



Machine Learning Meets Language Learning: The Transformative Potential of Artificial Intelligence in English Language Instruction

Professional paper

Praveena T¹ and Anupama K²

¹*School of Arts, Sciences, Humanities and Education (SASHE), Department of English, SASTRA Deemed University, Tirumalaisamudram, Thanjavur, Tamil Nadu, India*

²*Department of English, Acharya Institute of Graduate Studies Bengaluru, Karnataka, India*

Received: 2024/01/31

Accepted: 2024/12/18

Abstract

This study examines the prospective utilization of artificially intelligent technologies as pedagogical tools within English language classrooms, juxtaposed against conventional instructional methodologies. The discernment of AI tutors and virtual assistants, endowed with advanced natural language processing and machine learning capabilities, evinces promise in furnishing students with personalized and adaptive learning experiences. Nevertheless, the imperative necessity for additional empirical investigations persists to ascertain the efficacious integration of these tools into the fabric of language learning, while concurrently preserving the indispensable role of human instructors. Drawing upon the existing review of literature, this study illuminates the historical underpinnings of technology integration in educational settings and meticulously dissects the merits and demerits inherent in AI vis-à-vis traditional pedagogical approaches. Despite the augmentative potential of AI tutors in fortifying classroom instruction, fostering student confidence and motivation, and mitigating the burdens on educators, their deficiency in socio-emotional intelligence and creative acumen, quintessential attributes of human pedagogies, remains palpable. Consequently, a judiciously balanced approach, harnessing the complementary strengths of both modalities, is proffered, contingent upon contextual exigencies and educational objectives. The discourse culminates by positing the exigency for further investigations into the real-world ramifications of AI implementations and their corollary effects on English language proficiency. Proposing prospective trajectories for subsequent research endeavours in this domain, the article advocates an enriched understanding of the nuanced interplay between AI technologies and conventional pedagogy.

Keywords: *Artificial Intelligence (AI), Conventional, English Language, Learning, Teaching*

The rapid breakthroughs in artificial intelligence (AI) have ushered in a new era of inquiry and integration across multiple areas, with education emerging as a particularly promising sector. As English persists as the lingua franca of global communication, its mastery has become a pivotal determinant of access to a myriad of opportunities in various spheres. As a result, the incorporation of AI technology into education, particularly for English language acquisition, has received a great deal of interest. The drive for investigating the function of AI in language teaching stems from its potential to transform established pedagogical approaches. AI tools, including natural language processing (NLP) algorithms, chatbots, and machine learning applications, provide personalised and adaptable learning experiences. With these technologies, learning may become more dynamic and effective. They can analyse individual learning patterns, customise content to match specific needs and offer instantaneous feedback. This individualised approach contrasts sharply with traditional classroom environments, where teachers may find it difficult to meet the varied learning demands of a large student cohort.

Furthermore, AI-powered language learning platforms frequently employ immersive technologies like virtual and augmented reality to build simulated settings that mimic real-world language scenarios. This immersive approach enhances language acquisition by providing learners with contextualized experiences, allowing them to practice and refine their language skills in authentic situations (Saidin et al., 2015). For instance, language learners can engage in simulated conversations with virtual characters, navigate virtual environments, and participate in interactive language exercises that closely resemble genuine communicative situations. However, despite the promising prospects, it is essential to critically assess the strengths and weaknesses of AI-driven English language learning compared to conventional classroom pedagogies. One notable advantage lies in the scalability of AI systems, enabling them to reach a broader audience and address the global demand for English language proficiency. Additionally, the flexibility of AI platforms allows learners to access educational resources at their own pace and convenience, breaking down temporal and

spatial constraints associated with traditional classrooms (Kulkarni et al., 2013).

The application of AI in English language pedagogy presents a transition in the way language learning is conceptualized and delivered. While AI technologies offer unprecedented opportunities for personalized and immersive learning experiences, the balance between technological innovation and the preservation of essential human elements in education remains a critical consideration. As the discourse on AI in education evolves, continued research and evaluation are imperative to harness the full potential of these technologies while ensuring the holistic development of language learners. Research on the use of artificial intelligence, which includes AI tutors, virtual assistants, speech recognition systems, and adaptive learning platforms, in language learning and teaching has received a lot of attention in recent years. The outcomes of these endeavours have yielded a heterogeneous panorama, with varying degrees of success. Advocates of this technological wave posit that intelligent chatbots, virtual reality environments, and automated writing evaluation tools possess the transformative potential to furnish a personalized and scalable educational experience centred around the needs of individual students. This viewpoint champions the integration of AI into language instruction, asserting that it can revolutionize conventional pedagogical paradigms.

