Harnessing AI-Based Tools for Enhancing English Speaking Proficiency: Impacts, Challenges, and Long-Term Engagement

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ABSTRACT

Technology like chatbots, speech recognition systems, and mobile apps that can give instant feedback on pronunciation and speaking skills has revolutionized learning a language in the traditional sense through artificial intelligence (AI). This study reviews the status of artificial intelligence in English language education and looks mainly at its influence on speaking fluency, pronunciation accuracy, and learner independence. The paper discusses implications from recent studies focusing on the immediate benefits of AI for novice and intermediate-level learners: decreased language anxiety and greater student engagement. Despite these advantages, major logistical issues – including the technology infrastructure, ethical challenges, and limited teacher training – prevent widespread adoption. It also identifies gaps in the literature, particularly concerning the long-term effects on learners' speaking proficiency and motivations surrounding higher-level learning. Filling the gaps can illuminate AI use to improve a sustainable language teaching or learning environment that may transform educational practices.

Keywords: AI in language learning, speaking proficiency, pronunciation improvement, English language education, long-term engagement

Introduction

Over the years, this has made a significant difference with language learning using technology and artificial intelligence (AI), catching up on how people can now have a better interface in which getting correct pronunciation could never be more straightforward and speaking right away can now be done. Farida et al. (2024) have described how AI applications, chatbots, speech recognition software, and mobile phone applications that provide real-time personal feedback to test-takers may allow for more excellent independent practice among students than traditional classroom practices. A helpmate when learning a language (Hoang et al., 2023) encourages real-life interactions and further reinforces the learning environment. Language learners can also be more active during their practice when using these tools, as they have been demonstrated to reduce language anxiety (Han, 2020).

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However, the importance of AI in personalized learning environments is especially relevant. The CHAT-ACTS framework proposed by Lin and Chang (2020) highlights the capacity of AI to support individualized self-regulated and active learning with features such as goal-setting, progress tracking, and instant feedback crucial for mastery of communication in both academic and professional contexts, AI tools like this (Nguyen & Pham, 2024).

For beginners and intermediate users, AI tools can help people become proficient immediately. However, people need more research into how they can support high-level learning over the long term. Nguyen and Pham (2024) noted how AI can help with ease of practice and feedback, which were significant obstacles that hindered traditional language learning. However, they also indicated that more research is necessary on the effectiveness of using similar content for advanced learners in a non-Western context, such as Vietnam. In particular, AI chatbots have some potential to provide authentic conversational practice to engage students and lower language learning anxiety.

Although some past research has examined the potential of AI to assist with academic language for university students who require high-level speaking and writing skills (Dennis, 2024), others still need help. Regarding generalizability, Tran (2024) found the use of AI integrated with mobile applications to promote academic vocabulary acquisition among master students as an area that has not yet received attention across context subjects but is a prospective language resource for writing and publishing. It is essential for high-achieving students who aspire to meet international academic standards. The author hopes to fill this gap by examining AI-assisted language learning, the benefits and drawbacks of implementing AI in higher education, and how individual student engagement may influence long-term proficiency development.

Background of the Study

Big technology has been changing the role of AI in language education, from basic grammar correction to natural language processing (NLP) technologies that can interpret and respond to human speech. Current AI tools like the language learning app Duolingo, ELSA Speak, and conversational chatbots that can read scripts with users are personalized for learners who want to practice speaking skills, providing instantaneous feedback on their pronunciation, intonation, and fluency (Farida et al., 2024). The speech recognition features enable targeted practice where learners can perfect their speaking skills away from classroom settings

Speech recognition systems, for example, pinpoint pronunciation errors and give instant corrective feedback so students can refine their accents and enhance their overall communication skills (Dennis, 2024). Robots powered by artificial intelligence are used to create scenarios where users have to converse to develop fluency and reduce speaking anxiety, allowing practice sessions with no stakes (Han, 2020). Even with these advantages, most studies examine early-level students; using these tools to assist advanced proficiency still needs to be explored as it would also require addressing more complex and nuanced tasks. It signifies a significant deficiency in the perception of what advanced education and professional practice can get from AI.

