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RESEARCH ARTICLE

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Artificial Intelligence in English Language Learning: A Conceptual Analysis of Pedagogical Opportunities, Challenges, and Future Directions

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Abstract: The rapid diffusion of artificial intelligence (AI) into educational contexts has generated substantial interest in its implications for English language learning (ELL). This conceptual paper synthesizes current publications to examine the pedagogical opportunities, challenges, and future directions associated with AI integration in ELL. Drawing on frameworks from computer-assisted language learning and recent research on generative AI, the paper addresses pedagogical opportunities that AI offers to language learners, challenges and concerns arise from its integration, and pedagogical directions that can support its effective and responsible use. The analysis identifies personalized learning, automated feedback, and expanded opportunities for authentic practice as central affordances, while also highlighting concerns regarding communicative authenticity, linguistic standardization, academic integrity, and equity of access. The paper argues that the pedagogical value of AI in ELL depends less on the technology itself than on the theoretical and institutional frameworks within which it is embedded. It concludes by proposing directions for teachers' AI literacy, curriculum integration, and assessment reform that position AI as a complement to, rather than a replacement for, human-mediated language instruction. The discussion contributes a conceptual framework for researchers and practitioners seeking to evaluate AI's role in ELL critically and constructively.

Keywords: Artificial Intelligence, English Language Learning, Computer-assisted Language Learning, Generative AI Pedagogy

Introduction

Over the last few years, artificial intelligence (AI) has emerged as a key component of English language learning (ELL) instead of a technology novelty. With the help of these advances in NLP, machine translation, automated text evaluation, and conversational agents, learners and teachers are now equipped with tools that can produce text, evaluate performance, and simulate interaction with unparalleled fluency (Kasneci et al., 2023). In contrast to the relatively limited applications in the previous generation of computer-assisted language learning (CALL) studies, which focused on vocabulary drills and grammar checkers, the new generation of generative AI systems brings a whole new dimension to language learning pedagogy, with the ability to deliver tailored lessons, immediate feedback, and innovative language practice methods that were previously restricted by time and teacher availability in the classroom (Godwin-Jones, 2022).

This transformation has sparked a growing amount of empirical and conceptual research on the implications for the practice, roles, and assumptions of English language teaching in the age of AI. Many of these texts, however, are scattered in disciplinary pockets, and often applied linguists, educational

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technologists, and computer scientists discuss overlapping questions from disconnected theoretical perspectives. A conceptual synthesis is still needed that places AI's pedagogical affordances in existing theories of language teaching and learning and critically considers the issues that AI technologies raise with respect to linguistic authenticity, learner autonomy and educational equity.

This paper addresses this need. It is designed to offer conceptual analysis around the pedagogical opportunities, challenges, and future directions of using AI in ELL. To achieve this goal, the paper addresses the aims to sketch the pedagogical opportunities provided by AI for English language learning, to investigate the core challenges and concerns associated with the use of AI for English language learning and teaching; and to outline pedagogical directions that could facilitate the effective and responsible use of AI in the field of English language learning and teaching.

Research Questions

The research questions for this paper are:

1. What pedagogical opportunities can be provided by artificial intelligence in the learning of the English language?
2. What are some of the key issues and worries regarding AI for English language learning?
3. What are the pedagogical directions for the effective and responsible utilization of AI for English language learning?

Research Objectives

The research objectives are:

1. To explore pedagogical opportunities that can be provided by artificial intelligence in the learning of the English language
2. To identify the key issues and worries regarding AI for English language learning.
3. To investigate pedagogical directions for the effective and responsible utilization of AI for English language learning.

This paper is organized as follows. Section 2 below provides a conceptual background, giving a definition of AI for L2 education and positioning it under relevant theoretical frameworks. Section 3 looks at the pedagogical opportunities provided by AI for students and educators. The integration of AI poses challenges that are explored in Section 4. Section 5 outlines future directions for pedagogy and what this means for practice. In Section 6, the analyses of emerging themes are synthesized, while in Section 7, the contribution of the paper in language education research is summarized.