However, a counter-narrative began to emerge among opponents who question AI's ability to replicate distinctly human attributes such as empathy and ingenuity, which they argue are necessary for effective language education. This schism in perspectives underscores a fundamental tension in the discourse surrounding the intersection of emerging AI technologies and traditional teaching methodologies, especially in English language instruction.

This study contributes to the ongoing debate by conducting an in-depth analysis of recent interdisciplinary studies that scrutinize the amalgamation of AI-driven tools and conventional teaching methods in the domain of English education. The central inquiry guiding this investigation revolves around the comparative efficacy of artificial intelligence-driven tools and techniques

vis-à-vis conventional classroom pedagogies in teaching English as a second or foreign language. The article is organized into distinct sections to facilitate a comprehensive exploration of the subject matter.

The first section of the article delves into a meticulous review of relevant literature, providing a contextual framework for the research problem and elucidating key concepts that underpin the discourse. This foundational exploration lays the groundwork for subsequent discussions on the historical trajectory and contemporary landscape of AI in education, with a particular emphasis on its applications in language instruction. Following this, the article engages in a balanced discussion that critically evaluates the opportunities and limitations associated with AI-driven language education when juxtaposed against the capabilities of human educators. This comparative analysis not only considers the technical aspects of AI tools but also delves into the nuanced realms of interpersonal dynamics, emotional intelligence, and pedagogical intuition, thereby offering a holistic perspective on the matter.

Considering the insights garnered from the comparative analysis, the subsequent section puts forth recommendations for the judicious integration of AI-driven approaches and traditional pedagogies, advocating for a symbiotic relationship that harnesses the strengths of both paradigms. This section underscores the importance of a nuanced and context-specific approach to the incorporation of AI in language education, recognizing its potential while acknowledging the irreplaceable role played by human educators. The article culminates in a set of concluding remarks that encapsulate the key findings and delineate potential avenues for future research. This article aims to contribute to the ongoing discussion by examining the evolving landscape of AI in language education, providing valuable insights for educators, policymakers as well as researchers striving to navigate the complex relationship between technological innovation and the enduring principles of effective language instruction.

Review of Literature

The incorporation of artificial intelligence (AI) into language learning brings together several domains, including human-computer interaction, natural

language processing, multimodal learning analytics, and second language acquisition research. With an emphasis on increasing student interest and engagement, this interdisciplinary approach has resulted in the development of conversational agents and intelligent adaptive learning systems. This aligns with the constructivist teaching paradigm, emphasizing the construction of knowledge based on individual needs.

One prominent feature of AI in language acquisition is the use of sentiment analysis to interpret student emotional states via facial expressions, gestures, and speech patterns. AI tutors use this information to dynamically change the complexity of course content, trying to improve the overall learning experience. However, the use of affective computing technologies raises questions about data privacy, prejudice, and ethical consequences, resulting in ongoing disputes in the academic community. Munezero et al (2013) focused on the application of sentiment analysis to monitor emotions in students' learning diaries in their study. The authors discuss the use of computational techniques to analyze the sentiment expressed in written reflections by students, aiming to gain insights into their emotional experiences during the learning process. The article likely explores the potential benefits of leveraging sentiment analysis in educational contexts for understanding and improving students' emotional engagement and well-being (Munezero et al., 2013).

Review studies indicate a weakness in present AI systems, emphasising their proclivity to detect surface-level comprehension and language faults while missing a thorough understanding of linguistic nuances. As a result, pupils risk missing out on socio-cultural nuances and meta-cognitive skills that they would normally learn from interactions with human lecturers. Despite these concerns, proponents argue that intelligent virtual patient simulations can effectively build communication skills for professionals through immersive practice (Jensen & Konradsen, 2018). To assess the impact of AI tools on language proficiency, fluency, lexical resources, and critical thinking, comparative studies become essential. The significance of matching learner profiles with appropriate AI or instructor training is emphasised, taking

into account factors like age, competence level, and subject difficulty in needs analyses. However, the lack of standards in data collection, annotation, and measurement poses significant barriers to the development of evidence-based frameworks guiding the proper integration of AI in language pedagogy.

Methodology and Knowledge Gap

This study utilizes a qualitative research approach, employing an in-depth analysis of existing literature and secondary data sources. The investigation draws insights from diverse materials, including books, articles, book chapters, blogs, and websites. By critically examining these sources, the research aims to offer a nuanced understanding of the subject matter, enriching the qualitative dimension of the study. The identified research gap underscores the necessity for increased cross-disciplinary collaboration between technical innovators and language teaching experts. Such collaboration is critical for developing comprehensive norms and guidelines that assure AI's appropriate and successful incorporation into language teaching. Educators and technologists can work together to bridge the gap between technology advances and pedagogical competence, thereby contributing to the continued progress of AI applications in language learning.

