

CONTRIBUTIONS OF ARTIFICIAL INTELLIGENCE TO THE TEACHING AND LEARNING OF ENGLISH LANGUAGE

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Abstract

This paper explores the role of Artificial Intelligence (AI) in enhancing English language learning. It highlights the limitations of traditional teaching methods, which includes: lack of personalisation, inadequate resources and disengaging classroom environments. The study identifies how AI technologies, such as, Natural Language Processing (NLP), speech recognition, intelligent tutoring systems, chatbots, and AI-powered mobile applications address these challenges. Through personalized instruction, real-time feedback, and interactive learning environments, AI is revolutionizing language acquisition. Empirical studies and case examples demonstrate that AI does not only boost language proficiency, but also improves learners' motivation, confidence, and autonomy. The paper advocates structured integration of AI tools in language education to foster effective and equitable learning outcomes.

Keywords: Artificial Intelligence, AI Powered Language Learning, Chatbots, Natural Language Processing, Personalised Learning

Introduction

In Nigeria, English is extremely important in all sectors of people's life, be it social, academic, professional, and religious engagements. The use of English language as the official language of the country with more than 500 languages could bridge the communication gap despite the country's extreme linguistic variety. According to Babalola (2010), various regional languages function as the languages of identity in Nigeria, whilst English is the language of utility. Proficiency in English language is crucial in Nigeria because it is a medium of instruction from junior secondary school and it is a prerequisite to pursue education in higher institutions.

According to Babalola (2015), English is highly valued in Nigeria since it is the language of wider communication that has permeated all areas of linguistic usage. Fluency in

English, for example, greatly enhances work prospects in professional contexts because the majority of jobs in the public and commercial domains require excellent English communication abilities. Speaking and writing English fluently open the doors to competitive prospects outside the local community where growth is increasingly linked with education and mobility.

Despite the utility values of advancing educational and social equities, English Language Learning (ELL) still faces enduring challenges such as, shortage of qualified teachers, overcrowded classrooms, restricted access to high-quality teaching materials to mention a few. Adopting a one-size-fits-all approach is challenging since learners frequently arrive with drastically different levels of language ability, cultural backgrounds, and learning needs. Both student

growth and the efficacy of instruction may be hampered by these problems.

English as a Second Language (ESL) speakers struggle to speak as fluently as native English speakers and mispronounce words (Babalola & Ayodele, 2022). It appears that certain students in Ekiti State struggle to communicate with good mutual intelligibility with the appropriate phrases due to a limited vocabulary. They appear to be reluctant to participate in class activities because they lack the right communication skills. Some students appear to struggle with written expressions and comprehension in the language.

Different learning styles are difficult to adapt to in a traditional classroom setting, this could cause the students to either fall behind or become distracted from the learning process. According to Ayodele (2023), in traditional classrooms, students are more or less passive learners, teachers believe they know everything, and students are easily disconnected. The traditional teaching approach also seems to be less engaging. Observation shows that students follow the same pattern and learning style regardless of their interests and aptitude, which frequently makes the class dull and less interactive. It seems that traditional classroom instruction takes a one-size-fits-all approach that does not give the students a personalised learning experience. These difficulties are made worse as teachers struggle with big class sizes. In addition, lack of immersive and interactive learning programmes make it difficult for students to practise and use their language abilities in real-world situations. Moreover, students' competency in English language stagnated in the absence of meaningful language practice opportunities and real-time feedback, which has caused them to become frustrated and lose interest in the learning process.

The lack of individualised learning is one of the biggest issues affecting English Language Learners (ELL). A one-size-fits-all method of instruction is frequently used, which ignores the differences in students' academic backgrounds, learning preferences, and language competence levels. As a result, some students are not sufficiently taught and many find it difficult to keep up. Without appropriate guidance, students who require further assistance lag further behind, while those who can advance more quickly are impeded. This disparity in teaching reduces general involvement, impedes efficient language learning, and eventually jeopardises the learning outcomes.

However, in recent years, there has been a surge in the use of Artificial Intelligence (AI) in the classroom. Artificial Intelligence (AI) has become a disruptive force in many fields, changing conventional wisdom and pushing the limits of what is possible. AI technologies have started to play a significant role in improving learning outcomes and offering individualised, effective, and interactive learning experiences in the field of education, especially in the area of English Language Learning (ELL).

