Harnessing AI Chatbots for EFL Essay Writing: A Paradigm Shift in Language Pedagogy

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Abstract
In a time when digital technologies are changing educational paradigms, this study delves into integrating Artificial Intelligence chatbots in enhancing English as a foreign language essay writing, marking a significant shift in language pedagogy. With the backdrop of increasing reliance on technology in educational settings, the research foregrounds Artificial Intelligence chatbots' potential to revolutionise traditional teaching methodologies. This article aims to scrutinise the efficacy of these digital assistants in augmenting the essay-writing skills of English learners, underlining the importance of aligning technological advancements with educational needs. By investigating the incorporation of Artificial Intelligence chatbots into English as a foreign language curriculum, the study highlights their capacity to offer immediate, personalised feedback, fostering a learning environment that supports individual learners' needs and preferences. The central inquiry revolves around identifying and optimising the mechanisms through which Artificial Intelligence chatbots can contribute to developing writing proficiency among English students. Through a comprehensive review, the paper presents insights into the pedagogical benefits and challenges of using Artificial Intelligence chatbots, including their role in promoting learner autonomy, accommodating diverse learning styles, and providing a safe space for linguistic experimentation. The findings underscore the transformative potential of Artificial Intelligence chatbots in language education, advocating for a paradigmatic shift towards more interactive, responsive, and learner-centred teaching approaches. This review not only reaffirms the significance of integrating technology into language learning but also opens new avenues for enhancing the educational experiences of English learners.

Keywords: AI chatbots, EFL essay writing, ethical considerations, language learning, pedagogical implications

Introduction

Integrating Artificial Intelligence (AI) chatbots into educational practices, especially in English as a Foreign Language (EFL) essay writing, signifies a revolutionary stride in language learning methodologies. At the heart of this investigation is a dual motivation: firstly, to bridge the gap between traditional language pedagogy and the burgeoning technological advancements that promise to redefine it, and secondly, to critically examine the multifaceted implications of AI chatbots, like ChatGPT - a Large Language Model (LLM) AI chatbot - in enhancing the essay writing skills of EFL learners. The increasing reliance on technology in education has ushered in a new era where traditional teaching paradigms are being challenged and reshaped. In this context, AI chatbots emerge as tools for language practice and as catalysts for pedagogical transformation.

The burgeoning interest in AI chatbots for EFL essay writing stems from their ability to provide immediate, personalised feedback and a plethora of linguistic inputs, thus potentially revolutionising the way EFL learners engage with the language learning process. This review delves into the theoretical underpinnings of AI chatbots in language learning, examining their role through the lenses of constructivist learning, communicative language teaching, and the input hypothesis. Furthermore, it critically analyses the pedagogical implications of integrating AI chatbots into EFL curricula, their efficacy based on empirical evidence, and the associated limitations and ethical considerations. In navigating through this exploration, the review is driven by a conviction that understanding the capabilities and limitations of AI chatbots in EFL essay writing is crucial for harnessing their potential effectively. This encompasses addressing the challenges and opportunities in this dynamic intersection of technology and language education, aiming to foster a more interactive, responsive, and learner-centred teaching approach. This investigation is not merely academic; it is motivated by a keen interest in enhancing the pedagogical toolkit available to language educators, thereby enriching the educational experiences of EFL learners worldwide.

Literature Review

**AI Chatbots Vs Technology-assisted Language Learning Tools**

In language learning, AI chatbots have become increasingly prominent, offering considerable potential to enhance the acquisition and practice of languages. Various research efforts have investigated the role of AI chatbots in this field, noting their technological, instructional, and social benefits (Huang et al., 2021). These chatbots, powered by sophisticated AI methods such as “Natural Language Processing (NLP), Machine Learning (ML) and Deep Learning (DL)” (Siderska et al., 2023, p. 90), can reply to queries by drawing from extensive databases of human language (Kohnke et al., 2023). They present a unique opportunity for learners to engage in independent conversational exercises without the constant need for direct human interaction, thereby garnering significant interest in Computer-Assisted Language Learning (CALL) research (Gallacher et al., 2018).

