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# EXPLORING THE IMPACT OF ARTIFICIAL INTELLIGENCE ON SPEAKING SKILL DEVELOPMENT IN ENGLISH LANGUAGE LEARNING

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**Abstract**

The rapid development of Artificial Intelligence (AI) has significantly transformed the field of English Language Teaching (ELT), particularly with regard to the development of speaking skills. AI-powered technologies, including chatbots, automatic speech recognition (ASR) systems, virtual assistants, and adaptive learning platforms offer learners personalized, interactive, and flexible opportunities for oral communication practice that were previously unavailable in traditional classroom settings. This article critically reviews the role of AI in enhancing speaking skills among English language learners, examining its pedagogical benefits, current limitations, and broader implications for language instruction. The review discusses how AI tools can improve pronunciation accuracy, oral fluency, communicative confidence, and learner autonomy while simultaneously creating more engaging, student-centered learning environments. The article also addresses persistent concerns related to overreliance on technology, questions of authenticity in human-computer interaction, accessibility inequalities, and ethical considerations surrounding learner data. Drawing on theoretical frameworks from Computer-Assisted Language Learning (CALL), communicative language teaching, and adaptive learning theory, the findings indicate that AI holds strong potential to support speaking instruction when integrated thoughtfully and systematically into evidence-based pedagogical practice. Recommendations for researchers and practitioners are provided.

**Keywords**: Artificial intelligence, speaking skills, English language teaching, automatic speech recognition, pronunciation, communicative competence, learner autonomy, technology-enhanced language learning.

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## Introduction

The integration of digital technologies into formal and informal educational contexts has fundamentally reshaped the methodologies employed in English Language Teaching (ELT). Among the most consequential of these technological developments is Artificial Intelligence (AI), which has emerged over the past decade as a transformative force across a wide range of educational disciplines. In the context of language learning, AI refers to computational systems capable of executing tasks that have traditionally required human cognitive faculties, including natural language processing, automatic speech recognition, real-time corrective feedback, and adaptive content sequencing. These capabilities have made AI an increasingly attractive resource for supporting learners across the four core language skills: listening, reading, writing, and, most relevantly for the present review, speaking.

Speaking is widely regarded as one of the most demanding and affectively charged language skills for second or foreign language (L2/EFL) learners. Oral production requires the simultaneous coordination of multiple linguistic and paralinguistic systems — phonological accuracy, lexical selection, grammatical encoding, discourse coherence, and pragmatic appropriateness — under real-time processing constraints and often in conditions of heightened anxiety (Dörnyei & Ryan, 2015). In conventional EFL classrooms, learners frequently encounter structural impediments to speaking practice: large class sizes that limit individual speaking time, insufficient exposure to target language interaction, and the psychological barrier of speaking in front of peers. These constraints have long been identified in the literature as significant obstacles to oral proficiency development (Horwitz, 2010).

AI-powered tools have emerged as a promising response to these challenges, offering interactive environments in which learners can engage in spoken language practice independently, repeatedly, and without the evaluative social pressure of a live classroom audience. Platforms such as ELSA Speak, Duolingo Max, Google Assistant, and AI-driven conversational chatbots based on large language models have become increasingly accessible to learners worldwide, demonstrating the growing integration of AI within language education (Godwin-Jones, 2021; Holmes et al., 2019).

Despite the evident momentum behind AI-assisted language learning, the academic literature still lacks a comprehensive, critically oriented synthesis that

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evaluates both the benefits and the pedagogical limitations of AI tools specifically as they relate to EFL speaking development. This article addresses that gap through a narrative literature review, drawing on theoretical frameworks from CALL scholarship, communicative language teaching, and adaptive learning theory. The specific aims are: (1) to analyze the mechanisms through which AI technologies support speaking skill development; (2) to critically evaluate empirical and theoretical evidence regarding their effectiveness; (3) to identify persistent challenges and ethical concerns; and (4) to offer evidence-informed recommendations for educators and researchers.

