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Elevating Language Learning with Chatbot Technology: Promise and Pitfalls

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ABSTRACT

Chatbots are emerging as popular tools for teaching and learning in foreign language education. Their features have transformed them into conversational companions, enabling learners to engage with the language more effectively. This review establishes a theoretical framework for chatbot technology in language learning by utilising two theories, namely constructivism and connectivism. To date, numerous chatbots have been developed and implemented, showcasing their potential to provide more interactive language experiences. However, studies have also acknowledged the limitations of these tools. This review aimed to offer an overview of the application of chatbot technology in language learning by discussing the underlying theoretical concepts, examining their usage and reviewing recent research to explore both the benefits and drawbacks of chatbots on learners' language development. Future directions and innovations in this field were also presented.

INTRODUCTION

Artificial Intelligence (AI) is becoming a global trend across various disciplines, including education. One of the manifestations of AI technology in education is the rapid evolvement of Chatbot technology. Zumstein and Hundertmark (2017) defined chatbot as a computer program that stimulates "human language with the aid of a text-based language dialogue system using natural language processing" (p. 98). Derived from the fusion of "chat" and "bot", these platforms facilitate assistance through autonomous conversations or dialogues.

Today, chatbot technology is becoming a popular teaching and learning tool among educators, offering promising potential for effective and engaging activities particularly in motivating the young learners. Language educators are taking interest on the features it offers especially the "human-like" conversation which not only support the learning process but at the same time inculcate digital literacy amongst the learners. Chatbots are commonly integrated into webpages or instant messaging applications which provide convenient online access for learners to enhance their English language proficiency (Grudin & Jacques, 2019). For instance Duolingo or Mondly are amongst the popular applications used not only by the students but also working adults seeking language learning opportunities at their fingertips.

Numerous studies have explored the impact of chatbots on language learning and many findings indicated that chatbots are effective in providing technological, pedagogical and social benefits to the students (Kim, 2016; Wang et al., 2017; Xu & Warschauer, 2020; Chen et al., 2020).

However, several studies have also reported notable limitations and weaknesses of chatbots, such as limited pre-set knowledge (Grudin & Jacques, 2019; Haristiani, 2019) and its vulnerability to produce erroneous and biased information (Mosaiyebzadeh et al., 2023). These shortcomings highlight that while chatbots can enhance engagement and facilitate language practice, their pedagogical effectiveness is often constrained by technological and design limitations that require further refinement and empirical investigation.

The increasing use of chatbots in language learning has gained attention in recent years, particularly with the advancement of AI technologies such as ChatGPT. While these tools are often seen as beneficial for supporting language development, existing studies report varied findings across different contexts and language skills. Much of the literature also focuses on outcomes, with less attention given to how chatbots function as learning tools within educational settings. As such, there is a need to consider their role more holistically, particularly through technological, pedagogical, and social dimensions. Although research in this area has grown, studies often examine chatbot use in isolated ways without integrating these dimensions. As a result, the overall role of chatbots in supporting language learning is still not fully understood.

Therefore, this paper aims to examine the effectiveness of chatbot technology in language learning through the lens of technological, pedagogical, and social affordances. It seeks to provide a clearer understanding of how chatbots support language development by synthesising existing studies in the field. The paper begins with an overview of digital approaches in education and the emergence of chatbots, followed by a discussion of their theoretical foundations. It then explores their role in language learning across the three affordances before outlining future directions and potential developments.

To achieve this, relevant literature was identified through searches in academic databases such as Google Scholar, Scopus, and Web of Science using keywords including “chatbot”, “artificial intelligence”, and “language learning”. The selected studies were reviewed to identify key themes related to technological, pedagogical, and social affordances, as well as gaps in the current literature.

To guide this review, a set of research questions are formulated: (1) What are the key technological, pedagogical, and social affordances of chatbot in language learning? (2) How do these affordances collectively contribute to language learning? (3) What gaps remain in the current literature on chatbot use in language learning?

ADOPTING THE CONTEMPORARY DIGITAL APPROACH

Prior to the 21st century classroom, learning mostly took place within traditional classroom settings. Teachers played the central role of the educational process, acting as the primary source of knowledge by delivering content and providing guidance while students acted as the passive recipients of this process. However the rapid advancements of technology have triggered transformation in the education realm. Today, teacher is no longer the main character but rather a moderator, facilitator, and instructor while the students gradually taking ownership of their learning. According to Michos, Nasradin and Markovic (2019), the students today has the power to not only choose how to learn, access and share information but where and when to learn.