Compared to other technology-assisted language learning tools, AI chatbots offer unique advantages. More specifically, they have been implemented as English conversation partners in speaking classes, showing the potential to impact students' understanding of the subject matter positively (Petrovska et al., 2024), affective aspects, and speaking competence over time (Han, 2020). Also, AI chatbots can be integrated into online courses to investigate their impact on students' learning processes, indicating their potential to transform traditional language learning experiences (Neo, 2022). In the writing class, AI-driven chatbots can establish an automated,
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intelligent framework, assisting educators in evaluating and gauging a student's writing capabilities (Adiguzel et al., 2023). Also, AI writing tools have been found to improve the writing quality of EFL students, particularly in terms of content and organisation, as perceived by teachers across various universities in Indonesia (Marzuki et al., 2023).

Acknowledging that the research surrounding AI-powered chatbots for educational applications is developing is crucial. Additional studies are necessary to fully incorporate this cutting-edge supportive tool into diverse language learning scenarios (Fidan & Gencel, 2022). Additionally, deploying AI chatbots in language education has uncovered considerable research gaps, which warrant further exploration to enhance their efficiency (Yang et al., 2022). Conversely, other technological aids in language education, like mobile-assisted language learning and virtual assistants, have shown potential in improving language acquisition experiences. For instance, mobile-assisted language learning has been recognised for fostering language immersion and effectively boosting learner motivation (Mavropoulou & Arvanitis, 2021).

**Theoretical Underpinnings of AI Chatbots in Language Learning**

The use of AI chatbots in language learning and writing instruction could be supported by several theoretical frameworks that underpin language acquisition and pedagogical approaches. The principles of constructivist learning, communicative language teaching, the input hypothesis, and the role of immediate corrective feedback provide a foundation for understanding the role of AI chatbots in language acquisition and writing instruction.

**Constructivist Learning**

The theoretical framework of constructivist learning emphasises the active role of learners in constructing their understanding of the language. According to Berger and Luckmann (1966), knowledge is socially constructed as it mediates interactions and “typifies experience” (p. 39), aligning with the idea that language learning occurs through meaningful engagement and social interaction. AI chatbots can facilitate constructivist learning by providing interactive and personalised language practice (Bibauw et al., 2019), allowing learners to engage with the language actively in authentic contexts.

**Communicative Language Teaching**

Communicative Language Teaching (CLT) emphasises communication as the primary goal of language education. The approach stresses the use of language for authentic communication and meaningful interaction. The theoretical underpinnings of CLT support the role of AI chatbots in providing opportunities for authentic language use and communicative practice (Haristiani, 2019). Learners can develop their communicative competence and language skills in real-life contexts by engaging in conversations and receiving feedback from AI chatbots.

**Input Hypothesis**

Krashen's input hypothesis asserts that language acquisition happens via exposure to understandable input “in pressure-free situations” (Krashen, 1982, p.7). According to this theory, learners subconsciously absorb language when they encounter language input that is just above their existing level of proficiency. AI chatbots can provide learners with tailored input that is comprehensible and engaging, supporting language acquisition by exposing learners to meaningful language input, facilitating language practice, and reducing students' anxiety (Hawanti & Zubaydulloevna, 2023).

**The Role of WCF in Students’ Writing Production**
The benefits of immediate writing corrective feedback that a chatbot may offer versus the traditional delayed corrective feedback provided by the instructor on EFL students' writing have been the subject of extensive research. Corrective feedback has been recognised as a crucial aspect of EFL writing instruction, offering individualised attention that is otherwise rarely possible in a classroom setting (Sari, 2019; Ariyanti & Firtiana, 2017). Research examining the impact of immediate and delayed oral corrective feedback on the writing precision of intermediate Iranian EFL learners revealed that prompt feedback encouraged students to undertake more revisions and pay closer attention to their mistakes (Yasaei, 2016). Similarly, a study using a combination of track changes and word processors for immediate and delayed feedback indicated a significant effect in favour of immediate feedback in improving students' writing performance (AbuSeileek, 2013). In second language acquisition, the impact of immediate feedback on students' writing accuracy has been supported by research indicating that it leads to more significant gains in accuracy than no feedback (Benson & DeKeyser, 2018). The mode of feedback delivery has also been explored, with studies investigating the use of automated feedback programmes, such as 'Grammarly', and the implementation of immediate peer feedback in EFL writing classes (Alsaweed, 2022; Daweli, 2018; Ghufron, 2019; Muflihah & Authar, 2022; Taskiran et al., 2024). These studies have highlighted the potential of automated feedback programmes and immediate feedback in improving students' writing accuracy, competence, and attitudes toward writing tasks.