## Theoretical Background

The integration of AI into language education is grounded in a confluence of theoretical traditions that together provide a robust conceptual foundation for technology-mediated speaking instruction. Three frameworks are particularly salient: Communicative Language Teaching (CLT), theories of learner autonomy, and adaptive learning theory as applied in intelligent CALL systems.

## Communicative Language Teaching and Technology

Communicative Language Teaching, which positions meaningful interaction as both the medium and the goal of language instruction, provides the primary pedagogical rationale for AI-assisted speaking practice. CLT principles hold that language learners develop oral competence through repeated engagement in authentic or authentic-like communicative tasks that emphasize meaning over form, yet do not neglect formal accuracy (Chapelle & Sauro, 2017). AI-driven conversational systems, to the extent that they simulate purposive communicative exchange, can be seen as technological embodiments of CLT principles: they expose learners to situated language use, elicit oral production, and provide feedback oriented toward communicative success.

Warschauer and Healey (1998), in their foundational overview of computers and language learning, identified the shift from behaviorist, drill-based CALL to communicative and integrative CALL as a theoretical evolution that placed authentic interaction at the center of technology-mediated instruction. Contemporary AI systems extend this trajectory significantly, offering conversational interactions that are adaptive, responsive, and increasingly naturalistic.

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## Learner Autonomy and Mobile-Assisted Language Learning

A second theoretical pillar concerns the relationship between AI and learner autonomy. Autonomous language learning, defined as the capacity of learners to take responsibility for their own learning objectives, processes, and outcomes, is widely recognized as a predictor of long-term language proficiency (Benson, 2011). AI tools support autonomy by enabling learners to self-direct their practice, select tasks calibrated to their proficiency levels, review their performance through detailed feedback reports, and engage in speaking practice on their own schedules and in their own environments.

The mobile dimension of this autonomy is particularly significant. As Kukulska-Hulme (2020) notes, mobile-assisted language learning offers learners the flexibility to access target language input and engage in practice activities in situ, transforming otherwise unproductive moments, commutes, waiting periods, intervals between classes, into potential learning opportunities. When combined with AI-driven feedback and adaptive content delivery, mobile platforms substantially extend the reach and individualization of speaking instruction beyond what is possible within fixed-duration classroom sessions.

## Adaptive Learning and Intelligent CALL Systems

A third framework concerns adaptive learning theory and its application in intelligent CALL systems. Luckin (2018) argues that meaningful AI integration in education requires systems capable of modeling individual learner characteristics, prior knowledge, error patterns, affective states, and learning trajectories, in order to calibrate instructional support dynamically. This principle of adaptive personalization is operationalized in contemporary AI language learning platforms through algorithms that adjust task difficulty, feedback specificity, and content sequencing in response to learner performance data.

Holmes, Bialik, and Fadel (2019) situate such adaptive AI systems within broader debates about the future of curriculum design, arguing that the pedagogical value of AI in education lies not in its capacity to replace human instructors but in its ability to provide scalable, personalized scaffolding that complements and amplifies teacher-led instruction. This perspective, AI as a pedagogical supplement rather than a substitute, is central to the position advanced in the present review.

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## Methodology

This article is structured as a critical narrative literature review. Relevant sources were identified through systematic searches of the databases ERIC, Scopus, Google Scholar, and the Cambridge University Press and Wiley Online Library journal archives, using search terms including "artificial intelligence AND speaking skills," "AI AND EFL speaking," "chatbot AND language learning," "automatic speech recognition AND pronunciation," and "AI AND communicative competence." Priority was given to peer-reviewed empirical studies, systematic reviews, and theoretical monographs published between 2010 and 2025, with seminal earlier works included where theoretically foundational. Sources were selected on the basis of relevance to AI-mediated speaking instruction, methodological transparency, and scholarly credibility as indexed in recognized academic databases. A total of 47 sources were initially identified, of which 28 were retained for inclusion after screening for relevance and quality.