Examining the dynamics of the language learning classroom settings, traditional approaches often prioritise grammar and vocabulary as the core components of foreign language instruction and less attention was put on the communication skills. Resources like textbook and

methods like drilling were used to execute the teaching and learning. In contrast, contemporary approaches focused more on communicative skills. Resources also begin to shift to multimedia-based materials such as video lectures or interactive applications. Nonetheless, the role of teacher remain relevant despite the emergence of these technological advancements in the picture. Whether in traditional or modern educational settings, students continue to assert that the teacher's role is beyond mere knowledge bearer. Michos, Nasradin and Markovic (2019) highlights that teachers also serve as evaluator, mentors, educators, and motivators that shape students' academic progress and personal development. Consequently, the responsibility lies with this new generation of teachers to adapt to these changes by adjusting to the current necessity of digital age to accommodate to the learners' needs. The learning goal remains unchanged which is to enrich students' learning experience for the betterment of their academic achievement.

As we are living in an era where new technology continue to emerge, it is crucial for the existing educational system to evolve alongside it. Numerous teaching and learning approaches emerged these days such as blended learning, computer-assisted learning, flipped classrooms, virtual learning environment and many others. Blackwell et al. (2013) emphasizes that interactive technology has significantly transformed classroom dynamics which resulted implications for both teaching and learning. Moreover, a meta-analysis conducted by Haßler, Major and Hennessy (2016) highlights that leveraging technology to aid learning has generally improved students outcomes. Among these technologies, chatbots have emerged as a notable digital tool in language education, offering the ability to cater to learners' individual needs and preferences. Their capacity in offering authentic contexts for language practices paves the path for it to become one of the most promising digital methods in language learning.

THEORETICAL FRAMEWORKS

Constructivist

Two theories of constructivism form the basis for the theoretical framework explaining the chatbot technology which draw upon Piaget's constructivism and Vygotsky's social constructivism. Piaget's theory underscores the active participation of learners, while Vygotsky's theory emphasizes on the role of social and contextual interactions on knowledge construction.

Constructivism, as a theoretical framework in illustrating the learning phenomenon, posits that learners construct knowledge through the interaction between their experiences and idea. Jean Piaget introduced constructivism in the 1930s, emphasizing the active role of learners in shaping their understanding of the world. He argues that learners organize their understanding into mental frameworks called schemas which evolved with exposure to new experiences and information. Learners' schemata undergo a process known as assimilation and accommodation that trigger learners' cognitive development. Assimilation occurs when learners interpret new experiences or information within their existing schemata while accommodation involves learners adjusting existing schemata or forming new ones to incorporate new experiences or information that cannot be assimilated. According to Annamalai et al. (2023), employing chatbots for language learning aligns with the principles of constructivist learning theory as it enables learners to actively engage in their learning process as they take control of constructing their own understanding through dialogue and interaction. The nature of chatbot that constitutes natural language processing techniques can cater to learners' individual needs and requests, providing personalised learning experiences. With their interactive conversational disposition, chatbots prompts learners to pose questions or present

commands in order to gain input from the chatbot which encourage learners' active participation. By affording chances for engagement, collaboration, and problem-solving, chatbots and AI can foster the development of knowledge and understanding as well as promoting an engaging language learning process (Chang et al., 2022). It is crucial for the learners to be proactively involved with their own learning and technologies like chatbots should be leveraged as a facilitating tool in aiding this process.

Another constructivist theory, introduced by Lev Vygotsky in the 1930s, emphasises the importance of social interaction and culture in shaping learners' cognitive development. Vygotsky proposed a concept of the Zone of Proximal Development (ZPD) in his work which refers to the range of tasks or activities that learners can undertake with the assistance or guidance of a more knowledgeable individual such as teacher. While chatbots are artificial entities and lack the human touch, nonetheless, they still possess the capability to provide assistance and guidance to accommodate students' need in completing tasks, although perhaps not as effectively as a teacher. They can adjust their responses according to the learners' comprehension level and offering suitable support and challenges that match their present skills. The capacity of chatbots to respond with specific information to learners' commands or inquiries can personalize the learning experience, addressing the diverse communication styles and inputs of learners (Huang, Hew & Fryer, 2021). Moreover, by leveraging their technological features, chatbot can simulate real-life and cultural scenarios within socially mediated and collaborative virtual learning environments. Serving as digital coaches, they provide learners with assistance unbound by constraints of time and space (Scarpellini & Lim, 2020), a benefit that human coaches may not be able to offer.

