

The Impact of Human-AI Language Interaction on EFL Learners' Language Communication Competence: A Literature Review

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Abstract. Technological advances in generative AI have fundamentally changed traditional language philosophy assuming that natural language is an exclusive human faculty. Consequently, it is important for language educators to consciously know how to develop English as a foreign language (EFL) learners' language communication competence in the current era. The literature review summarizes Human-AI language interaction (HALI) systems' affordances across various EFL learning contexts. It also evaluates HALI's effects on EFL learners' language communication competence. The results show that HALI's beneficial effects include enhancing linguistic accuracy and fluency, and providing unlimited access to speech practice in low-anxiety environments. However, it has certain deficiencies in developing advanced communication competence, such as pragmatic strategies, sociolinguistic awareness, and critical intercultural communicative competence. The study suggests that educators should prioritize human interaction and instruction as dominant factors to enhance sociocultural and pragmatic abilities, and use AI to build specific linguistic skills and enhance language accuracy and fluency.

1 Introduction

In past centuries, theories of language communication have viewed natural language as a unique symbolic product of human-human interaction. This perspective, however, is fundamentally challenged by recent Artificial Intelligence (AI) technology. Generative AI, such as large language models and socialbots (AI-driven agents designed for social engagement), is rewriting the history of human language interaction now, as found in increasingly frequent language co-construction and socialization in daily life. Moreover, AI translation tools facilitate international communication across a wide range of learning contexts. These revolutions in language communication pose both opportunities and challenges for English as a foreign language (EFL) learners who seek to improve their communication competence through Human-AI language interaction (HALI). Language educators, therefore, need to examine the impact of human-AI language interaction on learners' language communication competence to determine whether it should be integrated into pedagogies and relevant theories.

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To explore this issue, the review first defines human-AI language interaction and examines its key affordances in the development of language communication competence across various EFL learning contexts. Next, it builds an integrated model for language communication competence by synthesizing core components from theoretical literature. Then, it analyzes the impact of HALI based on the model by comparing empirical research findings, showing convergences and differences. Finally, methodological limitations in existing research are highlighted, and implications for pedagogical application and future studies are provided.

2 Human-AI language interaction in various EFL learning contexts

2.1 Human-AI language interaction

Human-AI language interaction (HALI), drawing on insights from human-computer interaction (HCI), natural language processing (NLP), cognitive science and psycholinguistics, focuses exclusively on interactions between AI-driven tools and human users through natural language. It specifically studies the interaction where human and AI agents collaborate through textual or spoken dialogue to achieve a shared agency – to bridge human intent and AI's interpretation of human language in a conversational context.

Hence, HALI integrates human roles, AI roles, and shared agency. Human roles include turning an intent (such as solving a problem or consulting certain information) into a linguistic request, giving prompts that guide AI toward a desired output, interpreting AI-generated texts or speeches, and critically evaluating the texts for accuracy, relevance and bias. AI roles lie in its capabilities for understanding language, recognizing intent, generating coherent and contextually appropriate language, reasoning, grounding, and dialogue management (as in role-playing games). Shared agency is the iterative co-creation by human and AI agents through a multi-turn conversation — a continuous, interactive dialogue — to exchange messages back and forth, with each new exchange building upon the previous ones, until the gap between human intent and AI response is bridged.

2.2 HALI affordances in EFL learning contexts

Research shows that HALI systems provide an array of interactive scenarios for ELF learning, from structured specific tasks (such as pronunciation drills, grammar correction, and vocabulary retrieval) to open-ended role-play games that imitate real-world social interactions, and to cognitive and affective support in the writing process. To systematically outline how HALI supports EFL learners' communicative competence through these scenarios, this section synthesizes the studies according to three interrelated affordances: classroom instruction, communication assessment and self-learning assistance.

2.2.1 Classroom instruction

Research in this domain chiefly examines how HALI systems function as instant classroom instructors who support learners' communicative competence at multiple levels — including language components (grammar, vocabulary), discourse-level competence (cohesion, coherence, organization), and macro-skills (mainly writing skills). AI as writing instructors, across various stages of the writing process — brainstorming, drafting, editing and revising — covers a wide range of functions, from identifying vocabulary and grammatical errors to

writing issues recognition, idea generation and expansion, content organization and coherence, and proofreading and correcting. HALI is particularly powerful when incorporated into a human-AI collaborative feedback system. Research indicates that AI can serve as personalized cognitive scaffolding for EFL writing tasks, offering immediate, adaptive feedback tailored to learners' individual needs in lexical choices, syntactic structures, cohesiveness and coherence, while human teachers identify and analyze weaknesses areas based on AI feedback. This helps reduce learners' cognitive load and makes them focus on targeted learning, enhancing their autonomy in writing [1]. Moreover, according to Bai and Nordin, human-AI collaborative writing instruction can boost students' writing motivation and enjoyment by reducing their lexical retrieval and facilitating a smoother writing process [1].