**AI Chatbots in EFL Essay Writing**

To explore the specific functionalities of AI chatbots in enhancing essay writing skills, it is essential to consider the various features and roles of AI chatbots in facilitating critical thinking and reflective learning. AI chatbots have the potential to provide immediate feedback, personalised learning paths, and diverse linguistic inputs, thereby enhancing the overall essay-writing skills of EFL students.

The use of AI chatbots in EFL essay writing has gained attention due to their ability to provide immediate feedback and personalised learning paths. Studies indicate that essays perceived as superior quality often exhibit linguistic characteristics linked to complex text and advanced language usage (McNamara et al., 2009). This suggests that AI chatbots, by analysing linguistic features, can provide valuable immediate feedback to EFL students to improve the quality of their essays (Hwang et al., 2023; Dis et al., 2023).

**Pedagogical Implications of Integrating AI Chatbots into EFL Writing Courses**

Recent studies have focused extensively on incorporating AI chatbots into EFL writing programmes. ChatGPT, in particular, has been recognised as an influential tool that can potentially transform research methodologies (Dis et al., 2023). Within EFL writing courses, the adoption of chatbots has significant pedagogical consequences. Research by Klimova and Seraj (2023) explored key trends, models, and theories, offering specific teaching strategies for employing chatbots in EFL writing classes, including their use in prewriting activities and assessments. They found that students utilising mind mapping techniques generally achieve higher academic success and exhibit more logical thinking and noted the effectiveness of chatbots in evaluating students' writing abilities (Klimova & Seraj, 2023). Yang's (2022) study further highlighted the role of AI chatbots in EFL writing instruction, stressing the need for an educational environment that nurtures multilingual students’ literacy-mediated identities, integrating their previous literacy experiences with a dialogical teaching approach and a research-driven, multiple-draft strategy.
On the other hand, Jiang’s (2022) review pointed out the limited research on AI application in EFL contexts, particularly about pedagogical and ethical issues. This gap indicates a critical need for more comprehensive studies on the pedagogical impacts of AI chatbots in EFL writing courses. Overall, while current literature offers valuable insights into the educational implications of AI chatbots in EFL writing education, further studies are essential to fully understand the effects of AI chatbots on EFL writing competencies.

Providing a Safe, Error-Tolerant Environment

AI chatbots can provide a safe and error-tolerant environment for writing practice. They offer a low-stakes setting for students to practise language skills without fear of judgment or negative evaluation (Bao, 2019). Furthermore, chatbots have been found to reduce EFL students' speech-related anxieties and learning inhibitions, indicating their potential to create a safe environment for language practice (Bao, 2019; Shazly, 2021). Additionally, the positive impact of learner autonomy on the English mastery of EFL learners highlights the potential of AI chatbots in providing a safe environment for language practice (Artini et al., 2022; Khaki, 2013).

Challenges

Despite the potential benefits, integrating AI chatbots into EFL curricula presents challenges. Ensuring pedagogical soundness is crucial, as the use of chatbots in writing is still in its early stages, and there is a need to explore their pedagogical roles and implications (Winkler & Söllner, 2018; Wollny et al., 2021). Additionally, maintaining learner motivation is a challenge, as the effectiveness of chatbots in sustaining student engagement and motivation requires further investigation (Mai et al., 2022). Lastly, concerns have been raised about the ethical ramifications of using AI chatbots in writing, emphasising the need to consider their impact on student learning and development.

Empirical Evidence on the Efficacy of AI Chatbots in Improving EFL Learners’ Essay Writing Skills

The analysis of empirical studies provides valuable insights into the efficacy of AI chatbots in improving EFL learners' essay-writing skills. Quantitative and qualitative research offers insights into learner perceptions, performance outcomes, and pedagogical effectiveness. AI chatbots have shown the potential to improve EFL learners' essay-writing skills. The use of chatbots in the teaching and learning of writing has been viewed as a positive assistance by primary students in Saudi Arabia (Othman, 2023). ‘Argumate’, a chatbot system, was created to support student argument development and has been shown to assist learners in producing superior argumentative writing, thereby illustrating the significant capacity of AI chatbots in aiding specific writing tasks (Guo et al., 2022). Furthermore, using AI chatbots has effectively improved grammatical competence among EFL undergraduate students in Korea (Kim, 2019). These findings suggest that AI chatbots can be valuable tools for enhancing EFL learners' writing skills.

