

AI and English language teaching Affordances and challenges

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الذكاء الاصطناعي وتعليم اللغة الإنجليزية : الإمكانيات والتحديات

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الخلاصة

أدى التقدم السريع للذكاء الاصطناعي (AI) إلى تحولات كبيرة في مجال تدريس اللغة الإنجليزية (ELT)، مما أدى إلى فرص تربوية غير مسبوقة وتحديات معقدة. تدرس هذه الدراسة إمكانيات وقيود تعليم اللغة المعزز بالذكاء الاصطناعي من خلال عدسة تكاملية تستند إلى نظريات اكتساب اللغة الثانية (SLA)، وأطر التعلم الشخصية، والمنظورات الاجتماعية والثقافية، ونماذج التكنولوجيا التعليمية. توفر الأدوات التي تعمل بالذكاء الاصطناعي بما في ذلك أنظمة التدريس الذكية، وروبوتات الدردشة التحدثية، ومقاييس الكتابة الآليين، وتقنيات التعرف على الكلام فوائد كبيرة مثل مسارات التعلم الشخصية، وزيادة مشاركة المتعلم، والتغذية الراجعة التكوينية في الوقت الفعلي، وتوسيع فرص التفاعل خارج حدود الفصول الدراسية التقليدية. تتوافق هذه الإمكانيات بشكل وثيق مع المبادئ النظرية المتعلقة بالمدخلات المفهومة، والمخرجات المدفوعة، والملاحظة، والدعم داخل منطقة التطور القريب، والتعلم القائم على البيانات. وعلى الرغم من هذه المزايا، فإن دمج الذكاء الاصطناعي في تعليم اللغة الإنجليزية لا يزال مصحوبًا بتحديات ملحوظة. إن المخاوف بشأن دقة وموثوقية ردود الفعل الناتجة عن الذكاء الاصطناعي، والقضايا الأخلاقية والخصوصية، والاعتماد المفرط على المساعدة الآلية، والتخفيضات المحتملة في التفكير النقدي والاستقلالية التواصلية، والتفاوتات في الوصول إلى التكنولوجيا، كلها تثير اعتبارات تربوية ومؤسسية كبيرة. علاوة على ذلك، يتطلب الدور المتطور للمعلمين التركيز بشكل أكبر على محو الأمية الرقمية، والتقييم النقدي لأدوات الذكاء الاصطناعي، وتصميم تعليمي مستدير يضمن أن تعمل التكنولوجيا كمكمل وليس بديلاً للوساطة البشرية. ومن خلال تجميع هذه العناصر النظرية والعملية، تسلط الدراسة الضوء على الحاجة إلى نهج متوازن وقائم على الأدلة لدمج الذكاء الاصطناعي في بيئات تعلم اللغة. تؤكد النتائج أنه على الرغم من أن الذكاء الاصطناعي يحمل إمكانيات تحويلية في تعزيز جودة التعليم، إلا أن فعاليته تعتمد على التنفيذ المدروس الذي يسترشد بالمبادئ التربوية والاعتبارات الأخلاقية والحقائق السياقية. وخلصت الدراسة إلى أن مستقبل الذكاء الاصطناعي في تعليم اللغة الإنجليزية لا يكمن في الحتمية التكنولوجية ولكن في التكامل الاستراتيجي بين الخبرة البشرية والأنظمة الذكية لتعزيز التنمية اللغوية العادلة والهادفة والمستدامة. الكلمات المفتاحية: الذكاء الاصطناعي، تدريس اللغة الإنجليزية (ELT)، وجهات النظر الاجتماعية والثقافية، منطقة التنمية القريبة، التعلم القائم على البيانات.

Abstract

The rapid advancement of Artificial Intelligence (AI) has introduced significant shifts in the field of English Language Teaching (ELT), prompting both unprecedented pedagogical opportunities and complex challenges. This study examines the affordances and constraints of AI-enhanced language instruction through an integrative lens grounded in Second Language Acquisition (SLA) theories, personalized learning frameworks, sociocultural perspectives, and educational technology models. AI-powered tools—including intelligent

tutoring systems, conversational chatbots, automated writing evaluators, and speech-recognition technologies—offer substantial benefits such as personalized learning pathways, increased learner engagement, real-time formative feedback, and expanded opportunities for interaction beyond the boundaries of traditional classrooms. These affordances align closely with theoretical principles related to comprehensible input, pushed output, noticing, scaffolding within the Zone of Proximal Development, and data-driven learning. Despite these advantages, the integration of AI in ELT remains accompanied by notable challenges. Concerns regarding the accuracy and reliability of AI-generated feedback, ethical and privacy issues, overreliance on automated assistance, potential reductions in critical thinking and communicative autonomy, and disparities in technological access all raise significant pedagogical and institutional considerations. Moreover, the evolving role of teachers requires greater emphasis on digital literacy, critical evaluation of AI tools, and informed instructional design that ensures technology serves as a complement rather than a replacement for human mediation. By synthesizing these theoretical and practical elements, the study highlights the need for a balanced, evidence-based approach to the incorporation of AI in language learning environments. The findings underscore that while AI holds transformative potential in enhancing instructional quality, its effectiveness depends on thoughtful implementation guided by pedagogical principles, ethical considerations, and contextual realities. The study concludes that the future of AI in ELT lies not in technological determinism but in the strategic integration of human expertise and intelligent systems to promote equitable, meaningful, and sustainable language development. Key Words: Artificial Intelligence, English Language Teaching (ELT), sociocultural perspectives, Zone of Proximal Development, data-driven learning.