Connectivism

Connectivism learning theory is a relatively new theory that promotes and accepts the use of technology as a key component in the learning process. The theory highlights the importance of networks, connections and technology in shaping how individuals learn. One of its core is that knowledge is distributed across various networks rather than being confined to individual minds. Connectivism was first introduced in early 2000s by theorists George Siemens and Stephen Downes. Siemens' approach emphasizes the social dimensions of learning while Downes focuses more on non-human appliances, such as machine- based learning and the role of technology in facilitating knowledge transfer.

According to Siemens (2004), the connectivism theory posits that learning revolves around the creation of connections and that knowledge is dispersed across networks. He states, "the starting point of learning is the individual who feeds information into the network, which feeds information back to individuals who in turn feed information back into the network as part of a cycle" (Siemens, 2004). In this framework, Siemens emphasises the active role of learners in collaborating, recognising patterns, forming connections and adapting to new information as essential skills for success in the digital age. Given the rapid evolution of information and technology, individual must possess the ability to filter content effectively to identify valuable information. Chatbots, in this context, excel by providing learners with real-time access to vast language databases which allow learners to actively collaborated with it to practice conversational skills, receive immediate feedback, and explore diverse language resources. In addition to relying on its internal database, a Chatbot may provide links to videos or articles to offer context for language use. This approach aligns with the theory of connectivism, which emphasizes learning through a network of information sources (Xiao, Zhang, & He, 2024). However, since the primary

goal of connectivist learning activities is to ensure the currency of knowledge (i.e., accurate and timeliness), it is crucial for learners to remain vigilant when retrieving information from chatbots. As there is a risk that outdated databases may be presented, learners are required to critically evaluate the responses they receive to avoid incorrect or irrelevant linguistic information.

Meanwhile, Downes (2005) focuses on the practical implications of connectivism for educational settings and learning environments. He emphasises the importance of developing Personal Learning Networks (PLNs) and highlights the role of online communities in fostering collaborative learning. One of his key advocacies is Massive Open Online Courses (MOOCs) which promotes open educational practices. It allows learners to access a wide ray of resources and connect with peers from around the world hence enhancing the learning experience. In this context, chatbots can be considered valuable tools to be integrated into open educational practices to engage learners, both in traditional classroom settings and in online environments. Besides, chatbots is also reported to be an effective tool in facilitating peer and group activities among learners (Mahmoud, 2022) which aligns with connectivism's focus on learning through networks and connections.

Conceptual Framework

This review proposes a conceptual framework to provide a structured understanding of how chatbots support language learning through the integration of constructivist and connectivist perspectives. Rather than focusing solely on outcomes, the framework offers a lens to examine how chatbot use facilitates learning across multiple dimensions. As illustrated in Figure 1, constructivist and connectivist perspectives serve as the theoretical grounding for understanding chatbot use in language learning. These perspectives inform how chatbots function as learning tools, particularly in supporting interaction, access to information, and learner engagement within digital environments.

Building on this foundation, chatbot use is conceptualised through three key affordances: technological, pedagogical, and social. Technological affordances refer to the functional capabilities of chatbots, such as accessibility and real-time responsiveness. Pedagogical affordances relate to how chatbots support learning processes, including practice, scaffolding, and learner autonomy. Social affordances highlight the role of interaction and communication in shaping language learning experiences. These affordances are interconnected and collectively influence how learners engage with chatbots in language learning contexts.

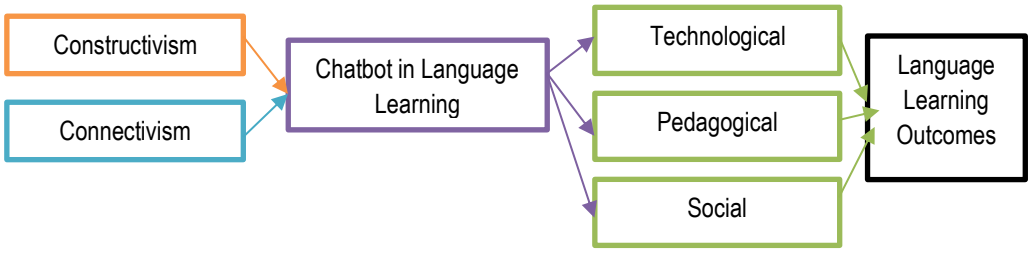

Figure 1. Conceptual framework of chatbot affordances in language learning

As shown in the framework, these affordances do not operate independently but work together in shaping language learning experiences. By viewing chatbot use through these interconnected dimensions, the framework provides a more holistic understanding of how chatbots support language development and serves as a guiding lens for synthesising the literature.