Limitations and Ethical Considerations of AI Chatbots in EFL Essay Writing

While AI chatbots offer promising functionalities for EFL essay writing, it is essential to consider the potential challenges, concerns, and ethical considerations associated with their use. Concerns have been raised regarding the possible usage of AI chatbots for academic writing and the need for guidelines for their use in scientific writing (Lee, 2023; Kumar, 2023; Khalil & Er,
2023). Additionally, the impact of AI chatbots on plagiarism detection and the ethical considerations of using such services have been highlighted (Aggarwal et al., 2023). Concerns regarding data privacy, the risk of over-reliance on technology, and the potential for reinforcing erroneous language patterns need to be addressed. Ethical considerations, such as the need for transparency in AI algorithms and the implications for assessment integrity, are also crucial in the context of AI chatbots in EFL education.

Data Privacy and Over-Reliance on Technology

AI chatbots raise concerns about data privacy and security, as these systems often require access to personal information and writing samples. The potential for data breaches and unauthorised use of student data necessitates robust privacy measures and data protection protocols (Bouhia et al., 2022). Moreover, the excessive dependence on technology carries a risk, as students may become dependent on AI chatbots for writing assistance (Alenezi et al., 2023), potentially hindering the development of independent writing skills and critical thinking (Følstad et al., 2021).

Reinforcing Erroneous Language Patterns

AI chatbots can reinforce erroneous language patterns if not carefully designed and monitored. Chatbots in writing instruction may inadvertently perpetuate incorrect grammar or vocabulary usage, leading to EFL learners internalising linguistic errors (Hockly, 2023). Therefore, it is crucial to guarantee that AI chatbots provide accurate and contextually appropriate language feedback to avoid reinforcing erroneous language patterns.

Transparency in AI Algorithms and Assessment Integrity

Ethical considerations in using AI chatbots in EFL essay writing include the need for transparency in AI data, algorithms, and models (Kozyrkov, 2024) and the implications for assessment integrity. The opacity of AI algorithms, especially those often called "black box" algorithms, raises concerns about the lack of transparency in how texts and feedback are generated (The Black Box Society, 2016). Additionally, using AI chatbots to write assessments calls into doubt the fairness and integrity of the evaluation process, particularly in high-stakes assessments (Hua et al., 2023). Whereas human raters may assess several linguistic features when examining writing competency (Crossley et al., 2014), chatbots may still need to be ready.

Pedagogical Implications and Learner Autonomy

Integrating AI chatbots into writing courses may also impact pedagogical implications and learner autonomy. There is a need to carefully consider the balance between using AI chatbots and preserving pedagogical principles that promote independent learning and critical thinking skills (Baskara, 2023). The ethical implications of using AI chatbots to guide and support learners' writing processes, particularly concerning personalised feedback and intervention, require careful consideration. Furthermore, the practicality and attractiveness of learner independence have been investigated from the viewpoints of EFL educators, illuminating the intricacies and difficulties involved in fostering learner autonomy within EFL teaching (Alibakhshi et al., 2015).

The limitations and ethical issues associated with integrating AI chatbots into EFL essay writing underscore the need for robust privacy measures, transparency in AI algorithms, and careful monitoring of language feedback to avoid reinforcing erroneous language patterns. Additionally, to guarantee the ethical and efficient use of AI chatbots in EFL instruction, concerns
about the influence on pedagogical principles and learner autonomy and the ethical implications of utilising these tools for evaluation must be addressed.

**Future Directions in AI Chatbots for EFL Essay Writing**

As the integration of AI chatbots in EFL essay writing continues to evolve, several promising avenues for future research and development exist. Longitudinal studies, the exploration of hybrid learning models, and the continuous refinement of AI algorithms are essential for better addressing the evolving needs of EFL learners.

**Longitudinal Studies**

Future research should prioritise longitudinal studies to investigate the long-term impact of AI chatbots on EFL essay writing skills. Longitudinal studies can provide insights into the sustained effectiveness of AI chatbots in supporting language development, tracking learners' progress over an extended period, and identifying any potential changes in writing proficiency and language acquisition. By conducting longitudinal studies, researchers can gain a deeper understanding of the lasting effects of AI chatbots on EFL learners' writing skills and language proficiency.

**Exploration of Hybrid Learning Models**

Exploring hybrid learning models, which combine AI chatbots with traditional teaching methods, holds promise for optimising language learning experiences. Future research should focus on developing and evaluating hybrid learning models that integrate AI chatbots into EFL writing curricula while maintaining the benefits of face-to-face instruction. By exploring hybrid learning models, researchers can identify the most effective ways to leverage AI chatbots as complementary tools in EFL education, catering to diverse learning styles and enhancing the overall learning experience.

