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VIRTUAL CONVERSATIONS, REAL LEARNING: THE ROLE OF AI CHATBOTS IN ENHANCING ENGLISH LANGUAGE EDUCATION

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Abstract

AI chatbots are rapidly gaining prominence across a variety of professional fields in the recent times. Their growing popularity stems from their ability to handle a wide range of tasks. This paper explores the concept of chatbots, tracing their historical development and technological evolution. It further examines their practical applications across different sectors, with a particular focus on their role in English language education. The findings emphasize the growing significance of chatbots as supplementary tools that support educators and learners in creating more interactive, efficient, and learner-centered educational experiences.

Introduction

What is a chatbot?

A chatbot is a software application powered by artificial intelligence which has spoken or written conversations with human users. Chatbot Technology uses natural language processing to understand and interpret the requirements of the user and generate a relevant response. Natural Language Processing (NLP) is a branch of Artificial Intelligence (AI) that inspects the way machines work and interpret human language to provide context -based responses. The most basic type of chatbot is a question-answer bot. This type of chatbot has access to a knowledge base and utilizes pattern recognition. The chatbot when incorporated with artificial intelligence programming become convincingly effective. Advanced AI-based bots utilize a database of information, deep learning, machine learning and natural language processing to recognize patterns in conversation which enables these bots to produce a realistic response and provide a human like engagement to the users. Chatbots are capable of interacting with humans through spoken, written, and visual modes of communication. They can simulate human-like behaviour and perform specific tasks while engaging in intelligent conversations with users. With the rapid advancements in artificial intelligence and machine learning, chatbots are increasingly being adopted across various sectors, including financial services, customer support, education, and healthcare. Some advanced chatbots are equipped with distinct personalities and are able to process and retain contextual information from their interactions. This enables them to provide more precise responses. Chatbots gather more data about the user over time, their ability to understand and adapt to user needs improves which aids in enhancing their overall performance (Pergantis et al., 2025).

History of Chatbots

The concept of chatbots originated in the 1960s with the development of ELIZA by Joseph Weizenbaum at MIT. ELIZA simulated a Rogerian psychotherapist using basic pattern-matching techniques to respond to user inputs. Despite its simplicity, it demonstrated the potential of machines to engage in human-like dialogue (Adamopoulou & Moussiades, 2020).

In 1972, psychiatrist Kenneth Colby developed PARRY, which simulated a patient with paranoid schizophrenia. Unlike ELIZA, PARRY used more complex modeling of human thought and behavior, which offered a deeper level of interaction (Adamopoulou & Moussiades, 2020). Advancements continued into the 1990s with ALICE (Artificial Linguistic Internet

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Computer Entity), created by Richard Wallace in 1995. ALICE employed heuristic pattern-matching and introduced AIML (Artificial Intelligence Markup Language), which influenced later chatbot frameworks (Adamopoulou & Moussiades, 2020). At the same time, Rollo Carpenter developed Jabberwacky, which attempted to mimic human conversation and adapt to user inputs through learning-based methods (Al-Amin et al., 2024).

In the 2010s, virtual assistants like Apple's Siri (2011), Amazon's Alexa, and Google Assistant became popular. These tools integrated natural language processing and machine learning, offering personalized and interactive voice-based experiences (Khosravi et al., 2023). A significant leap came with the launch of OpenAI's ChatGPT in 2022. ChatGPT was built on large language models, it showcased advanced language generation capabilities which enabled complex and coherent conversations. It set a new benchmark for chatbot interactions and was soon followed by similar AI-based assistants such as Google Bard and Microsoft Copilot (Khosravi et al., 2023).

Chatbots in other fields

AI-powered chatbots are transforming sales by automating important functions like lead generation, qualification, and customer support. These chatbots engage website visitors and social media users while capturing leads and guiding them through the sales funnel with personalized product recommendations. They qualify leads through analyzes of user behavior and responses and filter high-potential prospects for the sales teams. Chatbots enhances user satisfaction by providing responses to common queries in customer support. This efficiency not only boosts brand loyalty but also reduces operational costs by minimizing the need for human intervention (John, 2025). Furthermore, chatbots improve customer engagement through personalized interactions, which increases conversion rates and overall sales performance.