Statement of the Problems

AI technology has proven particularly useful for beginner and intermediate language learners. Tools such as speech recognition systems and AI-powered chatbots have been handy for providing immediate feedback on pronunciation and fluency, helping to lessen language anxiety, and encouraging independent learning. However, significant gaps remain, especially for its role in helping high-achieving students who would benefit from more advanced language. Even though more studies show the short-term benefits of having better speaking skills (Farida et al., 2024), what happens to current existing speakers, who have now been able to use tools like this for almost a year, should be addressed. Their potential long-term retention and motivation to keep their language should be examined as they are still understudied. However, studies that measure if these immediate benefits lead to persistent language gains still need to be included.

A significant challenge is the creation of specialized instructional AI tools that focus on advanced learners such as postgraduate students and professionals. Such learners frequently need tools to promote high-level skills such as critical thinking, persuasion, and accuracy for academic and career purposes. Nevertheless, most past research has focused on tools intended to facilitate essential language learning, a type of L2 use case that needs to be addressed in detail regarding how AI can help language learners with advanced language needs (Dennis, 2024). Even more advanced adult learners may have particular problems, such as needing an angelic balance between self-learning and demanding meaningful human interaction, which is essential for responsible language development.

Finally, the second one concerns the applicability of AI tools across different learning environments and student populations. While many studies emphasize the ability of AI tools to enhance learning in more focused contexts like vocational education (Bai et al., 2023), more is needed to know about their capacity for complex learning environments such as postgraduate programs. Furthermore, cultural and linguistic aspects heavily influence the adaptability of AI tools, indicating the necessity to research how technologies can be customized for different learners in varying contexts. Therefore, exploring how AI tools can help fill the space of cultural and linguistic barriers in classrooms and tackle the limited resources that many underprivileged youth need to attend school is pivotal to expanding their benefits.

These gaps reveal the research need for large-scale investigations into the longitudinal effects of language productivity supported by AI-aided tools and how such tools could influence retention, motivation, and engagement. This research should focus on best bringing AI into higher education or professional training programs for advanced learners who require help acquiring skills such as near mastery of upper-range order language and communication.

Purpose of the Study

This study is designed to evaluate the effectiveness of AI-based tools in learning English as a foreign language, focusing on advanced-level users. Specifically, it focuses on using AI tools and their impact on critical literary components such as pronunciation, fluency, and autonomy. An advanced learner needs more subtle linguistic abilities than a beginner can comprehend, such as when reading research papers or writing academic essays and analyses, especially in

graduate studies, and when composing persuasive speeches with formal grammar and delivery methods. Perhaps the focus areas of this research will enable AI tools to cater to these special needs, advancing from essential language learning to proficient complex and high-order language competencies.

This research also includes long-term implications of retention of the language and continued student motivation using AI tools as a part of it. Although previous research has shown that the short-term effects of AI are practical, such as instant feedback and engagement (Hoang et al., 2023; Tran, 2024), their impacts on long-term retention would be under question. This study addresses this limitation by assessing whether learning through AI leads to sustainable retention of language skills and whether it can affect learners' motivation to express their desire to learn more independently.

Finally, this research will investigate how effective AI tools can be used across various educational settings, such as postgraduate programs and professional training environments. The research will evaluate how these tools facilitate understanding issues in the context of cultural and linguistic differences and scarcity of resources facing less privileged educational settings. The nationwide study aims to explore some of the most effective strategies for implementing AI tools across different secondary school contexts and serving a broader population of students.

This study will help to understand how AI-based tools can best be leveraged in language learning for advanced learners, as well as the implications for practice in their integration and, more broadly, contribute to a conversation about technology-mediated education.

Literature Review

Theoretical Reviews

Existing language learning theories help describe how AI tools map to pedagogical principles. The interactionist perspective (Vygotsky, 1978 cited in Dennis [2024]) emphasizes social interaction and upfront social and real-life communication for children as they acquire language. These guidelines are embodied by AI-powered tools like chatbots or voice recognition systems that allow for somewhat natural communication. They provide real-time feedback, enabling learners to practice pronunciation and fluency in a safe space (Farida et al., 2024). Because of their potential to scaffold meaningful language work and practice, AI tools align with interactionist approaches focused on constructing and negotiating communication in a situated context (Han, 2020).