Introduction

In recent decades, the rapid advancement of digital technologies has had a profound impact on educational systems worldwide; however, the emergence of Artificial Intelligence (AI) represents a turning point whose potential to transform education—particularly the teaching of English as a second or foreign language—has been assessed as surpassing that of all previous technological shifts. AI, with its capacity to process massive amounts of data, analyze learning patterns, adapt dynamically to learners' individual needs, and provide instant and intelligent feedback, offers a new outlook for personalized learning and enhanced pedagogical effectiveness. Simultaneously, the rise of tools such as adaptive learning systems, conversational chatbots, automated content-generation platforms, speech-recognition technologies, and automated writing evaluation systems has positioned AI as a central actor in contemporary language learning. The use of AI in English language teaching is grounded in several key theoretical perspectives. First, theories of personalized learning emphasize that learners differ in their pace, preferences, and learning trajectories, and that technology can optimize the learning path for each individual. Second, data-driven learning frameworks highlight that large-scale linguistic data processing and the analysis of authentic language patterns can offer more accurate and realistic language input. Third, social interactionist theories argue that language develops through interaction, and AI-based tools can create sustained, semi-natural interaction even in the absence of a teacher or peer interlocutor. Consequently, AI not only aligns with major theoretical foundations but, in many cases, addresses or mitigates limitations inherent in traditional classroom environments. At the practical level, recent research identifies several key affordances of AI in English language teaching. One major affordance is personalization, whereby intelligent systems dynamically adjust task difficulty, the type of exercises, and individualized feedback based on learners' ongoing performance. This is especially beneficial for skills such as vocabulary, reading, and writing, where AI can generate targeted activities by analyzing recurring error patterns. Another significant affordance is increasing learner motivation through interactive experiences and gamified environments. Interaction with AI-driven chatbots or completing AI-mediated learning missions can reduce learners' speaking anxiety and offer unlimited practice opportunities without fear of human judgment. In addition, the provision of immediate and precise feedback constitutes one of AI's strongest advantages. Unlike human feedback—which requires time and resources—AI tools can instantly provide grammatical, lexical, pronunciation-related, and semantic analyses, thereby accelerating the consolidation of learning. Despite these affordances, the integration of AI into English language teaching entails several serious and multidimensional challenges. A major concern is the accuracy and reliability of AI-generated feedback. Although AI technologies have improved dramatically, the possibility of errors in meaning interpretation, writing evaluation, or linguistic recommendations still exists, potentially leading to incorrect learning or the fossilization of erroneous patterns. Another challenge is the risk of overreliance on AI, particularly when learners depend excessively on automated text-generation tools, which may reduce authentic learning opportunities, weaken critical thinking skills, and

limit learners' own productive language abilities. Moreover, ethical and data-security issues have emerged as critical concerns. Storing and analyzing learners' personal information without clear ethical guidelines may pose threats to privacy, transparency, and educational equity. From a pedagogical perspective, the teacher's role in the age of AI requires redefinition. Contrary to the common assumption that AI might replace teachers, the research literature indicates that technology can only assume certain limited functions, whereas guiding the learning process, fostering human interaction, identifying affective and motivational needs, and designing effective instruction still necessitate the expertise of trained teachers. Thus, the optimal use of AI depends on teachers' digital literacy, as well as their ability to assess tool quality, manage AI-mediated learning, and prevent potential misuse. Structural and infrastructural barriers must also be acknowledged. Inequalities in access to high-speed internet, digital devices, and financial resources mean that opportunities created by AI are not distributed equitably across all educational contexts. Additionally, the lack of clear regulatory frameworks for responsible AI use in schools and universities, insufficient standardization of AI tools, and the scarcity of localized research on the actual impact of AI in English language classrooms remain significant limitations. Given this complex and multifaceted landscape, examining the affordances and challenges of AI in English language teaching has become increasingly essential. Such investigations can provide educators, curriculum designers, policymakers, and researchers with evidence-based insights regarding AI's pedagogical effectiveness, the nature of AI-mediated interaction, and the ethical and educational implications of its use. Ultimately, the goal is for AI to be utilized not as a replacement for human instruction, but as a complementary and empowering tool that enhances the quality of English language learning in both formal and informal contexts.

Theoretical Framework

The integration of Artificial Intelligence (AI) into English Language Teaching (ELT) is grounded in several interconnected theoretical perspectives that explain how learners acquire language, how technology supports learning, and how human-machine interaction shapes pedagogical outcomes. This theoretical framework synthesizes key constructs from Second Language Acquisition (SLA) theories, learning sciences, and educational technology frameworks in order to conceptualize the affordances and challenges of AI-enhanced language learning. Collectively, these theoretical pillars provide an analytical lens for understanding the pedagogical, cognitive, and sociocultural mechanisms through which AI influences English language learning processes.

1. Second Language Acquisition Theories

1.1. Interactionist Theory

The interactionist perspective (Long, 1996; Gass & Mackey, 2007) posits that language acquisition emerges through meaningful interaction, negotiation of meaning, and corrective feedback. AI systems—particularly conversational chatbots, intelligent tutors, and speech-recognition tools—simulate interactional environments by offering repeated opportunities for negotiation, recasts, and clarification requests. When learners interact with AI-driven conversational agents, the system provides adaptive responses that mirror the interactional mechanisms known to facilitate SLA. Thus, AI functions as a surrogate interlocutor that enhances learners' exposure to comprehensible input, promotes pushed output, and supplies interactional feedback, even in contexts where human interaction is limited.

1.2. Input and Output Hypotheses

Krashen's Input Hypothesis emphasizes comprehensible input ($i+1$) as a prerequisite for acquisition, while Swain's Output Hypothesis underscores the necessity of producing language to develop linguistic accuracy. AI technologies contribute to both dimensions by (a) modifying input based on learners' proficiency levels and (b) prompting learners to articulate output in speaking or writing tasks. Adaptive reading platforms and AI-generated glosses enhance input comprehension, whereas automated writing evaluators and speech-assessment tools prompt learners to refine their linguistic output through iterative feedback cycles.

1.3. Noticing Hypothesis

Schmidt's Noticing Hypothesis argues that learners must consciously attend to linguistic features for acquisition to occur. AI's capacity to highlight errors, provide metalinguistic explanations, and visually mark areas requiring attention supports the noticing process. AI-driven feedback systems, for example, direct learners' attention to grammatical, lexical, and syntactic patterns that might otherwise remain unnoticed in natural communication.

2. Theories of Personalized and Adaptive Learning

2.1. Personalized Learning Frameworks

Personalized learning theories contend that instruction is most effective when tailored to learners' individual needs, preferences, and pace. AI operationalizes these principles through data-driven profiling, dynamic difficulty adjustment, and real-time learner modelling. Machine learning algorithms continuously analyze learner performance and use these insights to curate tasks that align with learners' strengths and weaknesses. This theoretical alignment explains why AI-assisted systems often outperform traditional one-size-fits-all instruction in terms of learner engagement and progress.

2.2. Cognitive Load Theory

Cognitive Load Theory (Sweller, 1988) suggests that instructional design should minimize extraneous load to optimize learning. AI enhances cognitive efficiency by delivering scaffolded content, simplifying complex linguistic structures, and offering immediate assistance when learners face cognitive overload. Intelligent tutors detect learning bottlenecks and intervene with targeted support, thereby balancing intrinsic and extraneous cognitive load.

3. Sociocultural Theory and Mediated Learning

Vygotsky's Sociocultural Theory (1978) emphasizes the role of mediation, scaffolding, and the Zone of Proximal Development (ZPD) in learning. AI functions as a digital mediational tool that provides scaffolding tailored to each learner's ZPD. Intelligent tutoring systems and conversational agents offer guidance that approximates human scaffolding by providing hints, step-by-step support, and graduated assistance. Although AI lacks full human empathy and contextual judgment, it nonetheless contributes to social mediation by enabling learners to engage in dialogic interaction and collaborative meaning-making through human-machine exchanges.