Background

The convergence of artificial intelligence (AI) and education builds upon a rich history of employing technology for language learning, dating back to the 1920s. The evolution from traditional blackboards to interactive whiteboards and textbooks to e-learning modules has been facilitated by the continual advancement of educational technology tools over the past century. Despite these strides, the integration of digital innovations for language instruction has been gradual, with response systems, digital games, and corpora analysis tools gaining popularity in the 2000s. However, the application of AI in language education remains largely experimental at present. The surge in global edutech investments, emphasizing scalable personalized learning, has led to an increased utilization of AI for standardized test preparation. Additionally, automated speech recognition contributes to reducing accents and pronunciation errors.

A more in-depth examination is warranted to assess students' receptiveness and learning outcomes compared to traditional classroom teaching.

As AI capabilities in natural language and speech processing continue to mature, developers assert their potential to revolutionize language education. Notwithstanding the prowess of large language models like GPT-3 and the conversational abilities of devices like Alexa, an overreliance on their input poses risks of inaccuracies and ethical concerns that human judgment is better suited to address. Thus, the responsible and equitable integration of AI in language classrooms necessitates a comprehensive scrutiny of both its limitations and potential.

AI teaching applications leverage computing algorithms to enable technological systems to emulate aspects of human cognition, such as perceiving patterns, reasoning to solve problems, and making recommendations (Popenici & Kerr, 2017). Language-focused AI tools can offer personalized instruction tailored to individual learners' abilities and needs, providing instant automated feedback and allowing educators more time for higher-order tasks. Nevertheless, caution is advised against over-relying on AI, as there are potential risks, including student overdependence on automation. Consequently, most experts view AI as supplementary rather than a replacement for human teachers (Zheng, 2018).

In the realm of language acquisition, interactive communication experiences are deemed crucial but often limited (Guilloteaux & Dörnyei, 2008). Traditional teaching methods, focused on grammar and vocabulary memorization through textbooks, worksheets, and exam preparations, have evolved. Modern approaches acknowledge the necessity of providing learners with opportunities for functional language application to develop authentic communicative abilities (Foss, 2011). Conversation and roleplaying exercises improve student engagement and foster cross-cultural understanding, while pair, group, and whole-class conversations provide natural settings for utilizing the target language. The effective integration of AI tools should complement these interactive, communicative teaching techniques.

AI English Education Applications

Various types of AI applications demonstrate the potential to support language learners across different aspects of language acquisition. Among these, Automated Writing Evaluation (AWE) programs, such as ETS's Criterion, play a crucial role in assessing and enhancing students' writing abilities. The ability to write may be enhanced overall by using these tools, which provide comprehensive critiques on syntax, expression, structure, and style. Intelligent Tutoring Systems (ITS) represent another significant AI application, which tailors learning content sequences to align with individual proficiency levels and areas that require improvement. ITS promotes a personalised and effective learning experience by tailoring it to learners' particular requirements.

Chatbots, as interactive conversational agents, simulate conversation partners and facilitate speaking and listening practice for language learners. The interactive nature of these AI tools provides learners with an immersive language experience, allowing them to practice communication skills in a controlled and supportive environment. Adaptive Learning Systems constitute another category of AI applications that contribute to language learning. These systems serve to promote mastery and cater to the specific learning speed of each student by dynamically adjusting the sequencing and complexity of learning materials depending on individual progress (Fryer et al., 2017). Moreover, speech recognition tools, exemplified by the Duolingo English Test, assess pronunciation and fluency, offering learners valuable insights into their spoken language skills (de Vries et al., 2015). This type of AI technology provides instant feedback on pronunciation, enabling learners to refine their speaking abilities in real-time.

Automated Writing Evaluation

To evaluate and provide comments on written assignments, Automated Writing Evaluation (AWE) programs have become popular. These systems use natural language processing (NLP) algorithms to score essays automatically, eliminating the need for direct human intervention. Criterion, an established instance of such a tool, evaluates essays and offers customised guidance to facilitate the revision process. Criterion's capabilities contribute to the realm of self-paced remote

learning, offering flexibility for students to engage with the tool at their own pace. This aspect is particularly beneficial in modern educational settings where remote learning has become increasingly prevalent. Moreover, AWE tools like Criterion have been recognized for their potential to alleviate grader workloads, a significant concern in educational institutions striving to manage the increasing demand for assessment (Dikli & Bleyle, 2014).