AI-powered chatbots are increasingly being implemented in healthcare settings to automate a variety of essential functions, including appointment scheduling, symptom assessment, and patient triage. These chatbots enable patients to independently book or reschedule appointments, enhancing accessibility and reducing administrative burden. They can also analyze patient-reported symptoms and provide preliminary assessments, offering immediate guidance and helping prioritize care based on urgency. Additionally, AI chatbots support medication adherence by delivering timely prescription refill reminders and contribute to mental health services by providing psychological support and coping strategies. In research contexts, they assist in literature reviews, data analysis, and the drafting of academic documents. However, while AI chatbots can improve efficiency and engagement, they are designed to supplement not replace the human healthcare professionals, particularly in complex diagnostic and treatment scenarios (Altamimi et al., 2023).

Chatbots in the field of English Language teaching

Chatbots are often referred to by various names such as talkbots, chatterbots, conversational AI bots, AI assistants, intelligent virtual assistants, virtual customer assistants, digital assistants, conversational agents, and virtual agents, are becoming integral to numerous sectors including healthcare, education, and customer service. These conversational interfaces operate through varying degrees of artificial intelligence, and their ability to respond effectively is directly proportional to their level of intelligence. In the field of education, the primary goal of using chatbots is not to replace teachers but to assist them by handling repetitive and low cognitive-level tasks, ultimately increasing the teacher's efficiency and allowing them to focus on more complex instructional activities (Yanduri & Majid, 2022). ChatGPT, an AI-powered chatbot presents a multifaceted set of functions that significantly enhance English language learning and teaching. One of its key capabilities lies in vocabulary enhancement, where it provides contextually appropriate synonyms and alternative word choices tailored to the learner's proficiency level. This function supports the development of lexical variety and precision in written expression. In terms of sentence construction, ChatGPT aids users in forming grammatically sound and logically structured sentences, which develops syntactic accuracy and coherence. The model also performs real-time grammar identification, enabling learners to recognize and correct errors in tense usage and parts of speech. This immediate feedback promotes deeper understanding of grammatical rules and conventions. Additionally, ChatGPT facilitates


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paragraph organization by guiding learners in structuring their ideas cohesively, which contributes to the development of well-formed and logically connected paragraphs (Jabbar & Barkati, 2024). Summarization is another advanced feature that allows learners to condense complex texts into concise versions without compromising essential meaning, thereby enhancing comprehension and academic writing skills. Paraphrasing support is equally valuable, as it enables students to rephrase content in their own words, promoting originality and reinforcing understanding. The platform also assists in error correction by offering explicit feedback on grammar, vocabulary, and usage, which encourages reflective learning and linguistic accuracy. Moreover, ChatGPT aids in the acquisition of domain-specific and professional vocabulary, encouraging the active use of both frequently encountered and less commonly used terms. It contributes to reading fluency by simplifying complex language, thus making challenging texts more accessible and reader-friendly. Lastly, it provides clear and structured guidance on how to approach reading and writing tasks, which is particularly beneficial for learners with developing literacy skills. Collectively, these dimensions position ChatGPT as a valuable pedagogical tool that complements traditional methods and supports personalized, interactive, and skill-oriented language learning.

Gemini is an advanced large language model developed by Google, which demonstrates considerable potential in enhancing English language instruction and learning. It possesses sophisticated capabilities in natural language understanding, generation, and translation that enable it to support a wide range of pedagogical functions. Gemini adapts to individual learners by offering personalized exercises and real-time feedback tailored to their pace and proficiency level. This adaptive feature benefits diverse learners, particularly those requiring differentiated instruction. Moreover, Gemini facilitates the development of interactive learning tools such as chatbots and virtual tutors, which simulate authentic communication and provide instant corrective feedback, thereby fostering learner engagement and improving outcomes (Tiwari et al., 2024). The platform also assists students across various stages of the writing process, including idea generation, drafting, editing, and proofreading. This comprehensive support strengthens writing competence and language proficiency. Additionally, Gemini generates targeted grammar and vocabulary exercises based on the learner's current level and highlights specific areas for improvement. This function contributes to a more efficient acquisition of linguistic knowledge and skills (Alnasib & Alharbi, 2024). Overall, Gemini represents a valuable educational tool that complements traditional instruction through its capacity for individualized, interactive, and data-driven language learning.

Conclusion

In conclusion, chatbots represent a significant advancement in artificial intelligence, offering practical applications across various sectors including healthcare, customer service, education, and language learning. Their ability to process natural language, simulate conversation, and adapt to user needs makes them valuable tools for both professionals and learners. In the educational domain, chatbots such as ChatGPT and Gemini support language development by providing personalized feedback, enhancing vocabulary and grammar skills, and guiding the writing process. These tools do not aim to replace human educators but to assist them in delivering more efficient and learner-centered instruction. As artificial intelligence continues to evolve, the role of chatbots in academia and other fields is expected to expand, while contributing to more accessible, responsive, and effective communication and learning environments.

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