4. Data-Driven Learning and Corpus Linguistics

The principles of Data-Driven Learning (DDL) position learners as active linguists who analyze authentic language patterns extracted from corpora. AI enhances DDL by automating corpus searches, simplifying pattern detection, and generating concordance lines in accessible formats. Natural Language Processing (NLP) systems analyze massive datasets to identify collocations, semantic patterns, and usage trends, offering learners exposure to authentic language use. AI thereby operationalizes the DDL approach in a user-friendly and scalable manner.

5. Educational Technology Frameworks

5.1. TPACK Framework

The Technological Pedagogical and Content Knowledge (TPACK) framework highlights the need for teachers to integrate technology in ways that align with pedagogical goals and content knowledge. AI's effectiveness in ELT depends on teachers' ability to understand not only the technological aspect of AI tools but also how these tools interact with pedagogical principles and language-learning content. Teachers with high TPACK competence can critically evaluate AI systems, mitigate potential misuse, and design lessons that harness AI's strengths.

5.2. SAMR Model

The SAMR model (Substitution–Augmentation–Modification–Redefinition) provides a lens for understanding the transformative potential of AI. While basic AI tools function as substitutes for traditional tasks (e.g., digital flashcards), more advanced systems enable modification (AI-assisted writing feedback) or redefinition (adaptive learning environments impossible in traditional classrooms). This framework helps contextualize how deeply AI reshapes learning experiences.

6. Ethical, Humanistic, and Critical Perspectives

Contemporary theoretical approaches emphasize that AI integration must also consider ethical and socio-educational concerns. Critical Digital Literacy theories highlight the importance of transparency, bias awareness, and responsible AI use. From a humanistic perspective, language learning is an affective and social process that cannot be fully automated. AI's role must therefore complement—not replace—human interaction, empathy, and cultural mediation. These perspectives help illuminate challenges such as overreliance on AI, data privacy concerns, and issues of equity and access.

Synthesis of the Theoretical Framework

Drawing on the theories above, the present study conceptualizes AI in ELT as a multifaceted mediational tool that:

1. Enhances interaction, input, output, and noticing (SLA theories),
2. Supports personalized, adaptive, and cognitively efficient learning (learning sciences),

3. Provides sociocultural scaffolding within learners' ZPD,
 4. Facilitates data-driven exploration of authentic language patterns (DDL), and
 5. Requires pedagogically informed and ethically grounded integration (TPACK, SAMR, critical theories).
- This blended theoretical framework establishes the foundation for analyzing both the affordances (e.g., personalization, feedback, motivation, accessibility) and the challenges (e.g., accuracy, ethics, dependency, privacy) inherent in AI-driven English language instruction.

METHOD

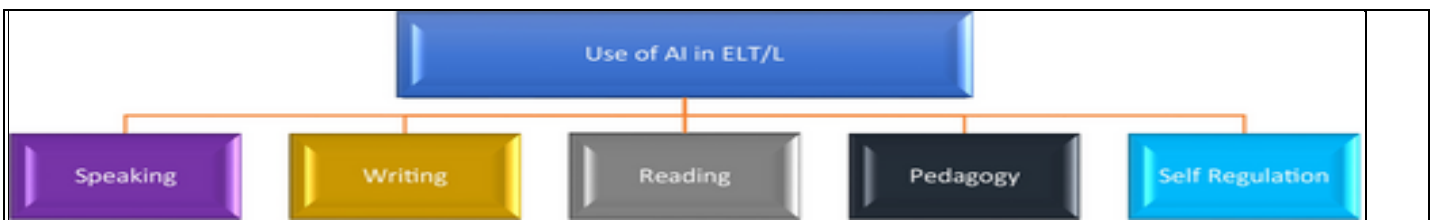
A systematic review methodology was conducted to answer the four questions guiding this study. The systematic review process involves two main parts. The first part is the search, identification and selection of the studies to be included in the study. The preferred reporting items for systematic reviews and meta-analysis (PRISMA principles; Page et al., 2021) were used for this. The second part of the systematic review is the analysis of those studies. This involved a mixed-method approach with quantitative methods to provide aggregate data with basic numbers, then qualitative inductive and deductive coding techniques using a priori and grounded coding (Strauss & Corbin, 1995) to provide a summary of how AI is being used in ELT/L and generate new theories from that collective review of the studies (Gough et al., 2017).

Search strategy

Only primary research was selected for this systematic review. Primary studies are studies in which the researcher has directly gathered data from participants and do not include systematic reviews or theoretical papers. In addition, to ensure a level of confidence in the quality of the research, only research published in a peer-reviewed journal was selected. Scholars (viz, Crompton & Burke, 2022, 2023) report an increase in the use of AI in education in the past decade. Therefore, the search parameters were set to include papers from 2014 to 2023 to keep current and include the latest additions to AI technologies.

FINDINGS AND DISCUSSION

From the grounded coding, six codes emerged from the way AI was being used, (see Figure 5). Extant systematic reviews focused on a priori categories that had the researchers only looking for key aspects, such as language skills of speaking, writing, listening and reading (Sharadgah & Sa'di, 2022; Yang & Kyun, 2022). The grounded coding approach used in this study was used to reveal the trends that emerged from the literature on what was actually being studied. The grounded coding did reveal skills related to speaking, writing and reading, while the aspect of listening did not emerge from the data. With that grounded approach, discernible patterns also surfaced regarding the utilisation of AI in ETL/L with studies to enrich and broaden pedagogical practices, bolster pupil self-regulation and explore connections with affective objectives.



Figur 1

It is important to note that there was overlap in these codes, but the main use of AI in each study was what was identified by the code. To break down the codes further, axial codes were created to delineate further those uses involved in each main code. For each of the overarching codes, both the uses of AI in ELT/L and the affordances are presented together in the following sections.

Speaking

Further investigation of the studies which had pupils practising speaking skills as the main use of AI revealed three axial codes: subskill, pedagogy and technology, see Figure 6. The only speaking subskill revealed in the studies was a focus on pronunciation. Nonetheless, pronunciation was a common focus in these studies. There were a variety of AI systems and programs that helped pupils in this area. As Tokoz-Goktepe (2014) posited, a challenge for ELT/L is often the limited connections to English outside the language courses. AI can help to provide those connections. Liu and Hung (2016) used a system for teaching pronunciation to pupils in Taiwan and found that the AI significantly improved pupils' pronunciation by reducing the flatness of pitch and intonation patterns. The researchers found that the visual representation of the pitch as a spectrogram provided by the AI was helpful in supporting pronunciation.