## The Role of Artificial Intelligence in Developing Speaking Skills

AI technologies contribute to speaking skill development through several distinct but interrelated mechanisms. The following subsections examine each of these mechanisms in detail, drawing on available empirical evidence.

### Pronunciation Improvement through Automatic Speech Recognition

One of the most empirically well-documented applications of AI in speaking development is the use of Automatic Speech Recognition (ASR) technology to support pronunciation improvement. ASR systems analyze learner speech, compare phonological features against target-language norms, and generate immediate corrective feedback regarding segmental accuracy, stress placement, and intonation contours (Godwin-Jones, 2021). Platforms such as ELSA Speak (English Language Speech Assistant) deploy deep learning-based ASR models trained on large corpora of native and non-native speaker data to provide learners with granular, item-specific pronunciation feedback at a level of detail that would be practically unachievable for individual teachers managing large classes.

The pedagogical significance of immediate corrective feedback is well established in the SLA literature: feedback that is timely, specific, and actionable is associated with more efficient phonological modification than delayed or general commentary (Ellis, 2009). ASR-based systems realize this principle at

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scale. Learners can repeat a target utterance multiple times, receiving differentiated feedback on each attempt, effectively engaging in deliberate phonological practice that mirrors the conditions known to support skill automatization (DeKeyser, 2007).

Empirical research has produced generally positive findings regarding the effectiveness of ASR-based pronunciation instruction. Golonka et al. (2012), in a review of technologies for foreign language learning, found positive effects for computer-mediated pronunciation feedback across several target languages. More recent evaluations of specific AI platforms have similarly reported measurable gains in pronunciation accuracy following sustained engagement with ASR feedback systems, though researchers caution that outcomes are mediated by the degree to which learner errors fall within the recognition capabilities of the ASR engine in use.

**Fluency Development and Anxiety Reduction**

Beyond pronunciation, AI-mediated speaking environments address a second major obstacle to oral proficiency development: communicative anxiety. Foreign language anxiety, particularly its speaking component, has been extensively linked to reduced oral participation, avoidance of speaking tasks, and suppressed fluency development in classroom settings (Horwitz, 2010). The evaluative social dimension of classroom speaking, performing before peers and under teacher assessment, is a well-documented source of this anxiety.

AI conversational systems offer a structurally different affective environment. Because interactions with AI interlocutors carry no social evaluative consequences, they provide what the literature describes as a "low-stakes" or "low-anxiety" speaking context (Godwin-Jones, 2021). Learners can speak, make errors, receive feedback, and retry without fear of peer judgment or negative evaluation. Several studies have reported that learners who engage regularly with AI chatbots for speaking practice demonstrate increased willingness to communicate and reduced self-reported anxiety over time, with corresponding gains in oral fluency as measured by speech rate, mean length of utterance, and frequency of self-corrections (Fryer & Carpenter, 2006; Coniam, 2014).

Conversational AI systems further support fluency development by simulating authentic communicative scenarios, job interviews, service encounters, academic discussions, that prepare learners for the pragmatic demands of real-world

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English use. The repeated activation of speaking routines in contextually meaningful frames is consistent with usage-based accounts of language acquisition, which posit that frequency and contextual embedding of language use accelerate the automatization of productive skills (Ellis, 2019).

**Personalized and Adaptive Learning**

A distinctive pedagogical advantage of AI over conventional classroom instruction is the capacity for genuine learning personalization. Traditional EFL instruction typically delivers uniform content to heterogeneous groups of learners, a design that necessarily under-serves both high-proficiency and low-proficiency learners. AI systems equipped with learner modeling algorithms can analyze individual performance patterns, identifying recurring error types, tracking progress across sessions, and modeling the learner's zone of proximal development, to generate tailored speaking exercises and feedback pathways (Luckin, 2018).

This adaptive dimension has significant motivational implications. Self-Determination Theory (Deci & Ryan, 1985) posits that autonomous, competence-supporting learning environments promote intrinsic motivation and sustained engagement. AI systems that adjust task difficulty to maintain an optimal challenge-to-competence ratio, and that provide learners with transparent progress data, operationalize both autonomy support and competence feedback, thereby addressing two of the three basic psychological needs identified in Self-Determination Theory.