Just like that, the constructivist approach focuses on active learning and engaging learners in processes to create knowledge through meaningful tasks. Duolingo and ELSA Speak, for example, adopt these principles by personalizing the learning content according to how users perform and facilitating autonomous learning (Hoang et al., 2023). Through these customizable resources, learners are provided with activities that enable them to take ownership of their own language-learning process by setting targets and tracking them over time. Although interactionist and constructivist theories underpin much support for AI, its applicability to

advanced learners must be clarified, particularly in higher-order skills such as critical thinking and professional communication.

As they align with such technical theories, the challenge is that all AI tools are pre-programmed so that their replication of soft tissues may not be as sophisticated as human social interaction. Furthermore, many constructivist applications are geared toward novice to intermediate-level learners. It raises the question of how constructivism can effectively scale for advanced users so that future research on how AI can better connect all theoretical constructs with practical applications to suit the needs of advanced learners.

Review of Related Literature

AI's fast growth has changed how people learn languages, especially how to say and pronounce English. AI-powered tools like speech recognition systems, chatbots, and mobile apps can give language learners immediate feedback on how they are pronouncing words and personalized practice. It makes the instruction for a language learner more focused than real-time in traditional methods. In the following literature study, this paper will examine three main areas of how AI can help people learn English.

Impact of AI-Based Tools on Speaking Fluency and Pronunciation Accuracy

AI tools have significantly improved speaking fluency and pronunciation by providing learners with personalized, real-time feedback. Speech recognition systems, chatbots, and mobile apps have become valuable tools for language practice, enabling learners to repeatedly refine their skills in low-pressure environments. For example, Qiao and Zhao (2023) found that Chinese EFL students who used Duolingo showed marked improvements in fluency and self-regulation. Similarly, MissionFluent enhanced the pronunciation, confidence, and motivation of vocational students in Hanoi through daily chatbot interactions (Hoang et al., 2023). ELSA Speak was also shown to improve first-year university students' listening and speaking abilities by offering instant, adaptive feedback (Farida et al., 2024).

While these studies affirm AI's potential to enhance fluency and pronunciation for beginners and intermediate learners, they share several limitations. Most emphasize immediate results like better pronunciation right after practice but must investigate long-term retention. More importantly, other tools can not provide such complexity to higher linguistics needs in academia and professionals. Further research should fill these gaps by investigating how AI tools can enhance long-term language maintenance and promote functional use at higher proficiency levels.

Challenges in Incorporating AI Tools into English Communication Skills Development

The challenges of integrating AI tools into language education are multifaceted and include technical, cultural, and pedagogical aspects. Technically, AI tools often fail to give correct feedback because of some constraints of not being able to identify abnormal accents or other linguistic contexts (Zaghlool & Khasawneh, 2023). Beyond the human dimension, infrastructure-related problems like unequal technological access in under-resourced locales impede their diffusion (Kovalenko & Baranivska, 2024).

Secondly, from a pedagogical perspective, various educators need more confidence and training

to facilitate AI tools in their classrooms (Dimitriadou & Lanitis, 2023). It complicates their integration when ethical considerations (PM, 2024), such as data privacy and an over-reliance on technology, are considered. Research tends to neglect the role of teachers in mediating AI-driven learning, even though one might argue that such systems become more relevant when effectively integrated into the classroom. Overcoming these challenges needs strategies that improve teacher education, guarantee data privacy, and customize AI tools to diverse educational contexts.

Emotional and Psychological Factors in AI-Enhanced Learning

More than the cognitive space, AI tools also play an essential role in the emotional and psychological experiences of learners that come into play, such as lower anxiety or greater motivation. According to Han (2020), AI chatbots reduce language anxiety and increase learner confidence by making learning more comfortable through a stress-free environment. Similarly, Nguyen et al. (2024) highlighted how platforms such as SmallTalk2Me and VoiceTube boosted learner engagement through real-time feedback. However, the novelty wears off, and their motivation wanes, which, in turn, means that they do need to use these tools more consistently.

While these studies demonstrate the motivational advantages of AI tools, sustaining learner involvement over time will be difficult. An avenue of research should develop gamification, individually set goals, and apply emotional support throughout the learning process to keep motivation high and emotionally safe.