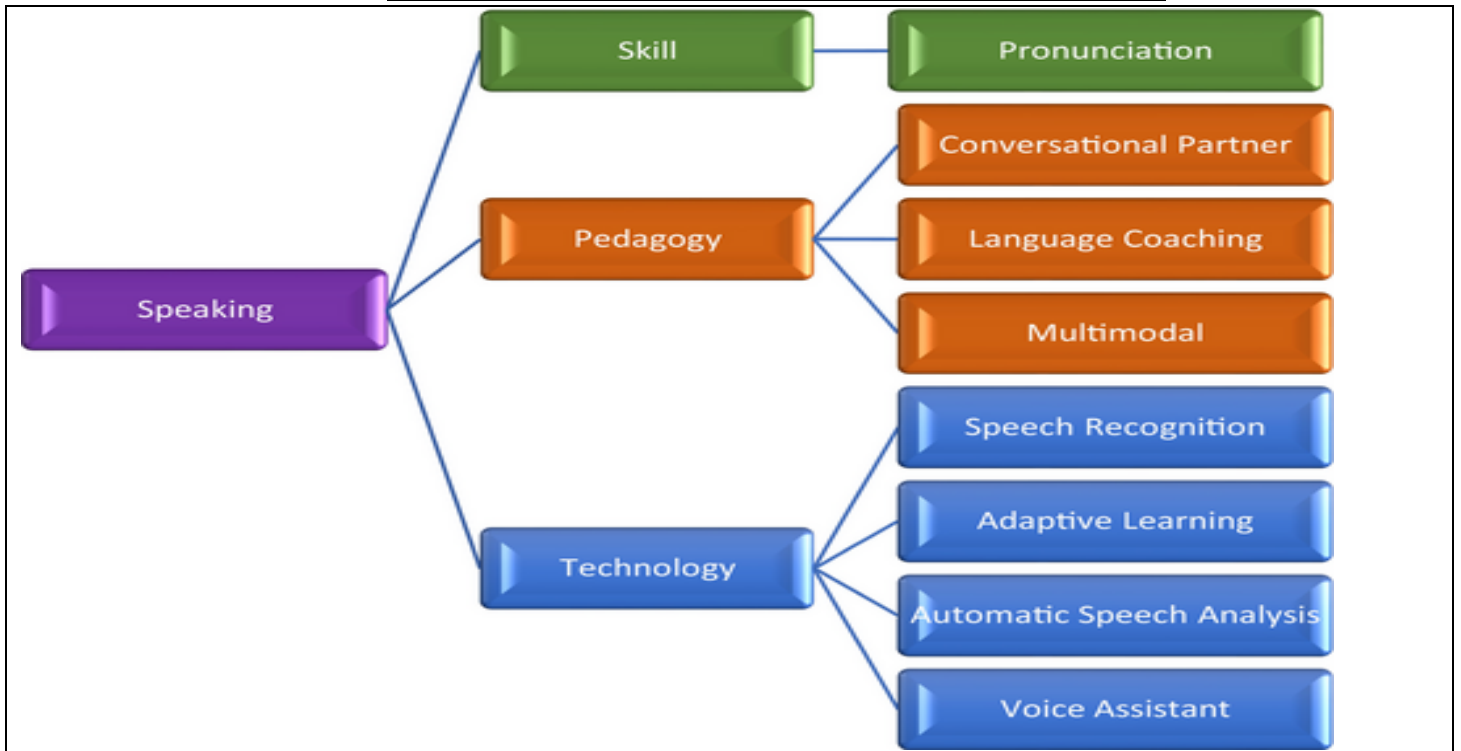


Figure 2

Three codes emerged in the pedagogical AI methods for teaching English speaking. AI was used as a conversational partner and a language coach. Dizon and Tang (2020) had pupils hold conversations using Alexa, a personal voice assistant. The findings of this study show a plethora of affordances. Pupils found Alexa easy to use, and it promoted meaningful interactions, supported vocabulary acquisition, improved language skills and provided interesting, enjoyable learning. It is interesting that while conversations should typically involve speaking and listening skills, the listening aspect was not an area of focus that emerged from this systematic review. This finding is intriguing given that typical conversation should ideally engage both speaking and listening skills, yet the focus on listening skills did not emerge in this systematic review. This insight is crucial for practitioners aiming to employ AI tools in an evidenced-based use of AI tools in supporting language skills development in ELT/L. In the pedagogies code, studies highlighted the use of coaching and multimodal systems which employ multiple ways to present information, such as text, images, audio and video. Shivakumar et al. (2019) focused on both language coaching and a multimodal approach in a higher education setting. Pupils studying pronunciation were provided with a coach that tailored instruction to each pupil's learning patterns and needs. This coach presented information using text, images and audio. The findings show that the multimodal coaching approach was highly beneficial for young ELLs. Lin and Mubarak (2021) also used a multimodal system approach with videos, pictures, memes and songs to help with conversation. The findings show that this variety allowed higher education pupils to speak more fluently using consistently accurate language structures. AI technologies were examined by scholars in their affordances for learning about spoken language. AI has a direct connection between speaking a language and natural language processing in that AI can recognise and produce speech. The axial codes reveal technology regarding speech recognition and automatic speech analysis as well as AI systems of adaptive learning and voice assistance. With high school pupils in Turkey, Kazu and Kuvvetli (2023) developed an AI-supported pronunciation model. This system was designed to help pupils practice, record and react to pupils pronouncing words. The findings show that the words remained in memory longer and it was most beneficial for learning consonant and vowel sounds. Generative AI technologies, such as ChatGPT, now offer speech options where pupils can verbally converse with AI. More future research may see these programs used for developing speaking skills. These programs offer pupils an opportunity to practice their spoken English with an AI with an advanced vocabulary that can further advance the pupils' spoken skills with unlimited practice time. This may also avoid educators needing to purchase expensive programs. Nonetheless, generative AI may not offer the very specific targeted feedback support that these other programs, such as the one used by Kazu and Kuvvetli (2023), can provide. Tai et al. (2022) used virtual reality with AI speech recognition with middle to high school pupils as they learned vocabulary. The study found that the linguistic cues provided by the agents in the VR making comments such as 'pardon me' and the kinesic signals (eg,

gesturing and staring) were highly beneficial to the pupils' speech abilities. It appears from the studies that the AI providing context surrounding the vocabulary during interactions is beneficial in learning. This supports prior research findings supporting the importance of contextualising vocabulary learning (Godwin-Jones, 2018). Currently, these kinesic signals are not available to pupils using generative AI which highlights the benefit of programs that target language learning.