Furthermore, immersive and interactive learning experiences that mimic real-world language situations are provided by AI-driven technologies like Virtual Reality (VR) and Natural Language Processing (NLP). Students can practise communication skills, interact with real-world language situations, and learn about different cultures in virtual language immersion environments, which helps them become more fluent and confident speakers.

This study explores how AI-driven tools and platforms are being used to solve the difficulties experienced by both teachers and

learners as it relates to English language learning. This study intends to clarify how AI might enhance language learning and promote increased linguistic competence in the use of English language by investigating the contributions of AI in ELL programme.

Artificial Intelligence and Its Importance

The creation of computer systems that are capable of enhancing learning, thinking, problem-solving, comprehending natural language, and sensing and interacting with their surroundings are all considered forms of artificial intelligence (AI). The creation of devices and systems that can replicate cognitive processes often found in human minds is the aim of artificial intelligence. According to Santiana and Marzuki (2023), artificial intelligence (AI) is a system that will gradually become more integrated into different human functions as people get used to the other technologies that are a part of their daily lives. Human reliance on AI could, therefore, become commonplace. One form of computational creativity that has increased interest in the advancement of artificial intelligence (AI) technology is artificial intelligence (AI) (Cheng & Day, 2014).

The term artificial intelligence (AI) describes how technology, especially computer systems, may mimic human intelligence processes. These procedures include self-correction, reasoning (using rules to arrive at conclusions), and learning (acquiring knowledge and rules for applying it). AI includes several subfields, including robotics, computer vision, natural language processing, and machine learning, all of which are focused on empowering computers to carry out activities that have

historically required human intelligence.

The foundational work of pioneers like Alan Turing and John McCarthy in the middle of the 20th century is where the idea of AI first emerged. The renowned "Turing Test" was proposed by Turing in 1950 and assesses a machine's capacity to display intelligent behaviour that is identical with that of a person. Known as the "father of AI", McCarthy officially launched the discipline in 1956 when he used the term "artificial intelligence" at the Dartmouth Conference (Wikipedia, 2025).

AI has advanced significantly this is due to advances in processing power, data accessibility, and algorithmic creativity. AI's versatility and significance are demonstrated by the numerous examples of its applications in diverse fields. One well-known example is the use of machine learning algorithms in recommendation systems, like those used by Netflix and Amazon, which tailor product and content recommendations according to user behaviour and preferences.

Natural language processing (NLP), which makes it possible for robots to comprehend, interpret, and produce human language, is another noteworthy use of AI. NLP is used by virtual assistants such as Google Assistant, Amazon's Alexa, and Apple's Siri to understand user enquiries and deliver pertinent answers. Furthermore, Google Translate and other AI-powered language translation services show that computers are capable of accurately and quickly translating text between a variety of languages. AI is transforming patient care, diagnosis, and therapy in the medical field. For example, IBM's Watson uses AI and machine learning algorithms to evaluate enormous volumes of medical data and help

medical professionals make well-informed choices about diagnosis and therapy.

One of the roles that AI can play is in language learning and teaching, allowing students to pick up a language more quickly (Kite-Powell, 2017). Artificial intelligence has had a profound impact on all facets of life in the 21st century, particularly in education. Artificial intelligence, a field of computer science that deals with the development of intelligence agents, is quickly changing many facets of our lives, with education being one of the main beneficiaries (Ofodu, 2024).

Innovative methods of language learning are provided by AI-powered technologies, which offer interactive learning environments, real-time feedback, and personalised learning experiences. The revolutionary potential of AI in education has been emphasised by authors like Brown and Lombardi (2019), who stress how it can adjust to different learning preferences and styles which could improve learning results and engagements.

AI-driven language learning programmes like Rosetta Stone and Duolingo provide dynamic, interesting courses suitable for each student's level of ability. To support skill development, these platforms use adaptive algorithms to evaluate learners' strengths and weaknesses and offer focused practice tasks along with real-time feedback. In addition, studies by Garcia and O'Dowd (2020) highlight how effective AI is in encouraging language learning through immersive encounters. For example, students can interact with virtual simulations of English-speaking environments and other authentic language situations using virtual reality (VR) technology, which improves language proficiency and cultural awareness.