AI and English Language Learning: Conceptual Background

Defining AI in Language Education

In the field of language teaching, AI can be broadly defined as computer systems that can be used to generate text, translate texts, detect errors, or engage in conversational interaction, which are traditionally functions of language abilities of humans (Zawacki-Richter et al., 2019). In the context of ELL, the applications of AI can vary from being relatively narrow in focus, like grammar-checking software or pronunciation analysis tools, to more general-purpose generative systems that can produce longer texts, emulate conversations, or tailor communications to the proficiency level of the learner (Godwin-Jones, 2024). The diverse applications are conceptually relevant, as they help avoid the pitfall of treating AI as a monolithic technology. AI in ELL is, on the contrary, a set of tools with varying pedagogical affordances and limitations that are created based on the tools' architecture and design purpose.

AI in language learning has come a long way since the advent of rule-based intelligent tutoring systems, moving to a more statistical and now neural method based on large language models. Zawacki-Richter et al. (2019) point out that early education applications of AI mostly focused on learner profiling, prediction, and adaptive tutoring, while natural language generation received relatively little attention. With the rise of

transformer-based large language models, systems are now available that can engage in coherent and context-aware dialogues and generate personalized content at scale for learners (Godwin-Jones, 2024). This technical change is at the core of the new pedagogical excitement around using AI in the English language classroom, and is also responsible for the growing references to scholarship outside of the traditional boundaries of CALL for conceptual approaches to the topic.

Theoretical Foundations

The applications of AI in ELL can be seen in a conceptual framework of CALL research, which has long studied the role of technology in the language acquisition process. Golonka et al. (2014) note that technology-based resources for language learning are more likely to be effective when they reinforce rather than supplant the use of pedagogical principles like meaningful input, output practice, and corrective feedback. The same principle holds true for the integration of generative AI: generative AI is not a new theory of language learning, but rather it provides new ways to implement interaction-based and feedback-based language learning approaches that are at the heart of communicative language teaching.

Pedagogical understanding of AI tools is also informed by the sociocultural and interactionist theories of second language acquisition. Sociocultural and interactionist theories of second language acquisition also contribute to the pedagogical understanding of AI tools. For example, dialogue-based systems have been studied for their ability to offer low-stakes opportunities for negotiated interaction, which is a key concept in interactionist views of language teaching (Bibauw et al., 2019). Meanwhile, researchers warn that the interaction with an AI system is inherently different than interacting with a human counterpart, especially as it pertains to social presence, pragmatic subtleties, and genuine communicative stakes (Godwin-Jones, 2024). These theoretical tensions provide a backdrop to the pedagogical opportunities and challenges that are discussed in the following sections.

Pedagogical Opportunities of AI in English Language Learning

Personalized and Adaptive Learning

A key opportunity AI brings to ELL is its ability to tailor instruction on a scale that is not possible with traditional classroom education. AI systems can be used to differentiate input to the learner, in terms of complexity, topic, and pacing, as learners prove their level of proficiency, so that learning is differentiated even in the context of a heterogeneous classroom (Kasneci et al., 2023). Kohnke et al. (2023) point out that generative AI tools like ChatGPT can create reading selections, reading comprehension questions, and word lists for students at a desired level of accuracy and can serve as a tool to help teachers create materials on demand. In addition, Koraishi (2023) shows that such systems can also be implemented to optimize the instructional materials and assessment tasks in the context of English as a foreign language (EFL), which is a longstanding concern of producing sufficiently varied and level-appropriate instruction and assessment tasks for a wide range of learners.

Personalization is not limited to materials production to adaptive feedback. Generative AI has significantly improved automated writing assessment systems, which have long been a part of language learning technologies to provide detailed feedback on learner writing that goes beyond checklist items (Godwin-Jones, 2022). This capability addresses a common challenge in language classes, which is the limited time that teachers can allocate to individualized written feedback, especially in large or under-resourced language classes where a high ratio of teachers to students may create a lack of opportunities for extensive, detailed written comments.

Enhanced Practice, Feedback and Assessment

The second, more significant, opportunity relates to AI's ability to create opportunities for true language use beyond the limits of formal instruction. Using dialogue-based systems and chatbots gives learners the chance

to practise in a way that feels more like a conversation, and without the pressure of classmates or teachers speaking to them, which can make speaking in English a daunting task (Bibauw et al., 2019). However, a recent meta-analysis by Bibauw et al. (2022) indicates that DABL, when well designed, has shown itself to be measurable yet variable in improvements in learner outcomes, meaning there is a potential for DABL to be a valuable classroom supplement.