Writing

Similar to the speaking code, the studies revealed the axial codes of subskills, pedagogies and technologies. Two subskills of writing that emerged from the papers were vocabulary learning and grammar. Lo (2023) examined pupils' vocabulary improvement and retention in writing when pupils had access to neural machine translation programs. The researchers reported that this AI system helped to improve or expand vocabulary, especially when specialised or unambiguous expressions are involved. One of the common uses of AI in writing revealed by this study is the use of AI grammar checkers. This finding follows a trend across disciplines of the use of grammar feedback tools, for example, Grammarly (Koltovskaia, 2020). Dizon and Gayed (2021) specifically examined the impact of Grammarly when used in higher education ELT/L. He found that using this AI tool, pupils had fewer grammatical errors and wrote with more lexical variation than pupils without the AI. The predictive text and real-time corrective feedback supported pupils studying English, especially novice writers. Educators have expressed apprehensions about pupils potentially becoming 'complacent' and utilising AI tools (such as grammar checkers or automatic translation tools) as a shortcut to learning (Bozkurt et al., 2023). However, the findings of this study suggest that AI-powered tools can be used to aid pupils in enhancing their writing skills. For practitioners looking to help pupils develop the vital skill of writing, it appears that there is value in real-time corrective feedback and the use of AI to extend vocabulary (see Figure 3).

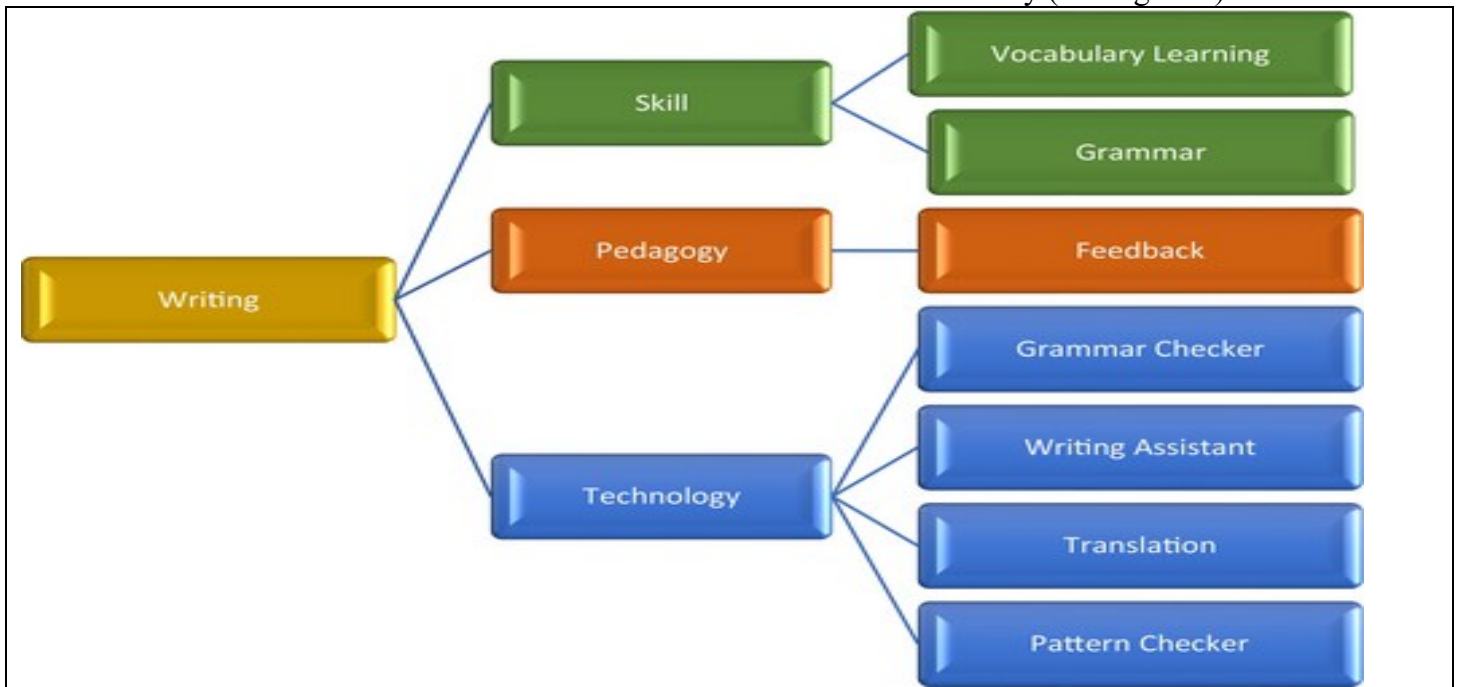


Figure (3)

Only one pedagogical focus emerged in the axial codes for writing. This was often connected back to AI tools providing feedback via spelling and grammar checkers, similar to that in Dizon and Gayed's (2021) study with Grammarly. Nazari et al. (2021) also studied the use of Grammarly as a feedback tool for ELLs and the findings again reported positive outcomes of statistically significant improvement in behavioural engagement, emotional engagement, cognitive engagement and self-efficacy in writing. With AI systems working well with procedural knowledge and systems within written text and languages (Crompton et al., 2022), it is discouraging to see feedback as the only writing pedagogy revealed in the grounded coding. Future researchers could further examine the pedagogical opportunities afforded by AI in teaching writing in English. Writing was an area using a variety of AI-targeted ELT/L technology supports and tools. An interesting find is the use of translation tools. It could be argued that AI translation tools could be used to bypass language learning with the translation readily available to the pupil. However, Chon et al. (2021) explored pupil use of an AI translation tool—Google Translate. Working with pupils studying English writing in a South Korean college, the study's findings revealed that using Google Translate enabled the pupils to produce the greatest number of complex words of more than

three syllables. It also allowed the learners to retrieve a larger range of lexical items as the translation process directed the learners to reflect on the different lexical choices available to them to effectively express their intended message.

Reading

Reading did appear from the grounded coding. However, it was not as common in the data as speaking and writing. This reduced focus on reading is similar to the findings of Sharadgah and Sa'di (2022). This may be due to the extensive affordances of AI in natural language processing aligned to speaking and writing that researchers want to use, with reading less aligned to those AI affordances. Nonetheless, there were AI ELT/L studies focused on reading subskills, pedagogies and technology resulting in five axial codes, see Figure 4.