Nevertheless, AI also demonstrates some drawbacks in writing instruction. For example, it cannot capture subtle contextual features and is weak in advanced thinking abilities such as critical evaluation and argumentation [1].

2.2.2 Communication assessment

HALI possesses many advanced assessment methods. First, it can collect learners' interaction data continuously and make learners focus on process-oriented analyses. Smalltalk2me, for example, shows that AI facilitates multidimensional diagnosis of speaking performance, including pronunciation, vocabulary, grammar, fluency, and interactional skills, making scoring more reliable and consistent [2]. It can raise learners' metalinguistic awareness through its formative feedback, which is convenient for future review. However, there is a difference between AI and human teachers in assessing pronunciation due to biased algorithms for different spoken English. Furthermore, as a study revealed, AI tend to overestimate lower-level learners (A2-B1) and underestimate advanced learners (C2), because it prioritizes linguistic features more compared with advanced communicative abilities, such as pragmatic competence, sociolinguistic awareness, and language creativity [2].

Second, in speaking assessment systems, AI can imitate an interlocutor (as in role-play games) to elicit more interactional competence. In this way, learners need to use interactional strategies such as organizing preference, expanding sequence, and managing turns to co-construct the dialogues with machines, which provides a low-anxiety environment to display discourse competence and speech acts in various social contexts [3]. However, the evidence shows that HALI uses a different mechanism to address turn-taking tasks than human-human interaction: AI's response time tends to be longer than that of human interlocutors, and AI speech has more overlaps when addressing turn-taking problems [3]. Thus, HALI may develop certain kinds of "human-computer social and collaborative competence" that are totally different from human-only interaction.

2.2.3 Self-learning assistance

Research highlights AI's role in empowering EFL learners to direct their own learning outside the classroom, acting as coaches, partners or consultants that enhance learner autonomy and immersive practice.

As pronunciation and fluency coaches, for example, HALI tools offer immediate corrective feedback on segmental features (e.g., phoneme accuracy) and suprasegmental features (e.g., speech rate, pausing) and unlimited opportunities to practice without social anxiety, as the phonological analyses of Smalltalk2me (an AI-powered platform for speaking practice) show [2]. These tools can directly enhance phonological abilities and speaking

fluency, though they often neglect the pragmatic pronunciation varieties in authentic dialogues.

Besides, HALI tools work as patient, non-interruptive speaking partners (as exemplified by ChatGPT's voice mode) who guide learners to increase their lexical complexity and enrich their content in a low-anxiety environment [4]. However, these types of interaction often differ from human-to-human communication because they often lack social intentions which need learners' spontaneous negotiation skills (such as clarification and adaptive strategies) to achieve real-world goals.

HALI systems also play as language consultants, facilitating translation in EFL writing, which learners depend on to connect native-language thinking and English expression, and addressing cross-cultural considerations, such as cross-lingual explanatory and comparison [5]. However, the drawbacks of such tools are obvious: over-reliance on them in the long run may reduce learners' motivation to internalize vocabulary and grammatical structures, as these tools often enable learners to bypass the vocabulary retrieval and syntactic formulation. Moreover, such functions can impede learners' inferential and metacognitive strategies in writing, weakening the writing communication competence [5].

3 EFL learners' language communication competences

This section examines theories of developmental language communication competence for EFL learners. It reviews key conceptions and evolutionary frameworks of communication competence, and synthesizes them into an integrated model, which is suitable for current EFL instruction.

3.1 Theoretical foundations and evolutionary frameworks

The construct of EFL communication competence began with Hymes' questioning of Chomsky's insights into the distinction between language knowledge and language use. Hymes argued that knowing a language involves not only grammatical rules but also sociocultural knowledge of its appropriate use [6]. During the argument, he introduced the term "communicative competence", which underpins all subsequent models. To make the conception more concrete, Canale and Swain proposed the first model for effective communication competence, consisting of grammatical, sociolinguistic, discourse, and strategic competencies [7]. However, it still remained abstract until 1990, when Bachman introduced a dynamic model, depicting communicative competence as organizational competence (grammatical, textual), pragmatic competence (illocutionary, sociolinguistic), and strategic competence (engagement in problems of knowledge, context, and performance) [8]. This involves the real-time language use in communication. In the late 1990s, Byram added an important element — "intercultural communicative competence" — to the existing models, arguing that language learning should not aim to imitate a native speaker but to become a mediator between cultures [9]. In 2001, to facilitate practical application, the CEFR (Common European Framework of Reference for Languages) translated theory into a global standard, and defined learners as "social agents" who use linguistic, sociolinguistic, pragmatic competencies and strategies to finish tasks [10].