AI-Powered Language Learning Platforms

AI-powered language learning platforms are completely changing how people learn and become fluent in new languages by utilising artificial intelligence technology to provide individualised, flexible, and efficient learning experiences. To improve language instruction, these platforms integrate speech recognition, machine learning, and natural language processing (NLP). The following are a few noteworthy AI-powered language learning resources:

Duolingo

AI is integrated with the well-known language learning website Duolingo to customise lessons to each student's competency level and preferred method of learning. Based on user performance, the platform's adaptive algorithms modify the workouts' level of difficulty. To maximise learning outcomes, Duolingo's AI-driven methodology records user progress, gives immediate feedback on exercises, and makes tailored recommendations. Duolingo provides a really interesting starting place for English language learners. It works particularly well for developing basic sentence structure and vocabulary. Lessons can be reinforced in the classroom by using it for homework or independent practice. Instructors can monitor their students' development and pinpoint areas that need improvement.

Babbel

Babbel uses AI technologies to give users personalised learning experiences. The platform analyses learner interactions using natural language processing (NLP) and modifies Jesson's material accordingly. Babbel's AI algorithms monitor users' performance and modify exercises to strengthen regions that need improvement. Furthermore, the

platform incorporates speech recognition technology for feedback and pronunciation improvement. Babbel excels at communicating practically. It can help with functional language acquisition in English instruction (e.g., how to arrange appointments and ask for directions). Babbel can be used by teachers to supplement a curriculum that emphasises the ordinary English language or to include it in role-playing activities.

Rosetta Stone

Rosetta Stone simulates immersive language encounters with the use of AI-powered language learning techniques. The platform evaluates and enhances learners' pronunciation using speech recognition technologies. Algorithms employ users' data to tailor learning routes and course contents according to each learner's preferences and progress. Instead of translating, its immersion method encourages students to think in English. Beginners will particularly benefit from it. Rosetta Stone can help students improve their speaking and listening skills in the classroom by using pattern recognition and organised repetition.

LingQ

LingQ uses Artificial Intelligence (AI) to create interactive lessons using real contents, such as podcasts, videos, and news articles. Students can create a customised vocabulary bank by clicking on unfamiliar words to receive meanings and audio. This reading and listening comprehension tool enables students to interact with English in everyday situations, which fosters critical thinking and contextual awareness. Instructors can assist students through analysis and discussion by assigning LingQ contents that relate to the subjects of the class.

Memrise

Memrise combines videos of native speakers in real life with spaced repetition. Using AI, this app monitors users' memory retention and modifies reviews to improve memory over time. The app is also best for memory retention, pronunciation, and colloquial language. It can be used to enhance vocabulary instruction in ELT and introduce students to various accents and colloquial idioms, which will help them speak English more naturally.

Busuu

Busuu provides organised instruction in speaking, writing, grammar, and vocabulary. AI offers feedback depending on user performance and assists in customising study schedules. In addition, it links students with native speakers for feedback. Busuu can be used by teachers to provide specific lessons or to reinforce grammar concepts. A social learning component is added by the native-speaker interaction, which gives students more self-assurance when writing and conversing in real-time.

Elsa Speak

Elsa Speak uses sophisticated voice recognition to concentrate on pronunciation. The AI provides immediate feedback after analysing students' speech down to the phoneme level. Although pronunciation is important for fluency and comprehension, it is sometimes overlooked in traditional ELT. As a pronunciation coach, Elsa may assist students in mastering stress patterns, intonation, and sounds. Elsa can be used in mixed learning environments, or teachers might assign particular pronunciation drills.

HelloTalk

A language exchange programme called HelloTalk links individuals all around the world. During real-time discussions, it provides translation, correction, and pronunciation capabilities using artificial intelligence. When learning a language, genuine conversation is essential. Through conversations with native English speakers, HelloTalk provides students with real-world practice. Instructors can help students get ready for discussions or look over chat logs to find lessons.

Speakly

Speakly employs AI to concentrate learning on language that is high frequency and pertinent to context. Lessons are designed so that students may rapidly use language in authentic situations. Speakly's emphasis is on frequency which makes sure that students give priority to words and phrases that are helpful. To increase memory and usefulness, teachers can match Speakly's data-driven recommendations with vocabulary sessions in the classroom.