However, despite the apparent advantages, there are lingering concerns regarding the reliance on algorithms to evaluate the subjective quality of writing. Automated systems may struggle to capture the intricacies of creative expression, tone, or voice that human assessors can discern. Furthermore, the limitations of AWE tools extend to their ability to accurately recognize learner intent and provide meaningful content advice beyond simple error correction. AWE tools may excel at addressing mechanical aspects of writing but may fall short when it comes to understanding the deeper intentions behind a piece of writing. This limitation raises questions about the extent to which AWE tools can truly replace the nuanced insights provided by human writing instructors.

Precisely, while AWE tools like Criterion offer significant advantages in terms of efficiency, immediate feedback, and workload reduction for graders, they currently cannot fully substitute the role of human writing instructors, particularly in fostering higher-order writing skills. The ongoing challenge lies in refining these tools to overcome the limitations associated with subjective assessment and providing more nuanced guidance on content development. Maintaining a balance between utilising automation to its full potential and acknowledging the indispensable contribution of human experience to writing is crucial as the subject of AWE continues to take shape.

Intelligent Tutoring Systems

Intelligent Tutoring Systems (ITS) represent a groundbreaking application of artificial intelligence (AI) in the realm of education, specifically targeting personalized instruction tailored to individual learners' knowledge states and learning needs (Nye et al., 2014). These systems leverage advanced AI techniques, such as machine learning, to

dynamically adapt instructional content based on the learner's proficiency and performance. The efficacy of ITS in assessing mastery of concepts through interactive engagement has been recognized as a cornerstone for providing timely and relevant feedback, thereby facilitating adaptive learning activities (Alim et al., 2019).

When it comes to language acquisition, ITS has proven to be able to enhance educational outcomes by emphasizing difficult or neglected topics while accelerating through known material. The complete realisation of ITS's potential, however, is beset with numerous hurdles, even despite the encouraging improvements. One of the most significant problems is the requirement to create comprehensive subject matter and pedagogical knowledge bases that support effective personalisation. Creating AI systems that possess nuanced understandings of diverse subject areas and instructional strategies is a complex task, requiring interdisciplinary collaboration between AI researchers and domain experts in education.

Moreover, critics have raised concerns about the potential drawbacks of heavier reliance on AI tutors within educational settings. A growing reliance on ITS may jeopardise human social connections, which are seen as critical for promoting a comprehensive learning experience. Social interactions contribute to the development of interpersonal skills, communication abilities, and collaborative problem-solving—qualities that extend beyond the scope of AI-driven instruction.

Intelligent Tutoring Systems demonstrate considerable promise in assisting educators and enhancing learning outcomes, but they are unlikely to entirely replace human instructors. The challenge lies in striking a balance between harnessing the capabilities of AI for personalized and efficient instruction and preserving the irreplaceable benefits of human social interactions in the educational process. The ongoing integration of AI in education necessitates continued research, collaboration, and careful consideration of both the opportunities and challenges inherent in this transformative approach.

Chatbots

Chatbots have emerged as valuable tools for facilitating conversational interactions with computer programs,

employing both text and voice interfaces. The chatbot ELSA, as investigated by Fryer et al., (2017) demonstrated a positive impact on language learners' fluency and engagement. Despite these advances, issues such as handling lengthy dialogues and comprehending contextual meaning persist in the sphere of chatbots. This highlights a critical area where further research and development are needed to enhance the conversational capabilities of chatbots (Fryer et al., 2017).

Potential student annoyance while engaging with chatbots is another important factor to consider. Conversations may look rehearsed or fail to reply appropriately, resulting in a poor user experience. Addressing these limitations is critical for developing a sophisticated view of chatbots' function in education. While chatbots serve as beneficial practice partners for language learners, it is imperative to recognize their current limitations. Advancements in technology are necessary to address challenges such as handling expansive dialogues and understanding contextual nuances. By doing so, chatbots can evolve into more effective tools for meaningful and human-like conversational interactions in educational settings.

Adaptive Systems

Innovative approaches to education are being offered via adaptive learning systems, which provide customised courses that dynamically modify their material sequencing and difficulty levels based on how well students do. This approach is designed to cater to the unique needs of each learner, addressing both their strengths and weaknesses. The primary goal is to provide a customised learning experience that boosts engagement and enables efficient knowledge acquisition. START, a platform that adapts language training to target reading strategies, is a noteworthy example of an adaptive learning system. It tailors the text selection and feedback to each learner's unique capacity to improve reading comprehension and language competency by responding to each learner's personal demands and skill levels. (Crossley & McNamara, 2016).

Research comparing constant and adaptive difficulty conditions has indicated the potential advantages of adaptive learning approaches. Jackson and McNamara found that adaptive difficulty conditions

led to better comprehension and increased motivation compared to constant conditions. This suggests that the adaptability of learning platforms plays a crucial role in maintaining learner engagement by presenting tasks that align with the learners' current level of competence while challenging them appropriately (Jackson & McNamara, 2013).