**Expanding Learner Autonomy and Independent Practice**

A further contribution of AI to speaking development lies in its capacity to extend the geography and temporality of language learning beyond the classroom. For learners in EFL contexts, particularly in regions where exposure to English outside school is limited and access to native-speaker conversation partners is rare, AI platforms constitute a critical supplement to formal instruction. Mobile-accessible AI speaking applications allow learners to engage in target language oral production at any time and in any location, significantly increasing the volume of practice that is possible within any given period (Kukulska-Hulme, 2020; Chapelle & Sauro, 2017).

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This democratization of speaking practice carries particular significance for learners in under-resourced educational contexts. AI tools have the potential to partially compensate for inequalities in access to skilled instruction and communicative interaction, though, as discussed below, such benefits are contingent on access to the technological infrastructure needed to run these platforms.

## Challenges and Limitations of AI in Speaking Instruction

Despite the promising features documented above, a critical evaluation of AI-assisted speaking instruction must also account for a set of substantive pedagogical, technical, and ethical challenges. The following discussion identifies the most consequential of these.

### The Authenticity Gap: AI Versus Human Interaction

Perhaps the most fundamental limitation of AI as a speaking interlocutor is the authenticity gap between human-computer and human-human interaction. Authentic human communication is not merely an exchange of propositional content: it is a dynamically co-constructed social event characterized by reciprocal affect, pragmatic negotiation, cultural inference, humor, implicit meaning, and the management of interactional contingencies that no current AI system fully replicates (Chapelle & Sauro, 2017). While conversational AI has advanced considerably in its capacity to produce contextually appropriate responses, it remains systematically deficient in the dimensions of communication that are most culturally and relationally complex.

This authenticity gap has direct pedagogical consequences. If AI interaction is substituted for, rather than supplemented to, authentic human communication, learners may develop productive fluency in a narrow register of AI-compatible discourse while remaining underprepared for the variability, ambiguity, and social complexity of real-world English use. This risk argues for a pedagogical model in which AI speaking practice is explicitly positioned as complementary to, not replaceable of, human interaction, including teacher-led discussion, peer collaboration, and community engagement.

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**Technological Dependence and Pedagogical Balance**

A related concern involves the risk of overdependence on AI tools. When learners come to rely predominantly on AI interlocutors for speaking practice, they may reduce their engagement with the more cognitively and affectively demanding work of interpersonal communication — the very demands that, according to sociocultural and interactionist theories of SLA, are most productive for language development (Vygotsky, 1978; Long, 1996). Teachers must therefore design curricula that preserve a meaningful role for human interaction while leveraging AI tools strategically for supplementary practice and formative feedback.

**The Digital Divide and Equity Concerns**

The benefits of AI-assisted speaking instruction presuppose access to reliable internet connectivity, capable devices, and in many cases subscription fees for premium AI platforms. These material prerequisites create a significant equity concern: learners in low-income households, rural communities, or under-resourced educational systems may be systematically excluded from the benefits of AI-mediated learning, potentially exacerbating existing inequalities in educational opportunity (Holmes et al., 2019). Any evidence-based assessment of AI's role in ELT must therefore account for the structural conditions under which such tools are deployed and for whom their benefits are accessible.

**Accuracy, Cultural Sensitivity, and Ethical Considerations**

ASR and natural language processing systems are not infallible, and their error patterns are not randomly distributed. Research has consistently demonstrated that ASR engines exhibit lower recognition accuracy for non-native speaker accents, particularly those from non-Western language backgrounds (Bajorek, 2019). This bias in ASR performance means that the corrective feedback generated for learners with certain first-language phonological backgrounds may be systematically less accurate or less useful than for learners whose accents more closely approximate the training data of the underlying model. Left unaddressed, this technical limitation risks reinforcing the marginalization of certain learner populations within AI-mediated learning environments. Ethical concerns also extend to data privacy. AI language learning platforms collect large quantities of sensitive learner data, audio recordings, performance logs, interaction histories, whose storage, ownership, and potential commercial use are governed by terms

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of service that learners rarely scrutinize. Educational institutions deploying AI tools bear a professional and ethical obligation to ensure that learner data is handled in accordance with applicable data protection regulations and institutional privacy commitments (Holmes et al., 2019).