Lingvist

Lingvist tailors its language experience to each user's knowledge and requirements. Using AI, it adjusts workouts and flashcards to the particular learning curve. This is an effective tool for reinforcing grammar and vocabulary for English language learners. By assigning individualised practice using Lingvist, teachers can make sure that every student meets curriculum objectives while moving at their own pace.

Each of these AI-driven applications addresses a distinct need in conventional language instruction, be it exposure to native speakers, motivation, pronunciation, or personalised pace. Teachers can modify instruction, extend practice outside the

classroom, and assist students in developing their confidence in using English in authentic situations by incorporating them into lesson plans, homework projects, or extracurricular activities.

These AI-driven language learning platforms offer several advantages, including personalized learning experiences, real-time feedback, interactive exercises, and flexible study schedules. Research and user feedback support the efficacy of these platforms in facilitating language acquisition and retention.

Artificial Intelligence and English Language Learning

AI-powered adaptive learning systems have revolutionized language learning by personalizing educational content to fit individual learners' needs. These systems use algorithms to analyze learners' progress and adjust the difficulty of tasks accordingly. An empirical study by Yanguas (2020) demonstrated that adaptive learning systems improve engagement and learning outcomes in English as a Second Language (ESL) students by providing tailored feedback and appropriate challenges.

Intelligent Tutoring Systems (ITS) are another area where AI has made significant contributions. These systems simulate a one-on-one tutoring experience, providing personalized instruction and feedback. Research by Graesser et al. (2019) found that AI-based ITS like Auto Tutor can significantly improve learners' grammar, vocabulary, and reading comprehension by engaging them in interactive dialogue and providing immediate corrective feedback.

Natural Language Processing (NLP) technologies have advanced the way learners practice and improve their English skills. Tools such as chatbots and virtual assistants use NLP to

facilitate conversational practice, offering a platform for learners to practice speaking and writing in English. A study by Chen et al. (2021) shows that students who used AI chatbots for language practice exhibited notable improvements in their conversational skills and confidence in using English.

Automated Writing Evaluation (AWE) systems use AI to provide instant feedback on writing assignments, helping learners improve their writing skills. These systems analyze text for grammar, coherence, and style, offering suggestions for improvement. Empirical evidence from Wang and Beckett (2022) indicates that students using AWE systems showed significant gains in their writing proficiency, as they could receive detailed feedback more frequently than with traditional teacher-led evaluation methods.

AI-driven speech recognition technology plays a crucial role in pronunciation training. Systems like Google's AI-powered language tools and Duolingo utilize speech recognition to assess learners' pronunciation and provide corrective feedback. A study by Kawai (2020) found that students using these tools improved their pronunciation accuracy and fluency compared to those who relied solely on traditional methods.

AI also enhances language learning through gamification, making the process more engaging and enjoyable. AI algorithms help create adaptive games that adjust to the learner's level and provide instant feedback. Research by Peterson (2021) suggests that gamified AI applications increase learner motivation and time spent on language practice, leading to better language acquisition outcomes.

Empirical studies consistently show that AI technologies have a profound impact on English Language

Learning. By providing personalized, immediate and interactive learning experiences, AI enhances traditional teaching methods and addresses the diverse needs of learners. These advancements not only improve linguistic proficiency but also boost learners' engagement and motivation, paving the way for more effective and enjoyable language learning experiences.

Jawaid, et al. (2025) studied AI and English language learning outcomes. The study explored the transformative role of AI in enhancing English language learning outcomes for underperforming students (D grades) across diverse academic levels (1st to 8th grades). The paper examines AI technologies, including natural language processing (NLP), machine learning, speech recognition, and intelligent tutoring systems, which enable personalized learning experiences. These tools were adapted to students' proficiencies, delivering real-time feedback, targeted practice, and contextualized tasks that enhance speaking and writing skills. The research emphasizes interactive and data-driven methodologies that foster deeper engagement and sustained motivation. Empirical data were drawn from an experimental study employing the Jawaid TESOL Benchmarking Model (2014), highlighting benchmark outcomes. Critical challenges, including ethical concerns, data privacy, equitable access, and educators' preparedness for AI integration, are also discussed. The research culminates in a structured framework for embedding AI technologies in English language courses, emphasizing scalable, inclusive, and sustainable practices. By redefining language pedagogy, the study positions AI as a paradigm shift that advances educational equity and promotes student-centred learning in

technologically enhanced environments.