Long-Term Impact of AI Integration on Student Proficiency and Engagement

Although the use of such AI tools is expanding, more research has yet to investigate whether exposure to these environments promotes the long-term retention or sustained command of a language. At the same time, there is much research on short-term findings, such as improvements in fluency and pronunciation and how these tools affect learning over a more extended period. Bai et al. (2023) noted that while ChatGPT promises to help students better memorize content and think critically, for example, they argue that the cognitive benefits and over-reliance on AI may threaten autonomous learning and intrinsic motivation.

Such a gap in longitudinal research gives us little insight into whether short-term benefits from AI tools are associated with long-term proficiency. It is essential to explore the long-term effects of AI on high-level language learners who may need assistance in mastering complex and nuanced linguistic skills necessary for academic and professional settings.

Research indicates that AI can revolutionize language learning, especially for elementary and medium users. With a pattern of instant feedback, AI tools like speech recognition systems, chatbots, and adaptable cell apps can adapt to the input from learners ready to listen to their thoughts being spoken back. These tools exist without which versatility would not be imaginable. They have made wonders in speaking fluency and pronunciation crystal clear by suggesting or directing correct answers. The nature of these tools correlates very well with existing pedagogical frameworks, such as interactionist and constructivist theories that value participation and relevance. Finally, its ability to alleviate language anxiety and increase motivation makes AI appear ideal for creating accessibility and inclusiveness in learning experiences.

However, there are still plenty of gaps and challenges. The research has an unbalanced emphasis on the immediate, such as instant progress in fluency, while giving little regard to how AI-induced changes can influence longer-term facets of language learning, including retention of knowledge, long-term motivation, or proficiency. Most studies focus on beginning learners, while only a few researchers examine advanced learners who need assistance at all stages in developing higher-order linguistic skills such as critical thought and professional communication. Fourth, these papers need to address the low sensitivity of many AI tools to differing cultural, linguistic, and resource environments.

Technological and pedagogical barriers also prevent AI tools from being more widely adopted. Feedback accuracy, infrastructure challenges, and teacher readiness highlight the requirement of multi-pronged approaches to overcome these hurdles. Today's research ignores the importance of teacher involvement as a mediator in AI-powered learning experiences. Also, ethical issues such as data privacy and plagiarism landing on educators' desks must be examined more closely to enable the capability of bringing AI into language education.

Addressing these gaps requires future studies to focus on longitudinal designs examining the long-term effectiveness of AI tools for advanced learners' language development. What can be done to address widening the scope and scalability of AI to fit contexts is a study of culturally adaptive AI solutions; increasing effectiveness in teacher training is always doable. Closing these gaps can move the field closer to building on AI's potential for supporting fair, equitable, accessible, and helpful language learning environments.

Discussion

Discussing the Research Methodologies

The studies considered were heterogeneous in terms of design, which reflects the exploratory state of research on AI in language learning. The study by Nguyen et al. (2024) allows for a mixed-method approach, using quantitative data such as test scores and qualitative learner feedback. The combination created a cohesive data narrative or story — connecting the numbers with what participants felt about their performance using AI tools and how they felt about their progress. Equally, experimental designs such as the pre-test and post-test design employed by (Qiao & Zhao, 2023) demonstrated substantial evidence of the causal effects of AI tool interventions on fluency and pronunciation improvement. These studies served as a foundation for evaluating AI's effectiveness on particular linguistic abilities.

The qualitative methods, including the focus groups and interviews of Bai et al. (2023), complemented their quantitative findings by revealing learners' emotional reactions and friction points when using AI tools. Though they do not offer sound quantitative insights, they remind us that language learning is a human activity, including motivation and anxiety. It serves a unique purpose: experimental designs test efficacy in defined contexts, qualitative methods illuminate the nuanced learner experience, and minimally intrusive research (MIR) approaches broaden the scope and provide empirical depth to theory-driven models. In contrast, mixed methods integrate parts of each. This study has, however, shown a shortcoming in examining the long-term use of AI technology, as there have yet to be longitudinal studies on whether

retention and continued interest exist throughout language development.