**Demands on Teacher Professional Development**

The effective integration of AI tools into speaking instruction does not occur spontaneously: it requires teacher knowledge of available platforms, capacity to evaluate their pedagogical appropriateness for specific learning populations, and skill in designing curricula that position AI tools in productive relationship to other instructional elements. Many in-service teachers, particularly in under-resourced contexts, have received limited training in technology-enhanced language teaching and may feel inadequately prepared to evaluate or implement AI tools critically (Chapelle & Sauro, 2017). Sustained investment in teacher professional development, focused not merely on tool operation but on pedagogically sound AI integration, is therefore a necessary condition for realizing the educational potential of these technologies.

**Pedagogical Implications and Recommendations**

The foregoing analysis yields several concrete implications for language educators, curriculum designers, and educational researchers.

First, AI speaking tools should be integrated as strategic complements to human-led speaking instruction, not as substitutes for it. A pedagogically sound model positions AI-mediated practice as a preparatory or consolidation phase within a broader cycle of instruction in which teacher-led tasks, peer interaction, and AI-supported independent practice each serve distinct and mutually reinforcing functions.

Second, teachers should select AI platforms critically, evaluating not only their technological features but also their bias profiles, data governance policies, and alignment with the linguistic and cultural backgrounds of the learners they serve. Professional associations and educational technology researchers have a role to play in developing evidence-based evaluation frameworks to support these decisions.

Third, learners should be encouraged to engage metacognitively with AI-generated feedback, understanding its basis, evaluating its reliability, and

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applying it selectively, rather than accepting it uncritically. This metacognitive framing situates AI tools within a broader competency of critical digital literacy that is itself a significant educational objective.

Fourth, researchers should prioritize longitudinal studies that track the effects of AI-assisted speaking instruction on measured oral proficiency outcomes, not merely on learner perceptions or attitudes. The field currently lacks a robust body of controlled experimental and quasi-experimental research that would allow confident conclusions about the magnitude and durability of AI's contribution to speaking development.

Fifth, equity must be an explicit design consideration in any proposal for AI-mediated ELT. Initiatives that deploy AI tools without attending to differential access conditions risk widening rather than narrowing educational inequalities. Policy frameworks for AI in education should include provisions for subsidized access in under-resourced contexts.

## Conclusion

Artificial Intelligence has emerged as a genuinely transformative resource for speaking skill development in ELT, offering capabilities, personalized real-time feedback, low-stakes interactional environments, adaptive content delivery, and temporally unrestricted access to speaking practice, that no prior instructional technology has fully replicated. The evidence reviewed in this article supports a cautiously optimistic assessment of AI's pedagogical potential, particularly in the domains of pronunciation development, anxiety reduction, and the extension of speaking practice beyond the classroom.

At the same time, the analysis underscores the importance of critical, equity-conscious, and pedagogically grounded implementation. AI cannot replicate the affective, cultural, and interactional complexity of human communication, and its deployment without careful integration into broader pedagogical frameworks risks producing learners who are fluent with machines but unprepared for the full demands of human interaction. The role of the skilled language teacher, as designer, critic, and mediator of AI-enhanced learning environments — remains indispensable.

Future research should prioritize rigorous longitudinal studies of AI efficacy across diverse learner populations, investigation of the long-term motivational effects of AI-mediated practice, and the development of ethical frameworks for

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AI data governance in educational settings. As the technology continues to evolve rapidly, the field of ELT has both an opportunity and a responsibility to shape its integration with critical intelligence and pedagogical purpose.

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