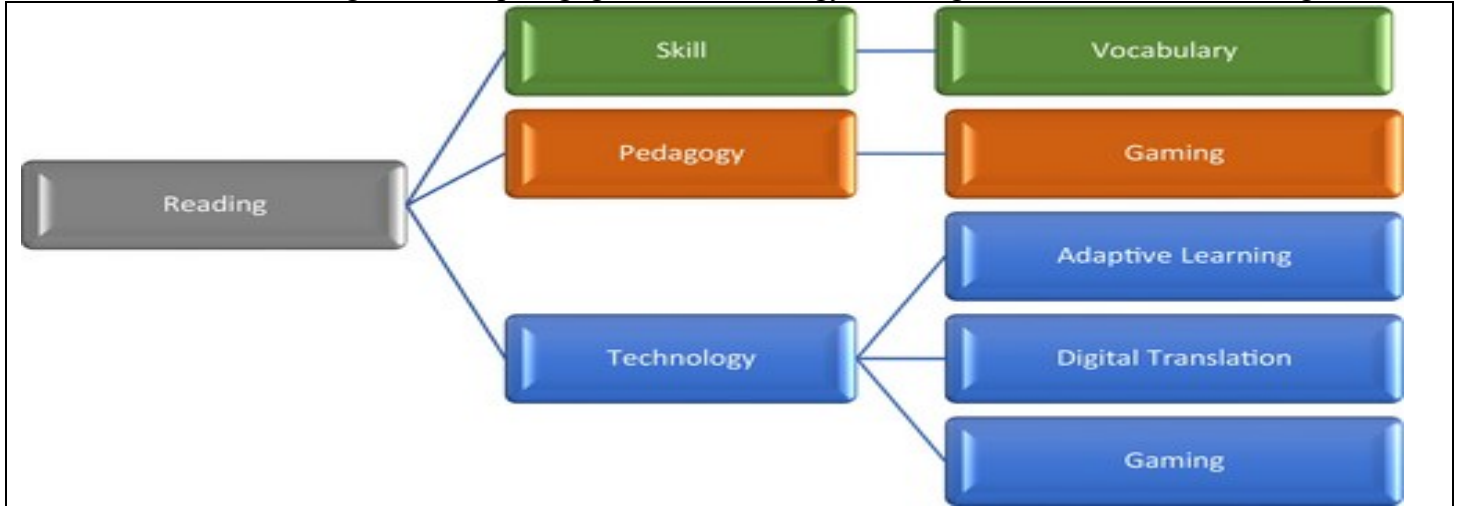


Figure 4

Vocabulary was the only subskill focus of studies in reading. Within pedagogy, gaming is the only code. It could be argued that gaming could just fit with the technology code. However, some gaming studies concentrated on the method of learning and others on developing AI gaming systems. Zheng et al. (2015) explored how vocabulary learning in reading occurs during gaming quest-play mediated in English with Japanese pupils playing with an English player. The pupils, embodied as avatars, used semiotic resources imbued in the game called World of Warcraft (WoW). For example, during the game, players can kill the enemy and then take items from the person killed with the word 'looting' appearing. The pupils then learn that word and read the explanation of the term provided by the other player via the chat, who then situates the word in the wider context. From the findings, Zheng and colleagues posit that pupils have opportunities to learn vocabulary and understand meaning via games beyond what a textbook or classroom can provide. It appears that contextualising often decontextualised vocabulary is useful in learning and is offered by gaming that involves AI. WoW uses AI in the program to provide that context, through the inclusion of AI characters (that are not operated by humans), pathfinding navigation algorithms and within the system to make the environment dynamic and engaging. For educators who have pupils who appear unengaged or unmotivated to learn, gaming could be an approach that supports those pupils in reaching their learning goals.

Pedagogy

However, pedagogy here is a main code and not an axial (sub) code to denote that the researchers focused primarily on the pedagogical methods, strategies and techniques of AI in ELT/L. The pedagogical studies in this systematic review were in and across formal, informal and non-traditional learning settings. Figure 5 provides an overview of those targeted skills and pedagogies.