Generative AI also provides new opportunities for formative assessment. These systems provide a shorter time lag between learner input and response, enabling learners to receive immediate feedback, which is more individualized than what is possible in teacher-led feedback (Kasneci et al., 2023). This is especially applicable to writing instruction, where the process of revision and iterative drafting is at the heart of acquiring skills, but is limited by teacher workload. Combined, these opportunities make AI a tool that can enhance the effectiveness of communicative and process-oriented pedagogies that have long been integral to English language teaching, as long as it is integrated with proper pedagogical scaffolding and not used instead of the design of lessons.

Challenges of AI Integration in English Language Learning

Pedagogical and Linguistic Concerns

Nevertheless, there are substantive pedagogical issues related to the integration of AI in ELL. One of the main issues is that of authenticity and communicativeness of AI-powered interaction. Allowing AI to be designed to avoid conflict or ambiguity to ensure a smooth interaction may leave conversations superficial, lacking the negotiation of meaning that is an integral part of communicative competence (Godwin-Jones, 2024). In this perspective, the human learning capacity of genuine communication with real interlocutors is irreplaceable, no matter how powerful the language skills of synthetic conversational partners.

The other issue is the standardization of language that can be encouraged by AI tools. The use of LLM models is likely to marginalise linguistic diversity and World Englishes (Godwin-Jones, 2024) since they are trained predominantly on the standardized varieties of English. Automated speech recognition systems, on the other hand, have been found to be less effective in processing accented speech and the variation in regional dialects, which may affect learners speaking English with accents and dialects not common to the training of the system. These constraints have led to a possible danger of limiting rather than broadening learners' engagement with the sociolinguistic variety of English as a global language when it is used uncritically.

Ethical, Equity and Academic Integrity Concerns

In addition to pedagogical and linguistic issues, there are significant ethical and institutional implications in adopting AI technology. The ability of Generative AI to generate coherent and fluent text has become a significant challenge in measuring writing assignments, especially in writing instruction. As shown by Perkins (2023), AI-generated text poses a significant challenge to traditional models of written evaluation in English language learning, as it can pass both automatic and human systems of assessment. In ELL settings, this concern is exacerbated as it is difficult to differentiate between authentic language support provided by AI and academically fraudulent language support provided by AI in place of student effort.

Equity of access is another concern. Although AI technologies are increasingly being adopted in education, most of the current research has focused on the technical and research dimensions of AI, leaving the ethical or pedagogical aspects of the technologies under-researched and, in most cases, failing to include educators as its key users (Zawacki-Richter et al., 2019). This divide has real implications for ELL, as reliable internet access, current devices, and access to paid AI subscriptions are not equal, and could lead to increased, not decreased, disparities in access to quality language instruction. The lack of learner autonomy and critical engagement with language is also a concern of over-reliance on AI-generated feedback and content, echoing broader debates in education regarding the balance between technology and skill development (Kasneci et al., 2023).

Future Directions and Pedagogical Implications

Teacher AI Literacy and Curriculum Integration

The problems discussed above will need conscious consideration and attention with regard to teacher preparation and curriculum design. Kohnke et al. (2023) suggest that with regard to their use of AI as a digital tool, teachers and students must have digital skills to a great extent, skills that are not yet systematically integrated into teacher education programs in the English language. The future of ELL education should, therefore, focus on establishing frameworks for AI literacy for teachers to critically analyze and reflect on AI-generated content, on the integration of AI tools in a purposeful manner within communicative curricula, and on demonstrating responsible use among learners. These should not only encompass the technical competence of AI but also cover assessing the AI-generated content for linguistic correctness, cultural relevance, and educational suitability.

Similarly, curriculum integration should shift from an "ad hoc" approach to using AI tools to a more principled approach that identifies when and how AI can be used to foster specific language learning goals. Schools and academic institutions are currently experimenting with generative AI to boost student learning and enhance the effectiveness of their work. Just like in previous waves of technological adoption in language learning, the technology is moving faster than the evidence of its effectiveness (Golonka et al., 2014). Educational models in the future should therefore be based on the reevaluation concept and consider that the introduction of AI should be driven by the evidence of learning outcomes and not by novelty alone.