DISCUSSION

Chatbots in Language Learning

Chatbots, or chatterbots, are software agents which functions as conversational agents. They can operate through text or voice interfaces which enable human to interact with computers using natural language (Muldowney, 2017; Quarteroni, 2018). Todays, with the rapid technological advancement taking place, tons of different chatbots are built with improvised features to accommodate to the weakness of the existing ones in the market. Nonetheless, all bots shared a common foundation, which is that they are derived from Natural Language Processing (NLP) to communicate with their users based on pre-defined rules or Artificial Intelligence (AI) (Rieke & Martins, 2023). The former type of chatbot relies on predetermined rules which offers guided communication that tends to be informative. Meanwhile, the latter type uses AI to comprehend queries which allows users to have an open dialogue as it has the ability to recognise connections and references. Janarthanam (2017) asserts that AI-powered chatbots possess the capability to respond to open-ended questions and understand user concerns, even without them being explicitly programmed for such interactions.

Given its capacity to engage in conversational interactions and provide answers to queries, it becomes a useful tool in executing language learning process. Naturally for language learners to improve their language proficiency, a language partner is necessary and typically it can be either peers or language instructors. However, with the rapid advancement in AI technology, chatbots have emerged as alternative language-learning partners as well as tireless tutors available anytime and anywhere. This is particularly beneficial in situations where formal education and access to native speakers are not an option (Belda-Medina & Calvo-Ferrer, 2022). This technology not only provides opportunities for language learners to practice their language outside classrooms but also provide endless repetitions and multimodal capabilities, thereby enhancing their digital literacy skills concurrently.

Every language learners aspire to attain native-like fluency, hence, the journey can be long with numerous attempts that may trigger anxiety as their language skills are continually assessed and evaluated. However, the creation of chatbots has transformed the language learning landscape by alleviating much of this anxiety. As learners are provided with a private and personalised experience, the tendency for them to feel anxious decreased as human judgement is no longer exist within their learning space. A key advantage of using conversational AI among language learners lies on its grounds of the bots' non-judgemental character (Shawar, 2017; Radziwill & Benton, 2017). This reduction in judgemental pressure indirectly increase learners' motivation to learn the language as demotivation often stems from fear of negative evaluation by their peers and instructors. Hence, it explains why chatbot is becoming increasingly popular language learning tool in the language education sphere.

To dates, numerous chatbots are available in the market such as TalkpalAI, Duolingo, Rosetta Stone, Babbel, Mondly and many others. While they may go by different names but these chatbots shared common characteristics; they serve as platforms for conversational practice, able to provide instant feedbacks and responses, interactive by nature, provide personalised experience and are easily accessible. Whether accessed through a website or instant messaging application, language learners can conveniently learn the language without having the trouble to register for

formal classes. In fact, they can progress at their own pace due to the chatbots' 24/7 availability, thus making the language acquisition more flexible and accessible

Research on The Integration of Chatbots in Language Learning

Review of past studies on the efficacy of chatbots in language learning has yielded a variety of results, encompassing both positive and negative outcomes. The discussion of the findings was elaborated in terms of the technological, pedagogical and social aspects on learners' language learning experiences.

Technological Affordances

Examining the positive technological affordances it provides, Chen et al. (2020) in their study found that the timeliness feature allows learners to set their own learning pace, as they receive immediate responses when they interact with chatbots. This immediacy reduces the lag that typically occurs in traditional classroom or online forum interactions, where learners may need to wait for teachers or peers to respond. By contrast, the instant feedback offered by chatbots fosters a sense of continuity in the learning process, enabling students to clarify doubts, test their understanding, and adjust their approaches in real time. Such responsiveness not only promotes greater learner autonomy but also enhances motivation and engagement, since students can see the outcomes of their actions without delay and refine their strategies accordingly.