Moreover, the efficacy of adaptive learning solutions is contingent on the availability of significant data to inform the adaptation process. These platforms require substantial data inputs to accurately gauge learner abilities and tailor content accordingly. This reliance on data underscores the importance of a well-established infrastructure for data collection and analysis.

Despite the potential benefits of adaptive learning platforms, it is essential to recognize their limitations. Standalone adaptive platforms may fall short in achieving comprehensive language mastery without the guidance of teachers on broader learning processes. While adaptive technologies excel in individualizing content delivery, the role of educators remains pivotal in providing holistic support, addressing diverse learning needs, and fostering a deeper understanding of language skills.

Precisely, adaptive learning platforms offer a viable way to improve education by delivering personalised and dynamic learning opportunities. The effectiveness of these platforms, particularly in the field of language acquisition, is dependent on the quality of the algorithms, the availability of adequate data, and the incorporation of instructor assistance to ensure a well-rounded and effective educational experience. As technology continues to advance, further research and development in adaptive learning will contribute to refining these platforms and maximizing their impact on educational outcomes.

Speech Recognition

Speech recognition systems evaluate spoken input to determine characteristics such as pronunciation, pace, and fluency. Pronunciation rating helps uncover areas for development, whereas gamification components encourage advancement. Systems like the Duolingo English Test compare metrics against native baseline samples to align with human ratings (de Vries et al., 2015). However, performance

in terms of recognising finer distinctions or determining meaning vs sounds remains imperfect. Teachers thus retain the importance of assessing higher-order speaking abilities until algorithms further advance. However such tools already assist in providing detailed feedback at scale. AI shows growing potential value in assisting language education. Yet no solution currently exists offering a wholesale replacement for human teachers' abilities to interpret needs, guide development and evaluate mastery, especially of higher-order skills. The next section suggests integration strategies to complement conventional instruction, before addressing remaining research gaps.

Discussion

Conventional Language Learning Methods

For several decades, language educators have employed various teaching methodologies to impart language skills to learners. Among the prominent approaches are grammar-translation, audio-lingual, communicative, and task-based methods, all of which have contributed significantly to the pedagogical landscape (Richards & Rodgers, 2014). These techniques include specific education and practice of critical language components such as syntax, lexicon, articulation, and the four language skills of reading, writing, listening, and speaking.

The grammar-translation technique, which has its roots in conventional language instruction, focuses on memorising grammatical rules and translating phrases between the target and native languages. The audio-lingual approach, on the other hand, emphasises frequent drills and oral exercises to reinforce linguistic patterns through habit formation. Communicative language teaching emphasizes real-life communication and situational context, encouraging students to use the language for meaningful interaction. Task-based language teaching integrates language skills into purposeful tasks, fostering practical language use in authentic situations (Richards & Rodgers, 2014).

These approaches emphasise the acquisition of practical communicative skills as well as the development of language competence (Kumaravadivelu, 2007). The effectiveness of these methods is enhanced through social interaction activities, which provide learners with opportunities to use the

language in authentic contexts. Such whole-language instruction strives to bridge the gap between theoretical knowledge and practical application, fostering well-rounded language proficiency.

However, despite the advantages of these traditional approaches, personalized remediation poses a considerable challenge in large classrooms. In such settings, individualized attention and feedback for each student become logistically complex, hindering the customization of instruction to cater to individual learning needs. The sheer number of students in a typical classroom can impede the implementation of tailored language interventions.

Moreover, conventional language teaching approaches heavily rely on the teacher's skills in designing curricula and materials. The efficiency of these methods is determined by the instructor's ability to generate compelling learning materials, design meaningful activities, and adapt teaching strategies to the learners' various requirements. As a result, the effectiveness of language instruction is inextricably linked to the teaching staff's ability to adapt.

AI-enabled Language Learning

Recent advances in AI are enhancing many aspects of language learning, from speech recognition for pronunciation evaluation to conversational agents that provide dialogue practice (Fryer et al., 2017). Machine translation facilitates composition writing and reading comprehension. AI's strengths in pattern recognition can help diagnose errors and track progress. Its interactive capacities allow learners to get instant feedback and practice anytime. Such technologies can expand access and supplement instruction (Zawacki-Richter et al., 2019). However, solely relying on AI has risks, as it currently cannot fully interpret language usage in diverse sociocultural contexts.

Comparative Analysis

When applied correctly, AI and traditional approaches have complementary strengths in language training. Explaining language rules and social nuances still necessitates human teachers' abilities. AI instructors offer more customised tutoring through continuous diagnosis and micro-level modifications. AI chatbots provide speaking practice but cannot determine appropriateness. Games and simulations

interest learners, but human interaction teaches real-world communication rules. While machine translation improves convenience, it still makes errors in conveying linguistically and culturally appropriate expressions.

