**Key words:** *Artificial intelligence, English language learning, computer-assisted language learning, educational technology, applied linguistics.*

### **Introduction**

The use of digital technologies in education had fundamentally altered the traditional language learning environment. During the past two decades, computer-assisted language learning (CALL) has matured from rudimentary multimedia applications to advanced artificial intelligence (AI)-based systems [1, 2]. AI is the term coined for computer programs that are capable of performing functions that we would usually think require cognitive abilities found in humans, such as the ability to use language, understand spoken language, make decisions based on what they have been taught to do, etc. [3, 4]. AI in applied linguistics has received a great deal of interest due to the potential to improve language teaching and learning [5].

Developing technologies based on AI has opened up new ways to improve how we teach and learn a new language. Technologies that are commonly used within the education field include intelligent tutoring systems, automated writing evaluation programs, and speech recognition programs. These technologies allow us to provide personalized instruction and immediate feedback on the skills required for success in language acquisition [6, 2]. In addition to allowing students the opportunity to practice their language skills in a way that is often not available through traditional classroom settings, this means that these students will have more access to high-quality language instruction and practice opportunities. AI is defined as computers created to carry out tasks that normally require human-like abilities; for example, to process language, problem-solve or make decisions [7]. Developments of AI have enabled the creation of intelligent language learning environments that have the ability to provide learners with instantaneous feedback and personalized instruction [8].

Recent research indicates that AI can help students cultivate learner autonomy and motivation [4], and that students are now able to generate spoken and written language with the help of generative AI technologies, which creates even more opportunities and challenges for teachers of English [9]. Although numerous studies have been conducted in these areas, the results are currently quite scattered. A comprehensive review of all available studies is necessary to outline the primary findings, discover gaps in the research, and outline directions for future studies.

The majority of the common methods of teaching the English Language, i.e., in-class instruction (using printed materials), have produced good results, but may not provide the same level of success or response to students with varying profiles [10]. There is a significant body of research that indicates the positive effect that AI-supported learning environments have on language acquisition through the attainment of a large number of language competencies, such as reading, writing, speaking, and listening [4, 2]. In addition to this, it has been well established that using AI technology can also increase a learner's motivation to learn, provide them with a personalized learning path and increase their access to valuable teaching and learning resources [11, 12].

There are many different forms of AI tools available today (over the last ten years); some examples include automated writing evaluation systems, speech recognition software, machine translation capabilities, and interactive platforms for learning [6, 13]. Despite all of the advantages an AI-integrated approach to language learning has, there are several challenges that must be addressed before such a practice will become widely adopted within the education system. These challenges include, but are not limited to, the limitations of current technology, ethical concerns regarding the privacy of personal data, and the potential for AI to result in a reduction in human interaction in the language learning process [11, 2].

Additional to this, AI systems do not appear to account for the sociocultural and pragmatic dimension of language use fully, which are essential to communicate competently [14]. With the ongoing rapid growth of this research area, a thorough synthesis of the literature is warranted to compile the current literature; assess the educational implications; and identify the literature gaps that need to be filled. The objective of this review would be to:

1. Assess the use of AI in English as a second language.
2. Analyze the educational benefits of AI-based tools.
3. Identify limitations and challenges of AI in second language education.
4. Discuss implications for the field of applied linguistics and language education.

## **Methodology**

This study is a qualitative systematic review that synthesizes recent literature on artificial intelligence tools in English language learning from the field of applied linguistics. This study constitutes a systematic literature review of relevant academic sources (i.e., peer-reviewed journal articles, books, and conference papers) regarding this subject, with an emphasis on studies conducted in recent years so as to encompass the latest developments in AI technologies. This study uses an extensive search strategy to find important literature on artificial intelligence tools such as intelligent tutoring systems, automated writing evaluation and speech recognition technologies,

chatbots, and adaptive learning platforms. The relevant studies will be analysed thematically for patterns, key benefits, challenges and pedagogical implications of AI in language learning and teaching. Findings were then organized into high-order themes within the analytic framework of personalized learning, learner control, timely feedback, technical constraints, ethical issues, and sociocultural issues. Further, using a critical appraisal framework, the strengths and weaknesses of previous studies including their design, sample sizes and scope are discussed. For all of the above, the comparative synthesis of material is also employed to emphasize commonalities and divergences across studies and to highlight gaps in the literature. In this way, we can appreciate both the advantages of AI in language learning as well as its limitations. This methodology organizes and synthesizes insights across a range of resources to create a cohesive base both for introducing and negotiating the consequences of AI in applied linguistics and for recommending future research avenues.