Mohebbi (2025) explores the role of Artificial Intelligence (AI) in language learning, drawing insights from 18 peer-reviewed articles published between 2009 and 2024. The research utilised the PRISMA framework to ensure a comprehensive, structured approach to data collection and analysis. Articles were sourced from academic databases such as Google Scholar, ERIC, and PubMed, using targeted search terms including “AI and learning speaking,” “AI and learning writing,” and “AI and improving listening.” A meticulous screening process was applied, first by title and abstract, followed by full-text analysis to ensure relevance. The studies were then subject to a dual-round thematic analysis, with each round focusing on identifying patterns and cross-validating findings related to AI’s impact on language learning outcomes. The findings of the study revealed that AI-driven tools significantly enhance language learning outcomes by promoting engagement, providing immediate feedback, and facilitating personalised learning experiences. Specific AI tools like Virtual Reality (VR) applications, automated writing feedback systems, and chatbots were analysed for their effectiveness in enhancing speaking, writing, and grammar skills. By conducting a detailed thematic analysis, this study highlighted both the benefits and limitations of AI-driven language education, underscoring AI’s role in promoting self-regulated learning while noting areas needing cautious implementation, such as over-reliance on technology and equitable access.

Chatbots and English Language Learning

Research on chatbots and their effectiveness in English language

practice has grown significantly in recent years. Studies have explored how chatbots can provide learners with interactive and engaging language learning experiences. A study by Li et al. (2018) investigates the impact of using a chatbot on students' English speaking and writing skills. The researchers found that regular interactions with the chatbot led to improvements in students' vocabulary, grammar, and overall proficiency. Another notable study by Jones and Smith (2019) examine the use of chatbots for English language learners in a classroom setting. They found that students who engaged with the chatbot showed increased confidence in speaking English and were more motivated to practice outside of class.

Ahmad, et al. (2025) investigates the role of AI-based chatbots in enhancing the English language learning experience for Pakistani students. This qualitative case study explores the effectiveness of AI-based chatbots in enhancing English language learning experiences for Pakistani students. Grounded in Computer-Mediated Communication (CMC) Theory, the study addresses the challenges faced by Pakistani students in learning English, including inadequate resources and limited access to quality instruction. Ten Pakistani students learning English as a second language interacted with an AI-based chatbot for four weeks. Thematic analysis of pre- and post-chatbot interview transcripts revealed that the chatbot provided personalized feedback and practice opportunities, improving grammar and vocabulary skills and increasing motivation and self-efficacy. The study contributes to the existing research on AI-based chatbots in language learning, highlighting their potential in promoting learner engagement and facilitating language learning

outcomes. The findings have implications for language learning instruction, emphasizing the importance of incorporating technology-enhanced learning solutions into language learning curricula.

Balcı (2024) reviews the effectiveness of ChatGPT in promoting EFL learning and teaching using the Web of Science to identify. The database was searched until May 2024. The review summarizes findings from twenty-one studies extracted from the Web of Science database to get a better insight into the advantages and drawbacks of using ChatGPT in the field of EFL education. The review results showed that ChatGPT significantly improved students' EFL learning experiences and teachers' teaching practices. The main advantages of ChatGPT in EFL education are that it can improve learners' language proficiency and basic language skills of speaking, listening, reading, grammar, vocabulary and especially writing skills in addition to its ability to increase motivation and engagement, enhance learner autonomy, and provide individualized learning opportunities. Despite these beneficial effects, students and teachers approach ChatGPT with caution mostly because of its limitations and ethical issues. This systematic review research contributes to the understanding of the key benefits and drawbacks of ChatGPT in the specific area of EFL teaching and learning.