When applied wisely, modern AI can enhance the teaching profession rather than take its place. Teachers offer whole-language instruction, facilitation, and evaluation. AI facilitates practice, micro-adaptations, and progress tracking. More empirical investigations are needed to create evidence-based guidelines for such integrations (Wang & Petrina, 2013).

AI teaching tools offer notable benefits in terms of effectiveness, cost, assessment capability, and inclusiveness, though also pose certain limitations regarding emotional engagement, creativity nurturing and technological barriers to access.

Opportunities by AI-Based Language Teaching

Proponents present AI technologies as powerful teaching aids which can supplement and extend conventional language instruction in significant ways as follows:

Personalized and adaptive learning

In contrast to classroom sessions that are designed to fit every student, intelligent tutors examine individual profiles and activity data to provide assessments and content that are tailored to the needs and speed of different learners. Automated feedback then scaffolds students needing additional support. Such differentiation enables self-directed learning crucial for adult learners.

Engaging multimodal content

Interactive games, virtual worlds and augmented reality simulations created by AI can provide immersive opportunities for learners to use language skills. Such experiential learning builds engagement and motivation levels, especially for digitally native students.

Efficient evaluation mechanisms

Automated speech recognition tools and essay scoring systems powered by neural networks offer quick diagnosis of grammar and pronunciation errors which teachers can then focus on resolving (Celik et al., 2022). This formative feedback guides self-correction and revision. Workload reduction through such automation creates space for teachers to mentor students.

Increased access

AI-based language programmes have expanded learning opportunities in rural locations and for economically disadvantaged people through mobile apps, hologram assistants, or voice UIs. The asynchronous and device-agnostic nature of such tools aids inclusiveness.

Limitations of AI-Based Language Teaching

However, critics argue reliance on artificial intelligence as language instructors also comes with several risks and pitfalls such as:

Absence of Emotional Intelligence

The human qualities that are necessary for teaching linguistic and communicative competence, such as humour, empathy, sarcasm, and cultural sensitivity, cannot be demonstrated even by the most sophisticated chatbots. Students miss out on vital socioemotional connections and situational analysis possible only through human interaction.

Inadequate Creative Intelligence

Machines excel at statistical analysis, pattern recognition, and generative tasks, but they lack the creativity, imagination, and abstract thinking required for activities such as story brainstorming or hypothesis formulation. Such higher-order proficiencies are better nurtured collaboratively.

Poor Interpretive Abilities

Despite breakthroughs in contextual embedding, sentiment analysis, and co-reference resolution, AI still struggles to understand deeper semantic and pragmatic concepts beyond surface-level language patterns. Appreciating subtleties like irony is restricted without common-sense reasoning capacities.

Bias Perpetuation Risks

Current NLP models include biases that are exacerbated in downstream applications because they were mostly trained on standard English data. This can negatively impact English learners from diverse linguistic and cultural backgrounds. Opaque AI systems also suffer from accuracy issues and ethical risks.

Creation of Passive Learners

Students become dependent on AI guidance instead of gaining metacognitive autonomy and critical thinking abilities in overly scaffolded environments that provide prescriptive feedback. This hinders the

realization of personalized agency vital for self-driven lifelong learning.

Findings

Promising opportunities develop for AI to augment rather than replace traditional approaches, tackling respective limitations. This reduces burdens while allowing teachers to focus expertise on higher mastery guided through interpersonal activity and discussion. However, many open questions remain regarding how to optimally integrate automation alongside existing pedagogical approaches. Further research should assess implementation strategies balancing usefulness with ethics.

Suggestions***Integrating AI With Conventional Teaching***

While still evolving, AI solutions show meaningful successes targeting specific language acquisition capabilities and pain points in the learning process. These could address challenges students face between lessons while freeing up class time for interactive activities. Teachers may assign AI writing tools to improve early drafts, to enable more advanced composition guidance instead of solely addressing errors. Instructional Technology Systems (ITS) lessons could allow self-directed vocabulary building with terms or grammatical concepts needing work to inform subsequent instruction. Chatbots create low-pressure conversational practice opportunities, potentially customized around recent lesson themes. Adaptive programs might reinforce literacy and comprehension competencies by selecting appropriate readings matched with personalized scaffolding and feedback between sessions. And speech recognition aids diagnose pronunciation issues for focused improvement.

Such AI integration should attempt to strengthen particular student shortcomings and provide a solid platform for intense human-led initiatives. These might increase involvement via pair talks, debates, or roleplays in real-world settings using target language. Lessons may include higher-order language applications for issue analysis and assessment rather than basic comprehension or accuracy. Building linguistic talents and cultural proficiency demands meaningful idea interchange, which is best fostered by human social interactions. Although AI efficiency allows for the acquisition of key skills, language mastery requires real experience.