Policy and Assessment Redesign

At the institutional level, the challenges facing academic integrity can be identified as discussed in Section 4, which require fresh thinking on how to design assessment in language learning and teaching in English. Instead of a detection-centered approach to responding to AI-generated text, Perkins (2023) argues that assessment tasks should be reimagined to include the use of AI in a way that is transparent, such as by using process evaluations to assess drafting, revision, and reflection tasks in addition to or alongside written products. Methods like this are consistent with process-based writing pedagogy in language education and reflect the unique concerns of integrity in the context of generative AI in writing.

Equity should also be taken into account in policy development, as AI-based learning should not be based on a student's ability to afford more expensive AI services. While access gaps outlined above may be addressed through institutional provision of AI tools, alongside clear guidelines on their appropriate use, it is important to note that the inequities in access are not solely attributable to the availability of AI tools. It is equally important to recognize that access disparities outlined above are not only due to the availability of AI tools. Last but not least, further research and policy must hold a balanced perspective on the role of AI in ELL, not equating it with a panacea for the age-old pedagogical challenges or with an inevitable threat to language learning but rather as a tool that can be beneficial for language learning when used in a context where the theory and institutional practices dictate the ways and means of its application.

Emerging Themes from the Conceptual Analysis

Three interrelated themes emerge from the conceptual analysis that has been presented in the previous sections. As the discussion in the previous sections was brought together, three interrelated themes arose from the conceptual analysis. The first theme is complementarity in that, across the literature that has been reviewed, the use of AI is most convincingly seen as an accompaniment to humans, enhancing pedagogies found in language instruction, such as personalized feedback, materials development, and low-stakes conversational practice (Godwin-Jones, 2022; Kohnke et al., 2023). Moreover, the second theme is around authenticity, which involves issues repeatedly mentioned in the literature about the linguistic and communicative constraints of using AI-based interaction in comparison with human counterparts, such as the standardisation of language varieties (English) and the lesser negotiation of meaning (Bibauw et al., 2019;

Godwin-Jones, 2024). The third theme relates to accountability, including academic integrity, fair access, and institutional systems to ensure responsible use of AI (Perkins, 2023; Zawacki-Richter et al., 2019). The research objectives of the paper are mapped to the opportunities, challenges, and future directions identified in this analysis in Table 1, which synthesizes these themes into a coherent conceptual model for understanding the role of AI in ELL.

Table 1
Thematic Synthesis from addressing the Research Objectives

Research Objectives	Emergent Themes
Pedagogical opportunities	Complementarity : AI extends personalization, feedback, and practice opportunities within existing communicative pedagogies
Challenges and concerns	Authenticity and equity: Concerns over linguistic standardization, communicative depth, integrity, and access
Future pedagogical directions	Accountability : Teacher AI literacy, curriculum grounding, and assessment and policy redesign

These themes suggest that the pedagogical significance of AI in ELL cannot be evaluated in purely technological terms. Rather, its significance is contingent on the theoretical frameworks, institutional structures, and professional competencies within which it is deployed. This conclusion has implications for how future empirical research in this area should be designed, suggesting a need for studies that examine AI integration within specific pedagogical models rather than treating AI use as an undifferentiated variable.

Conclusion

The current paper has offered a conceptual examination of the pedagogical opportunities, obstacles, and prospects when implementing AI in English language teaching and learning. Based on the analysis, the potential for personalized, enlarged supervision of student practice, and improved feedback, along with the concerns of communicative authenticity, language standardization, academic honesty, and access, are significant points to consider. The theoretical underpinning, institutional frameworks, and professional development of AI's use in the classroom determine the pedagogical usefulness of the tools for ELL more than the technology itself.

The paper's value is its ability to integrate a disjointed collection of literature into a unified conceptual toolset that covers three related research questions related to the pedagogical opportunities, difficulties, and directions for the responsible integration of AI. The framework provides a foundation for researchers in structuring empirical research that goes beyond general assertions on the efficacy of AI in language learning to more precise investigations of the relationship between specific forms of AI and existing theories and practices in language learning. The analysis highlights the need for teachers' AI literacy, rethinking assessment practices, and addressing equity concerns in the context of growing AI integration in English language education for both practitioners and policymakers. It is important that the pedagogical implications of generative AI systems are considered, both conceptually and empirically, to ensure that their use supports rather than detracts from the aims of effective and equitable English language teaching, as they continue to develop.

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