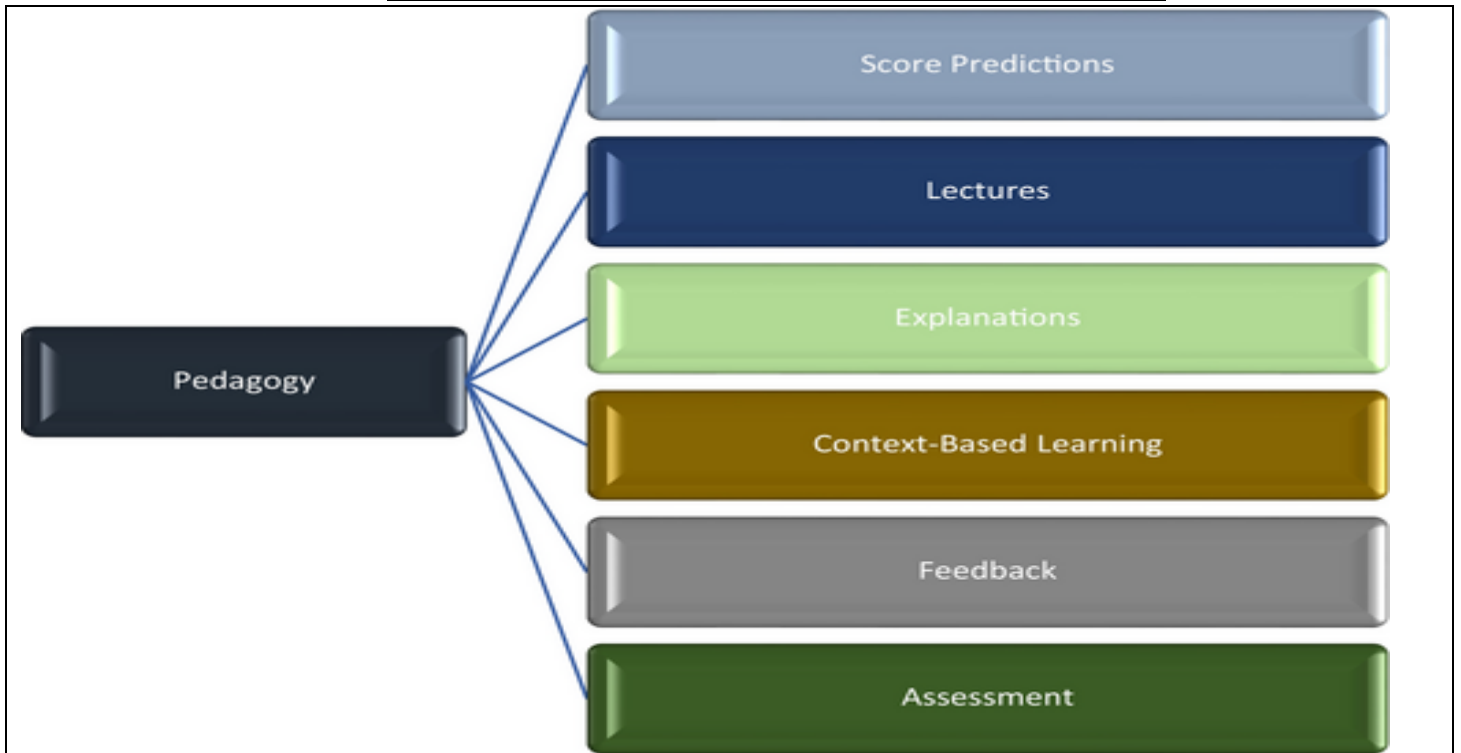


Figure 5

Coding from the pedagogy code revealed six axial codes, see Figure 6. Some studies examined multiple pedagogies which appear to provide more personalised learning approach. For example, Kim (2022) explored the effects of the pedagogical approaches of score predictions, lectures, explanations and practice tests on Korean pupils studying for their Test of English for International Communication (TOEIC). An AI system, Soljam, was used to provide these pedagogical approaches to learning. Pupils began with a diagnostic assessment in which the AI then used the data to provide lectures, explanations and practice tests at the level required by the pupil. In Kim's examination, there were two groups using AI: those using AI via a computer and those using a mobile device. The findings show that there was value in these pedagogies when AI was used either on a computer or a mobile device. However, they reported that some aspects of learning may work best on a particular device, such as a larger computer screen for more detailed work. Lee et al. (2023) took a different look into pedagogy by exploring a context-based approach; specifically, learner-generated context (LGC) based. Lee et al. described LGC as the design and application of digital technology in a manner that assists learners in forming a 'learner-generated context' and learning within this context. This context is constructed from data that are gathered as the pupils perform actions and make choices. The system then learns about the pupils to provide them with more content to match their preferences. The researchers found that the LGC AI pedagogical approach catalysed learners' autonomous learning experiences. As AI is rapidly extending its capabilities, it is positive to see that researchers are also focused on the pedagogical aspects of how effective practices connect with AI. Some of the pedagogies, such as context-based learning, use relatively recent ways of teaching, especially in targeting pupils' personal learning needs. However, it is interesting to note that there are a lot of traditional forms of pedagogies, including lectures and explanations being used. Scholars, such as Crompton and Burke (2020), lament 'using 21st Century technologies, with 20th Century teaching' (p. 2.). The new affordances of AI can provide new avenues of learning and it would be pertinent for researchers to explore and grow these areas. One area of AI value is the ability to look across large datasets and assess pupils' work at speed. Assessments were seen in the coding but were not explored in great detail in the extant literature. Again, further examination of AI assessment in ELT/L would be helpful to the academic community. These pedagogical findings have implications for educators as they navigate the intersection of effective pedagogical practices and AI. The research uncovered some innovative applications of AI for pedagogy. These pedagogies often highlighted ways to provide more of a student-centred focus with personalised learning and learner-generated context. However, practitioners should be aware that more traditional pedagogies, such as lectures and explanations, continue to prevail and it would be beneficial for educators to explore new possibilities for learning from those AI capabilities.

Self-regulation

Self-regulation emerged as a code from the grounded coding, with six axial codes, see Figure 6. Self-regulation refers to the ability to manage and control one's thoughts, emotions, behaviours and physiological responses to achieve personal goals and maintain well-being. Affect can influence the choices and actions the pupil takes. For example, someone in a negative mood might be more prone to impulsive decisions or avoidance behaviours.