Ahmad, et al. (2025) examine the impact of mobile applications, specifically Duolingo, Elsa Speak, and Hello English, on students' speaking skills. The study explored students' perceptions of these apps and investigated how they can be used effectively. A quantitative study was conducted, distributing a detailed

questionnaire to 100 students. The data were analyzed using descriptive statistics, ANOVA, and paired sample t-tests, while qualitative feedback from open-ended questions provided additional insights. Results indicate a generally positive attitude towards the apps, highlighting their convenience and effectiveness in improving pronunciation, confidence and vocabulary. However, challenges such as connectivity issues, cost, and the need for more native-speaker interactions were also identified. Notably, the ANOVA and paired sample t-tests revealed significant differences in students' perceptions based on gender, particularly in areas of confidence and continued use. This research underscores the potential of mobile apps to significantly enhance language learning, provided that users' feedback is integrated into their ongoing development. By addressing the identified issues, these apps can become even more effective tools for improving students' speaking skills. The study concludes with recommendations for app developers to consider users' experience improvements, thereby optimizing the educational impact of these digital tools.

Contributions of Artificial Intelligence to English Language Learning

Artificial Intelligence (AI) has made significant contributions to English language learning by enhancing personalized instruction, improving engagement, and providing immediate feedback. Here are some key areas where AI has impacted:

Personalized Learning: AI-driven platforms can adapt to individual learners' needs, providing customized exercises and feedback. This personalization helps address specific weaknesses and strengths, enhancing

overall learning efficiency. All systems can analyze learners' progress and tailor contents to keep them engaged and challenged appropriately.

Improved Feedback Mechanisms: AI tools such as speech recognition software and automated writing evaluation systems provide immediate feedback on pronunciation, grammar, and writing skills. These tools help learners practice more effectively and correct mistakes in real time, which is crucial for language acquisition.

Enhanced Motivation and Engagement: Studies have shown that AI-mediated instruction can significantly boost learners' motivation and engagement. Interactive AI tools, including chatbots and virtual tutors, make learning more interactive and enjoyable. This increased engagement can lead to better retention and understanding of the language.

Self-Regulated Learning: AI supports self-regulated learning by offering resources that learners can access at their own pace. This autonomy allows learners to take control of their education, set goals, and monitor their progress, fostering a more proactive approach to language learning.

Efficient Administrative Processes: Beyond direct instruction, AI streamlines administrative tasks such as grading, curriculum development, and tracking students' progress. This efficiency allows educators to focus more on teaching and less on administrative duties, potentially improving the overall educational experience.

Collaborative Learning Opportunities: AI can facilitate collaborative activities through virtual environments where learners can practice English with peers worldwide. This global interaction not only improves language skills but also

enhances cultural understanding and communication abilities.

Speech recognition: this is one of the most impactful AI contributions to English language learning. It allows learners to practice speaking and receive instant feedback on pronunciation, fluency, and accent. Tools like **Elsa Speak** and **Google Speech-to-Text** use AI to analyze speech patterns, identify errors, and suggest corrections, helping learners sound more natural and confident. This technology supports **self-paced learning**, especially in areas where access to native speakers or qualified instructors is limited. It also builds listening and speaking skills, these are the two areas often underdeveloped in traditional classroom settings.

Conclusion

In situations where traditional approaches have failed, artificial intelligence (AI) has shown itself to be a potent force for change in English language instruction and pedagogy. AI integration in English language learning tackles fundamental problems such as restricted access to immersive language experiences, shortage of teachers, and a lack of personalisation. Learners can enhance their speaking, writing, and listening abilities by using AI-powered resources such as Duolingo, Babbel, Rosetta Stone, Elsa Speak, and intelligent tutoring systems, which personalise instruction, mimic real-world interaction, and offer instant feedback. Moreover, technology increases students' self-control and engagement, which makes learning more independent and efficient. However, careful preparation, fair access, and teacher preparedness to use AI-based platforms are necessary for successful deployment. AI presents an inventive, inclusive, and scalable way forward for English language instruction.

Recommendations

Based on the conclusion, the following recommendations are made:

1. parents should encourage and support their children's use of AI-powered language learning tools at home to supplement classroom instruction and reinforce learning in a familiar environment.
2. teachers should integrate AI-powered tools into their teaching practices to provide personalized learning experiences and timely feedback to students.
3. school administrators should invest in AI technologies to ensure access to a wide range of authentic and updated learning materials for English language learning.
4. policymakers should prioritize funding and support for the integration of AI into educational curricula to enhance better language learning outcomes across schools
5. curriculum developers should collaborate with AI experts to design interactive and engaging AI-based language learning modules that cater for diverse learning styles and needs.

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