3.2 Synthesis of key components for an integrated model

Table 1 synthesizes the key theoretical contributions outlined above into a coherent model of language communication competence for contemporary EFL instruction, with each

component defined, traced to its theoretical source, and broken down into key sub-components relevant for EFL learners.

Table 1. An integrated model of language communication competence for contemporary EFL instruction

Core component	Description & theoretical source	Key sub-components for EFL learners
Linguistic competence	The foundational, code-related language knowledge. Source: Canale & Swain [7]; Bachman [8].	Phonology, Lexis (range & precision), Grammar, Orthography.
Pragmatic competence	The ability to use language to perform functions and construct coherent discourse in context. Source: Canale & Swain [7]; Bachman [8].	Functional competence (e.g., requesting, suggesting); Discourse competence (cohesion, coherence, genre); Interactional competence (e.g., turn-taking, talk management).
Sociolinguistic competence	The sensitivity to social conventions and the ability to use language appropriately within specific social contexts, relationships, and cultural norms. Source: Canale & Swain [7]; Bachman [8]; CEFR [10].	Style/Register variation, Politeness conventions, Understanding cultural references/idioms.
Strategic competence	The cognitive and communicative capacity to plan, execute, monitor, and repair communication, especially when faced with difficulties or gaps in knowledge. Source: Canale & Swain [7]; Dörnyei [11].	Compensation strategies (circumlocution, approximation); Interaction strategies (checking, clarifying, repairing).
Intercultural communicative competence	The overarching ability to navigate and mediate across cultures with language. It informs and transforms all other components. Source: Byram [9], CEFR [10].	Attitudes (openness, curiosity); Knowledge (of self and others); Discovery & interaction skills; Critical cultural awareness.

4 The impact of human-AI language interaction on EFL learners’ language communication competence

The evidence shows that integrating HALI tools into EFL learning presents significant potential and notable limitations across five key communicative competencies. Research findings reveal common areas of consensus and divergence regarding their pedagogical impact.

4.1 Linguistic competence

Regarding Linguistic Competence, studies concur that HALI has strengths in providing form-focused corrective feedback on grammar, vocabulary and syntax in a low-anxiety environment, and that it is effective in segmental pronunciation training (individual speech sounds, e.g., consonants and vowels), with automated speech recognition (ASR) systems

providing objective feedback that increases phonological awareness [2,4,12]. Studies also agree that it enhances fluency and content delivery in both spoken and written forms of conversations without social anxiety, as seen in tools like ChatGPT's voice interface and AI feedback systems for writing tasks [1,4].

However, views on language complexity development differ significantly: some studies find that it promotes lexical diversity, while others report that machine outputs tend to feature monotonous syntax, potentially limiting learners' development of language complexity [4]. There is also disagreement about the effectiveness of HALI in promoting natural prosody and intonation. While advanced AI can generate natural speech, whether it can, like a human, dynamically adjust prosody to promote learners' emotional engagement and deep understanding remains an open question [12]. Furthermore, the long-term effect of AI feedback is controversial: some studies agree on AI's benefits for form-focused accuracy, while others find its tendency to give simplistic feedback without explanation and extensive guidance, which will impede long-term language retention and internalization [4].

4.2 Pragmatic competence

In the domain of Pragmatic Competence, researchers agree that AI is useful for practicing routine speech acts and building initial functional confidence in low-stakes scenarios [3], though its discourse is often recognized as unnatural and formulaic [3,13]. There is also strong consensus that AI is currently insufficient to handle complex pragmatic cues such as irony, ambiguity, intention inference, contextual subtlety, or genre adaptability [3,13].

The divergence lies in the details of interaction. First, while most research shows that AI can simulate turn-taking, a study revealed a "striking difference": AI exhibited "longer inter-turn gaps" and "frequent overlaps", lacking contingent responsiveness and multimodal cues of human interaction [3]. Second, while studies indicate that AI can elicit learners' functional language for making requests, Timpe-Laughlin et al. pointed out that direct request strategies were more common in human-AI interaction than in human-human dialogue [14]. Third, research diverges on whether participants treat role-play tasks as co-constructed activities or as merely predetermined assessment scenarios, which can significantly affect the nature of communication [3,12].