Discussing the Results/Findings

These studies showed that AI can significantly enhance the individual components of language acquisition, such as pronunciation, fluency, and self-regulation. Research like the one by Hoang et al. (2023) and Farida et al. (2024) described the features of tools such as MissionFluent and ELSA Speak that provide repeating activities to improve pronunciation. In contrast, real-time feedback boosted learners' confidence levels. Similarly, Dennis (2024) noted substantial improvement in fluency and accuracy among learners who have used autonomous speech recognition systems over a term. These tools enable students to practice independently, as often as they want, filling in learning gaps that traditional classroom settings leave behind.

Additionally, AI tools facilitate self-regulation, which allows for the monitoring and modifying learning strategies. Bai et al. (2023) also pointed out that learners using ChatGPT to perform adaptive practice had enhanced memory retention and organized motivational cycles. These advances are, however, not very long-lived, and more research must be done to determine whether or not they also result in lasting language representations that can be activated later on for more communicatively global uses. In addition, using AI solely for practicing one aspect of language leaves other skills underdeveloped — real-world communicative ones like cultural sensitivity and use of language outside the practice context where it is so often lacking in nuance.

The results also highlight fundamental challenges in implementation. Many schools and colleges, particularly those under-resourced, need the required technological environment to implement AI tools properly (PM, 2024). Teacher training is also a significant bottleneck; Dimitriadou and Lanitis (2023) mentioned that teachers are rarely trained to use AI tools efficiently and effectively. Implementation is additionally complicated by moral issues such as data privacy and an over-reliance on AI. These obstacles must be overcome to realize the potential of AI in education at scale.

Discussing the Research Gaps

While the literature demonstrates AI’s potential in language learning, critical gaps persist, particularly for advanced learners. Current research predominantly focuses on beginners and intermediate learners, with limited exploration of how AI tools address higher-order linguistic skills, such as academic writing, professional communication, and critical thinking (Dennis, 2024). Tools designed for basic language acquisition may not meet the complex needs of advanced learners, leaving a significant area of research unexplored.

The other critical gap is the long-term impacts. Most of the research measures short-term results like gains in phonology or fluency but does not test whether these modifications endure over time (Farida et al., 2024). For students striving for a high level of proficiency, it will be essential to grasp the long-term viability of AI-focused language learning. AI tools still need to be studied for cultural and contextual sensitivity. As Nguyen et al. (2024) emphasized, tools created for a single linguistic or cultural context may need to be more appropriate and effective in other contexts, especially low-resource and non-Western educational settings.

The situation is made even more complicated by ethical and pedagogical considerations. Another major challenge that deserves more attention is data privacy issues and the risk of over-dependence on AI (PM, 2024). Moreover, AI improves individual skill sets, but communication skills need to be improved on a broader level, which includes understanding other cultures and human interaction. These gaps reveal a demand for holistic research that evaluates AI performance in terms of adaptability, sustainability, and relevance to the communicative environment.

Summary of Results and Future Directions

The AI tools reviewed in these studies were effective for specific language skills, with pronunciation, fluency, and learner autonomy being the primary skills improved. The authors also describe how AI-assisted practice can alleviate anxiety and increase motivation by providing a low-stress environment where the difficulty of questions adapts to each learner's ability. OpenAI claims this focus on short-term outcomes and beginner-level learners leads to gaps in knowledge about the technology's most robust use cases and its long-term effects on language learning and communicative competence more broadly.

Future research should also fill these gaps by focusing on longitudinal studies investigating AI's longer-term effects on language learning, particularly among advanced learners. It is equally important to explore ways to create the same AI tools in different cultural contexts and linguistic settings to enable a broader range of applicability. There is a need to mitigate ethical issues, like data privacy and equitable access, and strategize how teacher training can be improved or how resource-poor educational settings can integrate AI tools.

Addressing these challenges will enable research to go beyond the current focus on localized skills toward a new understanding of how AI may support broad, authentic language proficiency. While AI tools can help students improve their command of a language, this change in perspective will guarantee that they also learn to communicate and make an impact within various globalized environments emulating the real world.