## **Result and Discussion**

### **1. Artificial Intelligence and Language Learning**

AI has become a key aspect of technology in education, and it is becoming increasingly prevalent in second language (L2) acquisition. As such, the majority of AI applications in L2 instruction depend on the use of natural language processing, machine learning algorithms, and speech recognition technologies to analyze student language performance and provide automated feedback [6, 4]. The integration of applied linguistics and AI hinges substantially on developments within computer-assisted language learning (CALL); in the early eras of CALL, students engaged primarily with grammar drills and vocab exercises, but today's CALL technologies utilise advanced and interactive AI - simulating real-world communication and providing psychologically intelligent feedback to students during completion of activities [8, 15].

Intelligent tutoring systems (ITS) are a decision-support tool developed to enhance L2 instruction and provide an alternative to human tutors. ITS use the L2 learner's response data to simulate the types of feedback and learning experience a human tutor would provide [3, 2]. Learners can therefore learn at their own individual pace because AI systems can provide difficulty levels appropriate for each learner's ability [6, 2]. AWE (Automated Writing Evaluation) tools are another type of application of AI in language education. AWE uses natural language processing to identify errors in grammar, evaluate the structure of sentences, and provide suggestions for improvement. Studies have shown that AWE provides learners with real-time feedback, which leads to faster writing development and increased levels of independent learning [14, 4].

Speech recognition technology has been increasingly combined with AI for language learners, to allow students to use the analysis of the phonetic aspects of speech to practice both their spoken fluency and their pronunciation, and to find errors in pronunciation and receive corrective feedback on their pronunciation. Speech recognition has been shown to improve the accuracy of learners' oral communication and their overall communicative ability [11, 14].

AI has also been used to create adaptively learning platforms and mobile applications, which personalize the educational experience for each student using their individual learning profiles. Adaptive learning platforms assess each learner's progress, analyze their learning patterns and suggest learning activities that fit their requirements [2, 6]. Adaptive learning environments have been shown through research to enhance learner engagement, motivation and proficiency as it pertains to both classroom language learning and independent study [3, 12].

Natural Language Processing (NLP) is another significant branch of AI in applied linguistics and refers to the ability of a computer or machine to carry out some of the same tasks as people when it comes to understanding and producing human language [7]. By using NLP-based applications to analyse language use, identify errors in grammar, vocabulary choice and the structure of sentences, provide learners with real-time feedback considered crucial for their effective language learning experiences [16, 4]. Finally, AI-based technologies have generated increased uses of automated analysis techniques in applied linguistics by facilitating the analysis of large digital corpora [17]. Automated correlation procedures make it possible to conduct more accurate, reliable and extensive

research in applied linguistics.

AI technology can create a highly interactive, personalized and learner-centered experience for those who are studying a language. While AI systems will not replace the role of the human instructor(s), they can enhance traditional teaching through improved quality of feedback given and encouragement of independent learning while providing more opportunities for practice outside of the classroom [4, 11]. There are multiple uses of AI technology to create digital tools that can assist learners of English as a second language (ESL). Many of these tools allow learners to practice their language through enjoyable and interactive experiences [11, 18]. AI technology-based tools provide learners with real-time feedback and make it easy for them to work alone while learning [8]. The following discussion provides an overview of the major categories of AI tools used in ESL.

## **2. Benefits of Artificial Intelligence in Language Learning**

A growing body of research has begun to identify the numerous advantages to integrating AI into language education. One area that consistently emerges as an advantage is personalized learning. Traditionally, large classes with a limited amount of time available to provide instructions make it difficult to provide individualised support to all learners. With the use of AI systems, learners will be able to receive a highly customized learning experience by adapting to their level of proficiency, learning style and learning preference [3, 6].

Immediate feedback is another very important advantage. Immediate feedback is critical to developing effective language skills. By providing learners with the ability to correct errors in real-time through immediate feedback, their language accuracy will be improved, while also helping them to develop necessary related skills. AI-enhanced feedback provided to learners after completing assigned writing and speaking tasks has been shown to enhance the learners' grammatical accuracy and to help them feel more confident in their ability to effectively communicate in the target language [14, 2]. Using AI technologies has led to greater learner autonomy. Self-pacing allows learners to continue practicing outside of the classroom by offering more flexible learning opportunities [11, 12] and to feel responsible for their progress, which has been correlated with increased motivation and engagement [6].