4.3 Sociolinguistic competence

When it comes to Sociolinguistic Competence, a strong consensus emerges on major limitations. Scholars agree that current AI systems have a poor grasp of sociolinguistic nuance, struggling with context-dependent appropriateness, register variation, cultural taboos, humor and politeness [1,13]. There is also agreement that AI can perpetuate cultural and social biases present in its training data, which would potentially reinforce stereotypes rather than develop nuanced sociolinguistic awareness [12,13].

However, the fundamental divergence between the "socio-functional critique" and "techno-performance optimism" concerns the future. While some scholars maintain that rich, authentic human social feedback is irreplaceable for developing this competence, others are exploring the potential for culturally adaptive AI systems that vary responses based on simulated social variables [12].

4.4 Strategic competence

Concerning Strategic Competence, research strongly converges on HALI's value as a safe, patient environment for practicing and making learners explicitly aware of communication strategies, such as circumlocution, paraphrasing, and clarification requests. It is also found

that human-AI roleplays lack the more sophisticated strategies used in human-human interactions, including a repertoire of methods to indicate and understand relationships between speakers in the beginning, as well as a broader range of resolution strategies, such as perturbation, hitches, and beat [3].

Nevertheless, regarding the effectiveness of AI-driven strategies in human-only interactions, studies show mixed results: some report positive outcomes, whereas others note that strategies that are successful in resolving human-AI interactions may not be effective in human-only interactions due to differences in expectations and responsiveness [3,11].

4.5 Intercultural communicative competence

For Intercultural Communicative Competence (ICC), studies concur that HALI can promote cultural content and intercultural exchanges (e.g., via avatar-based scenarios or AI personas from different cultures). This allows EFL learners to retrieve cultural facts and raise cultural awareness, so that they can foster their intercultural curiosity, enhance their intercultural learning, and develop their sociocultural competence [15].

There are, however, differences in its capacity to raise critical cultural awareness and develop advanced ICC skills. An optimistic view posits AI as a useful tool for presenting comparisons between different cultural perspectives, and for central ICC skills such as discovery and interaction [15]. A critical view argues that what AI contains is merely stereotypes based on trained data, so it lacks authentic, unpredictable ICC skills and is prone to cultural biases [4]. Moreover, some scholars affirm that AI-mediated intercultural interaction lacks emotions such as empathy, ambiguity, and critical cultural awareness, while others are seeking for efficient emotion detection methods, for example, by searching a pre-defined emotional keyword database, analyzing those emotional words and phrases, and relating machine learning to emotion detections in given scripts [4].

5 Conclusion

The study has investigated HALI's impact on EFL learners' language communication competence through the lens of linguistic, pragmatic, sociolinguistic, strategic, and intercultural communicative features. Its findings show HALI's advantages in cognitive and affective scaffolding, formative assessment and feedback, self-learning assistance for accuracy and fluency, and unlimited access to practice phonology and fluency. However, it remains controversial for its role in fostering pragmatic and sociocultural competencies. These findings suggest that AI cannot be a competent replacement for human interaction and instruction to achieve language internalization and learner autonomy, although it is qualified for building specific linguistic skills and enhancing language accuracy and fluency.

The current study also identifies several methodological limitations in existing research. First, as current research mostly adopts short-term, small-scale descriptive designs, longitudinal, mixed-methods studies are needed to examine the long-term development of EFL learners' communicative competence through HALI. Second, more research should examine how differences among individual learners (e.g., learning styles, digital literacy, proficiency level) affect HALI's effectiveness. Finally, from a technological dimension, studies must evaluate AI's cultural adaptivity and emotional intelligence to determine whether they can really narrow the identified pragmatic and sociolinguistic gaps, or merely present more simulations.

For EFL educators and curriculum designers, the findings indicate that HALI tools are best used to enhance specific linguistic skills, provide formative feedback, and create unlimited speaking opportunities, but not to achieve language internalization and learner autonomy. Their pedagogical use should also be accompanied by explicit human instruction,

such as reflections on AI outputs, tasks comparing human and AI responses, and the skills of turning AI outputs into authentic contexts.

In conclusion, while HALI is reshaping EFL learners' communicative competence through personalized feedback and opportunities for practice, it cannot fulfil to cultivate flexible, empathetic, critical and socioculturally aware communication, which can only be achieved through human instruction. The future of effective language education, therefore, depends on educators who strategically use AI to handle certain skill-building while relying on human intelligence to address the strategic and sociocultural essence of language communication.

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