Conclusion

Summarizing the Discussions

The large-scale review of AI tools in language learning showcases these emerging technologies' incredible potential to help improve various aspects of this process, especially speaking fluency, pronunciation, and self-regulation. Chatbots, Speech recognition systems, and mobile language apps are AI-driven tools that give instant feedback and make it possible to adjust skills at the moment, which is an added advantage. Unlike conventional approaches, which tend to be rigid and are not necessarily suited to the requirements of effective language acquisition (Hoang et al., 2023), these tools offer a high level of adaptability and real-time language engagement, making them more suitable for effective learning. Moreover, AI encourages autonomous learning by providing learners with necessary self-regulatory competencies and diminishing language anxiety, which is particularly advantageous for practicing without teacher presence (Bai et al., 2023).

Nonetheless, these different forces conspire to keep the broader rollout of AI in language learning in short supply. In resource-poor contexts, technological and infrastructural limitations would limit the seamless integration of AI tools used for personalized learning in order to be utilized in classrooms (PM, 2024). Moreover, most teachers need to be trained or confident enough to deploy those tools, which is a considerable barrier to their usage (Dimitriadou & Lanitis, 2023). Finally, most existing studies measure short-term outcomes, and there is little beyond that in terms of evidence on the long-term impact of AI tools, notably for more advanced learners or even those aiming at excellence in their academic or professional lives. Overcoming these shortcomings is essential to maximize the potential of artificial intelligence in language education.

Suggesting Future Research

The second research implication concerns the need for further investigation into these gaps across several different areas. Second, longitudinal studies exploring AI tools' impact on sustained language development and learner motivation are needed. Research mostly centers around short-term benefits, like enhancements in pronunciation and fluency; however, there needs to be more evidence of whether these advancements are sustained long-term (Dennis, 2024). These studies shed light on the persistence of the language gains generated by AI tools and their effect on residual learning.

Second, higher education is not the focus of much existing work. However, graduate students and professionals have advanced linguistic needs such as critical or analytical thinking, such as evaluating data, academic writing skills, discipline-specific writing skills, and professional communication skills. Artificial intelligence (AI) tools only cater to highly early, foundational stages of language needs, leaving a massive gap for unmet higher-order language needs (Bai et al., 2023). It calls for future research to examine how AI can be adapted into the design system to meet their needs and aid their scholarly and career development.

Finally, studies need to be conducted on AI tools' cultural and contextual adaptability. Given that the global marketplace increases the need for more adaptive language results, considering how these AI tools fare in various other languages and cultures is essential. Works that target neighborhood-specific tools might need to be more effective when applied in other localities with different cultural conditions or available resources (Nguyen et al., 2024). Creating and validating AI tools with these variabilities will make them more generalizable and accessible.

Lastly, less focus on ethical considerations and more teacher training are necessary. Challenges like data privacy, reliance on technology, and access to technology should be resolved to gain learners' and educators' confidence and acceptance. Concurrently, there needs to be teacher training programs that ensure that teachers can use the AI tools effectively and productively. It will ensure that the impact of AI in language teaching is at its best while reducing the chances of misuse.

Implications

These findings reflect the transformative potential of AI in remote language learning and language learning more generally, but they also show that strategic problem-solving can help overcome current limitations. To effectively use AI tools, institutions must build infrastructure,

train teachers, and develop ethical safeguards. To achieve this, policymakers and educators must work together to develop affordable and culturally relevant AI solutions, especially within underserved communities and environments with few resources.

It has implications for liberal education and global citizenship education. When tuned right, AI tools can encourage language skills and cultural and situational understanding to prepare students for real-life conversations. Shortcomings in aspects of long-term retention, adapting to the needs of advanced learners, and cross-cultural capabilities point to ways forward for future research aimed at developing AI technology that can facilitate effective and sustainable language learning across different contexts. This perspective will guarantee that AI has a valuable role in developing equitable and functional learning opportunities across the globe.

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Biodata

The author, Nguyen Hoang Anh, is a postgraduate student of the Faculty of Foreign Languages at Van Lang University. Because he is very determined to teach young learners English and wants them to be empowered to learn English through better methods, he aims to recommend ways of improving teaching. As a result, he hopes to find ways to effectively combine technology, methodologies, and artificial intelligence into the educational experience.