Inevitably, only human instructors can completely give such chances.

Delimitations of the Study and Future Scope for Further Study

Delimitations

This article does not cover the technical complexities of natural language processing architectures or statistical evaluations of available models. With the focus restricted to English language teaching, exploring AI implications across other subjects could offer cross-domain insights. This study is restricted to a dichotomous comparison between artificial intelligence and human educators; nevertheless, the most promising results for student outcomes come from combining the two methods in a blended pedagogical model that is customised for individual requirements. More empirical studies testing such hybrid frameworks for language instruction across ages and proficiency levels are essential. Future scope also remains for investigating appropriate combinations of immersive simulations, intelligent tutors, educator dashboards, and collaborative tools in line with language learning objectives. Issues of transparency, accountability, and equitable access when scaling AI for education also warrant addressing through cross-sectoral efforts.

Future Research

While AI language learning tools demonstrate growing capabilities to assist students and instructors, best practices for real integration alongside conventional classroom teaching require further definition through additional research. Documenting various blended AI and human-led pedagogies can detail costs, benefits, and challenges in discovering optimal balances suitable for different educational contexts. Comparing student outcomes following systematic exposure to differing ratios of automation use versus typical instruction may reveal ideal models, though likely varying across ages and proficiency levels. Surveying teacher and learner attitudes following practical experiences with AI assistive technologies can also inform suitable adoption rates accounting for perceptions. Long-term studies tracking the effects of certain usage levels on mastery may disclose potential overreliance issues.

The legal and ethical ramifications of increasing educational AI should also

be considered. Maintaining privacy is still crucial as more student data is collected by systems for personalisation. Norms must be set to provide equitable access and prevent cultural or linguistic bias. Ongoing evaluation is also essential to ensure alignment with learning objectives as algorithms evolve behind the scenes. Ultimately judgment is still required to determine appropriate scopes of authority between AI contributions versus human direction over the learning process. Collaborative design processes may best delineate guidelines for transparency and accountability attuned to community standards (Knox et al., 2020).

By progressing such research, the potentials and limits of AI integration can become clarified to support teachers in selectively utilizing technological capabilities alongside their expertise to serve diverse student needs most effectively. However, it is imperative to retain human guidance, especially for higher-order language and cultural competencies essential to genuine communication abilities.

Conclusion

This article presents a balanced perspective on the merits and demerits of artificial intelligence technologies as supplements for conventional English language teaching based on current research in this interdisciplinary area. Integrating AI tools in language pedagogy, encompassing AWE programs, ITS, chatbots, adaptive learning systems, and speech recognition tools, demonstrates a promising avenue for enhancing language proficiency. The documented effectiveness of these tools, as evidenced by research findings, underscores their valuable contributions to various facets of language acquisition. As technology continues to advance, further exploration and refinement of these AI applications hold the potential to revolutionize language education. While usage of AI tools in English language acquisition demonstrates the potential for personalized education at scale, concerns around ethical risks, emotional voids, and creativity lag caution against outright replacement of human teachers who bring complementary strengths. Blending scaffolded AI tools aligned with specific learner profiles and contexts alongside compassionate instructor guidance is recommended for optimal student outcomes

and experience. More investigations into real-world implementations through university-industry partnerships can inform responsible integration frameworks and specialized educator training programs for the future of AI-enabled language learning. Precisely, more evidence is still needed while promising directions emerge on effectively combining automation and teacher guidance including peer learning models, wise feedback habits, and nurturing metacognition above rote mimicry.