**Continuous Refinement of AI Algorithms**

The continuous refinement of AI algorithms is crucial to suit EFL learners' evolving needs better. Future development efforts should prioritise enhancing AI chatbots' language feedback capabilities, personalisation features, and adaptability to individual learning trajectories. Additional ethical aspects of AI algorithms, such as transparency and fairness, should be addressed to ensure AI chatbots' ethical and successful usage in EFL instruction. Researchers and developers can continuously refine AI algorithms to improve AI chatbots' efficacy and ethical soundness in supporting EFL essay writing skills.

Future research and development in integrating AI chatbots for EFL essay writing should focus on conducting longitudinal studies to assess long-term impacts, exploring hybrid learning models to optimise language learning experiences, and continuously refining AI algorithms to better suit the evolving needs of EFL learners. By addressing these future directions, researchers and educators can further advance the effective and responsible use of AI chatbots in EFL education, ultimately enhancing EFL learners' essay writing skills and language proficiency.

**Discussion**

This review thoroughly examines the integration of Artificial Intelligence (AI) chatbots in English as a Foreign Language (EFL) essay writing, underscoring the transformative potential of
such technology in language pedagogy. However, it also highlights significant gaps and limitations in existing research, paving the way for future investigations.

Firstly, while this review outlines the advantages of AI chatbots over traditional technology-assisted language learning tools, it acknowledges an evolving research stage in this domain. This suggests a critical need for more empirical studies (Fidan & Gencel, 2022) that explore the pedagogical effectiveness of AI chatbots in diverse learning environments and investigate their long-term impact on language acquisition and proficiency (Jiang, 2022). Further research could focus on how AI chatbots contribute to developing critical thinking and reflective learning, which need to be explored.

Secondly, the article identifies challenges such as ensuring pedagogical soundness (Baskara, 2023), maintaining learner motivation, and addressing ethical implications (Aggarwal et al., 2023) related to data privacy and over-reliance on technology. These difficulties emphasise the importance of developing sound methodological frameworks and ethical guidelines for integrating AI chatbots into language education (Lee, 2023; Kumar, 2023; Khalil & Er, 2023). Future studies could explore innovative strategies to mitigate these challenges, such as hybrid learning models that combine the strengths of AI chatbots with traditional instructional methods.

Lastly, this review calls for the refinement of AI algorithms (The Black Box Society, 2016) to better suit the evolving needs of EFL learners, emphasising the need for transparency and fairness (Hua et al., 2023) in AI-driven educational tools. This underscores the potential for interdisciplinary research that bridges computer science and language pedagogy to enhance AI chatbots' design, functionality, and ethical deployment in EFL education. Addressing these points can significantly contribute to harnessing the full potential of AI chatbots in fostering a more interactive, responsive, and learner-centred educational landscape.

Conclusion

The review examines how well AI chatbots can support English language learners with their essay writing. It reveals that these digital assistants hold significant promise in advancing EFL essay writing skills. They align well with contemporary pedagogical theories, offering personalised and interactive learning experiences that resonate with constructivist learning principles, communicative language teaching methodologies, and the input hypothesis. The empirical evidence reviewed indicates a positive trajectory in their effectiveness, suggesting that these tools can enhance learner autonomy, cater to diverse learning styles, and provide a safe, error-tolerant environment for language practice.

However, this technological integration has its challenges. The limitations regarding potential over-reliance on technology, data privacy concerns, and the risk of reinforcing erroneous language patterns necessitate careful consideration and mitigation strategies. Ethical considerations, especially regarding AI algorithms' transparency and assessment integrity implications, underscore the need for a balanced and responsible approach to employing these chatbots in educational settings.

Looking forward, this review highlights the importance of further empirical research, mainly longitudinal studies, to better understand the long-term impacts of AI chatbots on language learning. Exploring hybrid learning models that synergise AI chatbot capabilities with traditional teaching methods could offer a more holistic approach to language education. Additionally, the ongoing refinement and ethical calibration of AI algorithms will ensure these tools evolve with the EFL learning community's educational needs and ethical standards.
Ultimately, AI chatbots represent a potent tool in the arsenal of language educators, offering innovative, adaptive, and engaging avenues for enhancing EFL essay writing skills. Their judicious integration into language education, underpinned by pedagogical soundness and ethical prudence, can significantly contribute to shaping proficient, autonomous, and critically-thinking language learners.

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