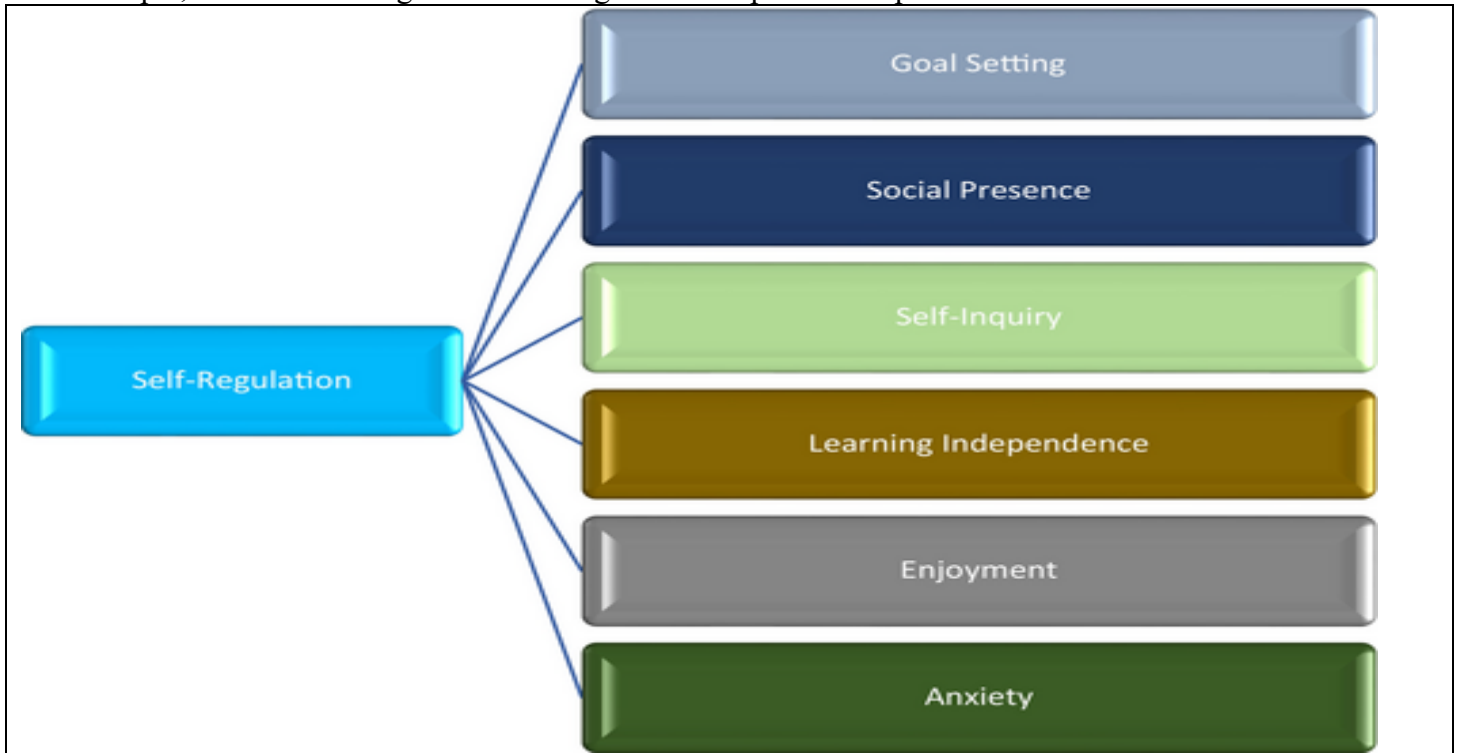


Figure 6

It is interesting that self-regulation has appeared in this study. Scholars (viz, He, 2021) posit that there is value in AI in language learning, and they also warn of the dangers of pupils becoming over-reliant on AI to perform tasks and avoid mastering content themselves. It is positive to see that of the 43 studies in this systematic review, there was a trend towards self-regulation in relation to AI and ELT/L by having pupils actively thinking, especially in relation to developing goals and learning independence. The study's findings concerning the affordances of AI-powered tools in promoting student self-regulation also have substantial implications for educators. The use of AI-powered tools such as chatbots to foster self-regulation could aid pupils in becoming more autonomous learners, setting more effective goals and alleviating anxiety about speaking in English. For example, Hew et al. (2023) used chatbots in ELT/L to support pupil goal setting and social presence in fully online activities. Hew's study purports that pupils often lack self-regulation in online language courses with pupils feeling isolated and disengaged. However, using a grounded approach, the results of this study revealed three primary affordances of AI in goal setting as the chatbot helped pupils with (1) clarifying their learning goals, (2) developing techniques for setting goals and (3) raising awareness of learning strategies in goal setting. The findings also report that the pupils enjoyed using the chatbots and had a positive learning experience. In another study, Chen, Hsu, et al. (2022), examined robot-assisted language learning. In Chen's study, AI and virtual reality were combined to create a system to use robots as a tool for training English language tour guides to develop a sense of autonomy. Pupils played the role of tour guide or traveller and interacted with various exercises including proper working, matching words, collocation and sentence structure. As the pupils worked with the AI system, the findings of the study identified affordances including developing autonomy, while also increasing motivation and engagement. Anxiety was the final axial code from the systematic review. This a priori term was used in regard to pupils feeling anxious while learning English. This included anxiety about speaking in public, making mistakes with vocabulary and interacting with others. From the 43 studies, researchers were working on studies that used AI to reduce anxiety as pupils tried to grasp another language and AI reducing anxiety was often referred to in the findings of the affordances of the AI. Chen, Koong, and Liao (2022) used an AI automatic speech recognition technique to support pupils' English-speaking skills and learning anxiety with fifth-grade pupils in Taiwan. Both Çakmak (2022) and Chen, Koong et al. found that AI raised the pupils' skills and lowered anxiety.

Conclusion

The growing integration of Artificial Intelligence (AI) into English Language Teaching (ELT) represents one of the most significant transformations in contemporary educational practice. This study set out to examine the major affordances and challenges associated with AI-enhanced instruction, drawing on a wide range of theoretical constructs and empirical insights. The findings point to a complex landscape in which AI simultaneously enables innovation in pedagogy while presenting constraints that educators and institutions must thoughtfully navigate. A central conclusion is that AI offers substantial pedagogical affordances that can meaningfully enhance language learning when applied strategically. Adaptive learning systems, automated feedback mechanisms, and conversational agents create dynamic environments that promote continuous engagement, personalized instruction, and practice opportunities that exceed the limitations of traditional classrooms. The capacity of AI to tailor tasks to individual learners—adjusting difficulty levels, sequencing activities, and identifying error patterns—enables instruction that aligns with core principles of personalized learning, cognitive efficiency, and learner autonomy. Furthermore, AI expands the scope of interactional opportunities, a key factor identified in Second Language Acquisition (SLA) research as essential for developing linguistic competence. By simulating negotiation of meaning, providing recasts or clarification requests, and supporting iterative output production, AI systems operationalize mechanisms that underlie effective L2 development. However, the study also reveals that the benefits of AI do not unfold uniformly or automatically. Several challenges must be addressed to ensure responsible and effective adoption. First, the reliability of AI-generated feedback remains a critical concern. Although AI-driven writing evaluators and speech-recognition systems have improved significantly, they still risk producing inaccurate or contextually inappropriate feedback. Such inaccuracies may lead learners toward incorrect hypotheses about language patterns, fossilization of errors, or decreased trust in instructional technologies. Consequently, human oversight remains indispensable, particularly in high-stakes learning contexts. Second, the ethical and privacy-related implications of AI integration require sustained attention. Many AI systems collect, store, and analyze sensitive user data. Without robust ethical guidelines, transparent governance, and secure data-management policies, learners may face risks related to unauthorized data access, algorithmic bias, and inequitable treatment. Moreover, the opacity of machine learning algorithms can lead to hidden biases that affect how learners are assessed or categorized, calling for a critical and informed approach to selecting and deploying AI tools. Third, there is an increasing concern about overreliance on AI among learners. While automation can support learning, excessive dependence on AI-generated texts, answers, or translations may undermine linguistic creativity, critical thinking, and independent problem solving. Learners may bypass cognitively demanding processes that are essential for long-term language development. This highlights the need for pedagogical frameworks that guide learners toward reflective and judicious use of AI, emphasizing AI as a supportive resource rather than a substitute for active learning. The evolving role of teachers represents another major consideration. AI does not eliminate the need for qualified educators; rather, it reshapes the responsibilities and competencies required of them. Teachers must possess not only language-teaching expertise but also digital literacy, tool-evaluation skills, and the ability to integrate AI effectively within curriculum design. Their role increasingly involves mediating between learners and technology, ensuring that AI functions as a scaffold aligned with pedagogical objectives, not as an unregulated or dominant force in the learning environment. Professional development programs that focus on AI literacy, ethical awareness, and instructional integration are therefore essential. Infrastructural and contextual inequalities further complicate AI integration. Access to high-speed internet, reliable devices, and institutionally supported platforms varies widely across regions and institutions, creating disparities in learners' opportunities to benefit from AI-enhanced instruction. Thus, any educational innovation involving AI must be accompanied by policies aimed at technological equity to prevent the widening of existing educational gaps. Taken together, the affordances and challenges identified in this study underscore the need for a balanced, pedagogically grounded model of AI integration in ELT. The goal is not to adopt AI uncritically, nor to reject it due to its limitations, but to develop a principled approach that leverages its strengths while mitigating its risks. Future research should focus on longitudinal studies that evaluate the long-term linguistic, cognitive, and social effects of AI use. Investigations into teacher preparation, learner attitudes, and contextual barriers will further contribute to developing sustainable frameworks for AI adoption. Ultimately, the study concludes that the future of AI in English language education lies in collaborative intelligence—the strategic partnership between human expertise and machine capabilities. When AI is utilized as a complementary tool that supports instruction, fosters engagement, and enhances linguistic development, it holds the potential to significantly enrich ELT practices. When implemented without oversight or theoretical

grounding, however, it risks introducing new inequities and pedagogical inefficiencies. Responsible, ethical, and research-informed integration will therefore be essential to realizing the transformative potential of AI in language learning environments.

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