Using an interactive/enjoyable mode of delivery, AI increases motivation to learn. Examples of this include the use of conversational agents, chatbots, and virtual tutors to replicate authentic communication situations to create immersive learning experiences that encourage learners to participate in the learning process [4, 14]. Additionally, these forms of entertainment usually incorporate gaming elements, resulting in increased interest and sustained engagement by learners with the language tasks. Using AI to study language and linguistics has both benefits and challenges for researchers. For example, researchers are concerned about the quality of the AI-generated data to use in research and are also concerned that students may become overly dependent on using technology to develop second language proficiency [19].

Research has shown that students learning through AI-supported environments experience general improvements in language acquisition across a variety of skills (i.e., reading, writing, listening and speaking). The average effect of AI-based interventions on general language proficiency has been evaluated to be medium to large based on authoritative meta-analyses [2, 4]. Learners can get the assistance of writing assistants to create more precise compositions, help to structure/edit thoughts in written work, and encourage the use of words they may not have otherwise considered. Chatbots and voice recognition tools can assist learners develop fluency and pronunciation skills while speaking. The availability of machine translation and AI reading programs will help learners read the material and understand it, while allowing them to practice vocabulary in a structured and adaptive manner [20], [21], [13]. Therefore, in general, AI-assisted tools will facilitate flexible, individualized, interactive learning opportunities where learners can practice independently and increase their performance level in each of their abilities [20][21][22][23][24][25].

In summary, the use of AI technologies in the area of language learning offers multiple benefits to the overall learning process by providing personalized instruction, immediate feedback, greater learner autonomy, increased motivation and improved learning outcomes [26][27][28][29][30]. AI is an effective option for use in modern language teaching, especially when traditional classroom

supplies are lacking [31][32][33][34][35]. AI also has an impact beyond writing in the area of all four skills of language: writing, speaking, reading, and listening [36][37][38][39][40].

### **3. Challenges and Limitations of AI in Language Learning**

#### **3.1 Technological Limitations**

Sophisticated is the word used to describe the capabilities of AI systems; however, they are still imperfect and make mistakes. For example, when evaluating written work using Automated Writing Evaluation (AWE), machines can misinterpret the contextual meaning of words and can overlook nuanced language; this can lead to false evaluation of the written work [14][41][42][43]. Also, in regards to evaluating spoken language, several speech recognition systems experience difficulty accurately understanding speakers with diverse dialects and/or speakers of a second language; this may lead to a misassessment of correct pronunciation [11], [2][44][45].

#### **3.2 Ethical Concerns and Data Privacy**

Data privacy poses an ethical concern when it comes to the use of AI [46][47]. In order for the AI system to create individualized curriculum for the student, an amazing amount of data on the student's usage of the system has to be stored by the AI; not only is there threat of mishandled data leading to loss of privacy by the student, but there may also be a risk of that data being used in an unauthorized way [12, 4]. In addition, the concern over algorithmic bias has arisen because many AI systems contain programmed biases that favour certain types of users, including but not limited to those based on language, gender, socioeconomic status, etc. [3].

#### **3.3 Reduced Human Interaction**

If too much dependence on AI is developed by a student, there is a good chance the student will never have a meaningful exchange or experience related to language (writing or speaking) [48][49][50]. The process of developing pragmatic competence and sociocultural understanding relies heavily on interpersonal communication and therefore cannot be replicated by AI [11, 14].

#### **3.4 Accessibility and Equity**

In addition, many AI-based platforms depend on high-speed internet and modern technology, which may not be accessible for everyone [51][52][53][54]. Hence, some learners from resource weak contexts are unable to benefit from an AI-supported learning environment creating potential issues related to equity [2, 6].

### **4. Critical Evaluation of Previous Studies**

#### **4.1 Strengths**

Innovative pedagogical applications: Evidence from studies indicate the successful implementation of AI tools in writing, speaking, and reading activities [4, 6]. Evidence of positive learning outcomes: A meta-analytic review supports the notion of AI being beneficial for language learning [2]. Increased learner engagement and autonomy: Studies have shown that adaptive AI systems encourage self-directed learning and enhance motivation [11, 12].