References

- Alim, N., Linda, W., Gunawan, F., & Md Saad, M. S. (2019). The effectiveness of Google Classroom as an instructional media: A case of State Islamic Institute of Kendari, Indonesia. *Humanities & Social Sciences Reviews*, 7(2), 240–246. <https://doi.org/10.18510/hssr.2019.7227>
- Celik, I., Dindar, M., Muukkonen, H., & Järvelä, S. (2022). The promises and challenges of artificial intelligence for teachers: A systematic review of research. *TechTrends: For Leaders in Education & Training*, 66(4), 616–630. <https://doi.org/10.1007/s11528-022-00715-y>
- Crossley, S. A., & McNamara, D. S. (Eds.). (2016). *Adaptive Educational Technologies for Literacy Instruction*. Routledge. <https://doi.org/10.4324/9781315647500>
- de Vries, B. P., Cucchiarini, C., Bodnar, S., Strik, H., & van Hout, R. (2015). Spoken grammar practice and feedback in an ASR-based CALL system. *Computer Assisted Language Learning*, 28(6), 550–576. <https://doi.org/10.1080/09588221.2014.889713>
- Dikli, S., & Bleyl, S. (2014). Automated Essay Scoring feedback for second language writers: How does it compare to instructor feedback? *Assessing Writing*, 22, 1–17. <https://doi.org/10.1016/j.asw.2014.03.006>
- Foss, J.A. (2011). [Review of the book *Communicative Language Teaching in Action: Putting Principles to Work*, by Klaus Brandl]. *The French Review* 85(2), 414–415. <https://dx.doi.org/10.1353/tfr.2011.0019>.
- Fryer, Luke K., Ainley, M., Thompson, A., Gibson, A., & Sherlock, Z. (2017). Stimulating and sustaining interest in a language course: An experimental comparison of Chatbot and Human task partners. *Computers in Human Behavior*, 75, 461–468. <https://doi.org/10.1016/j.chb.2017.05.045>
- Guilloteaux, M. J., & Dörnyei, Z. (2008). Motivating language learners: A classroom-oriented investigation of the effects of motivational strategies on student motivation. *TESOL Quarterly*, 42(1), 55–77. <https://doi.org/10.1002/j.1545-7249.2008.tb00207.x>
- Jackson, G. T., & McNamara, D. S. (2013). Motivation and performance in a game-based intelligent tutoring system. *Journal of Educational Psychology*, 105(4), 1036–1049. <https://doi.org/10.1037/a0032580>
- Jensen, L., & Konradsen, F. (2018). A review of the use of virtual reality head-mounted displays in education and training. *Education and Information Technologies*, 23(4), 1515–1529. <https://doi.org/10.1007/s10639-017-9676-0>
- Johnston, D. (Eds.). (2007). *Understanding Language Teaching: From Method to Postmethod*. B. Kumaravadivelu. *TESOL Quarterly*, 41(4), 826–828. Portico. <https://doi.org/10.1002/j.1545-7249.2007.tb00109.x>
- Joo, Y. J., Park, S., & Lim, E. (2018). TPACK, teacher self-efficacy, and Technology Acceptance Model. *Journal of Educational Technology & Society*, 21(3), 48–59. <http://www.jstor.org/stable/26458506>
- Knox, J., Williamson, B., & Bayne, S. (2020). Machine behaviourism: future visions of ‘learnification’ and ‘datafication’ across humans and digital technologies. *Learning, Media and Technology*, 45(1), 31–45. <https://doi.org/10.1080/17439884.2019.1623251>
- Kulkarni, C., Wei, K. P., Le, H., Chia, D., Papadopoulos, K., Cheng, J., Koller, D., & Klemmer, S. R. (2013). Peer and self assessment in massive online classes. *ACM Transactions on Computer-Human Interaction: A Publication of the Association for Computing Machinery*, 20(6), 1–31. <https://doi.org/10.1145/2505057>
- Munezero, M., Montero, C. S., Mozgovoy, M., & Sutinen, E. (2013). Exploiting sentiment analysis to track emotions in students’ learning diaries. *Proceedings of the 13th Koli Calling International Conference on Computing Education Research*. <https://doi.org/10.1145/2526968.2526984>
- Nye, B. D., Graesser, A. C., & Hu, X. (2014). AutoTutor and family: A review of 17 years of natural language tutoring. *International Journal of Artificial Intelligence in Education*, 24(4), 427–469. <https://doi.org/10.1007/s40593-014-0029-5>
- Popenici, S. A. D., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research*

- and Practice in Technology Enhanced Learning*, 12(1), 22. <https://doi.org/10.1186/s41039-017-0062-8>
- Richards, J. C., & Rodgers, T. S. (2014). *Approaches and methods in language teaching* (3rd ed.). Cambridge University Press. <https://doi.org/10.1017/9781009024532>
- Saidin, N. F., Abd Halim, N. D., & Yahaya, N. (2015). A review of research on augmented reality in education: Advantages and applications. *International Education Studies*, 8(13). <https://doi.org/10.5539/ies.v8n13p1>
- Wang, F., & Petrina, S. (2013). Using learning analytics to understand the design of an intelligent language tutor-Chatbot Lucy. *International Journal of Advanced Computer Science and Applications*, 4(11), 124–131. <https://doi.org/10.14569/ijacsa.2013.041117>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education - where are the educators? *International Journal of Educational Technology in Higher Education*, 16(1), 1–27. <https://doi.org/10.1186/s41239-019-0171-0>
- Zheng, R. (Ed.). (2018). *Digital Technologies and Instructional Design for Personalized Learning*. Advances in Educational Technologies and Instructional Design. <https://doi.org/10.4018/978-1-5225-3940-7>