#### **4.2 Limitations**

Limitations in empirical data: Many of the studies have a limited number of participants or short duration of intervention, which limits their ability to generalize to larger populations [14]. Focus on the technology instead of the pedagogy: Many studies have focused on the capabilities of the AI system instead of how the pedagogy interacts with the technology [3]. Lack of sociocultural consideration: Some of the literature on language learning in the field of applied linguistics fails to account for important aspects such as the context in which the learner is learning, and the culture of the language in which they are learning. Moreover, the subtle nuances that exist within the communicative act of using that language [11, 14].

### **5. Implications for Applied Linguistics**

AI technology will have a significant impact on applied linguistics in the area of research and teaching. There are four primary areas where AI can contribute to advancements in applied linguistics: Pedagogical innovation: With AI, teachers have more flexibility when designing

learning activities that are adaptive for each individual learner [6, 3]. Research opportunities: In addition to providing educators with useful data sets pertaining to learner behaviour, error patterns, and interaction strategies, AI will also provide applied linguistics researchers with a variety of data sets that are conducive to a range of research questions [2]. Focus on learner autonomy and motivation: Applied linguistics researchers can investigate how AI-mediated instruction can promote learner autonomy and increase learner engagement [11]. Integration of technology and sociocultural approaches: Research in applied linguistics should investigate ways in which AI can be used in conjunction with traditional methods of teaching to enhance communicative competence and pragmatic competencies of learners [14], [12].

## **6. Future Research Directions**

Currently, there are numerous areas within the field of applied linguistics that require further investigation regarding the use of AI technology for language learning. Specifically: Longitudinal studies: Much of the current research uses short-term interventions. Much longer-term studies would be useful in determining whether AI-based learning contributes to the development of language proficiency over an extended time [2, 6]. Sociocultural and pragmatic dimensions: An additional area of future research should involve exploring how AI tools can facilitate development of communicative competence (in terms of understanding and producing speech) and cultural awareness, particularly through incorporating sociocultural theories of language acquisition [11, 14] into the design of these tools. Equity and accessibility: Research is also needed to determine the extent to which different populations have equitable access (or lack of access) to AI-supported tools for language study [12], as well as how such access can be improved for less well-resourced populations. Ethics and data privacy: In addition, it is important for future researchers to investigate the safe and ethical use of AI in educational settings, with an emphasis on safeguarding student data and reducing algorithmic bias associated with AI algorithms [3, 4]. Teacher-AI interaction: Finally, it will also be important to explore ways in which AI technologies can be used to complement existing instructional methods, to assist teachers with decision-making, and to facilitate the provision of feedback while maintain a human element in learning [14, 11].

## **7. Conclusion**

Recent studies regarding the use of AI in the English language teaching and learning field of applied linguistics have provided evidence supporting the many benefits of using AI tools, including writing assistants, chat bots, machine translation systems, and intelligent learning platforms. These tools improve writing, speaking, and reading skills, offer individualized learning options, provide fast feedback, and increase student autonomy and motivation.

The benefits of AI (through its various forms) to English Language Learning through personalization, real-time feedback, and interactive environments are enormous. Some studies of AI-supported technologies like Intelligent Tutor Systems, Automated Essay Scoring (AES), and speech recognition have shown an increase in learner engagement and autonomy as well as an increased level of language proficiency [2, 6, 4]. Nevertheless, there are also challenges related to technological framework, ethical issues, loss of human interaction, and accessibility that deserve attention. According to the literature, critical evaluation findings demonstrate the necessity of further rigorous research that is contextualised and informed through sociocultural theory.

AI provides many exciting possibilities for future research in applied linguistics by providing researchers with access to new data sources to study learner behaviour, error patterns, as well as the use of technological tools in teaching communication, and pragmatically oriented communicative methods. Researchers can use AI as a complement to the 'traditional' methods of instruction, thereby incorporating new approaches into the language-teaching strategies used in various educational contexts, and address many of the research gaps that currently exist regarding language pedagogy.

This review has also highlighted that AI should not replace teachers, but instead should be used to complement the teaching and learning process. The thoughtful integration of AI will provide all

learners with interactive and flexible learning opportunities; at the same time, teachers will have more time to devote to more complicated instructional tasks. To sum up, today's artificial intelligence is an integral part of English language learning. In order to advance, we must continue researching and developing new ways to use AI; evaluate its potential future effects; and provide everyone with equal access to AI-based learning. This review provides valuable information about how AI can enhance language learning; outlines the problems associated with current AI use in language acquisition; and suggests strategies for potential future research in applied linguistics that focuses on learning through the application of artificial intelligence technology.

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