The chatbot's ability to tailor to students' needs and requests was also highlighted in Chen et al.'s (2020) findings, as students reported that it enabled them to have a more personalised learning experience. This adaptability allowed learners to receive content and guidance aligned with their individual learning styles, prior knowledge, and goals, which traditional one-size-fits-all instructional methods often struggle to achieve. Personalisation of this kind fosters a sense of relevance and ownership over the learning process, making students more invested in their progress. Adjusting the complexity or focus of responses based on the learners' input enables the chatbot to create a dynamic learning environment where students feel supported at their own level of readiness, ultimately strengthening both confidence and persistence in learning tasks. As Qadir (2023) notes, this approach is consistent with mastery learning, in which students consolidate foundational concepts at their own pace before advancing to more complex material.

The convenience of access through webpages or mobile applications was also highlighted in Chen et al's (2020) findings. This feature ensures that learners are not confined to a specific location or device when engaging with the chatbot, which aligns with the growing demand for flexible and mobile-friendly learning environments. The ability to access learning support anytime and anywhere enhances the continuity of study, particularly for students who balance academic work with personal or professional commitments. However, traditional classroom models hinge on fixed schedules and instructor availability, so comparable on-demand support cannot be reliably guaranteed (Davar, Dewan, & Zhang, 2025). Such accessibility also reduces barriers that might otherwise hinder participation, as learners can engage with the chatbot during transit, at home, or in short intervals between tasks. In this sense, the portability of chatbot-assisted learning extends educational opportunities beyond the classroom and formal study hours, thereby creating a more inclusive and learner-centred ecosystem. This practicality of chatbots in language learning besides providing a flexible environment for learners to get access to resources, it also directly helps to foster ongoing progress and improved retention.

However, the limited pre-set knowledge base of chatbots constrains their ability to address learners' complex requests, thereby reducing their overall efficiency in the learning process (Grudin & Jacques, 2019; Haristiani, 2019). Hartnett and Su's (2021) study further underscores this limitation, noting that chatbots are generally equipped to handle only rudimentary queries. As a result, although chatbots provide timely assistance, learners may struggle to fully construct meaning in language learning without the presence of an educator who can initiate and sustain meaningful multimodal communication and guide the development of abstract concepts. While the 24-hour availability and personalised learning features of chatbots remain advantageous, their technological limitations surface when confronted with context-specific requests that exceed their programmed capacity. In some cases, this reliance on scripted responses and predetermined interaction paths can also produce a monotonous learning environment, thereby reducing opportunities for authentic engagement and deeper cognitive processing.

Pedagogical Affordances

Chatbot technology has increasingly been recognised as a useful pedagogical tool, particularly in supporting vocabulary development. Through simulated dialogue, chatbots enable learners to encounter new words in meaningful contexts while encouraging repeated exposure, which is essential for both retention and flexible use (Kim, 2016; Ayedoun, 2020). More recent work further suggests that AI-driven chatbots enhance learners' strategic engagement with vocabulary learning by offering personalised and self-paced interaction, leading to improved outcomes (Hao et al., 2025). Taken together, these findings indicate that chatbots can support not only vocabulary acquisition but also the development of learning strategies. However, their effectiveness remains constrained by the design of many systems, which rely on limited scripts and lexical databases. As a result, their role is often restricted to reinforcement rather than supporting deeper and more comprehensive vocabulary development.

Beyond vocabulary learning, chatbots have also been associated with the development of higher-order thinking skills. Their dialogic nature encourages learners to ask questions, evaluate responses, and pursue further inquiry, thereby promoting critical thinking and decision-making (Goda, 2014). In this sense, chatbot interaction can extend learning beyond memorisation towards more reflective and analytical engagement. Similarly, Kim (2016) highlighted their potential in facilitating negotiation skills through interactive exchanges. Nevertheless, these benefits are not consistently realised, as many chatbot systems still depend on predetermined response patterns. This limitation may reduce the depth of interaction and restrict opportunities for sustained critical engagement.

In addition, the ability of chatbots to simulate human-like conversation allows them to function as interactive partners in role-playing activities. Such interactions provide learners with opportunities to practise pragmatic language use, test speech acts, and build communicative confidence in a low-risk environment (Yang & Zapata Rivera, 2010). Chatbots have also been employed to facilitate group discussions by managing turn-taking and sustaining dialogue, thereby promoting peer interaction (Tegos et al., 2014). Interestingly, learners may respond to chatbots as quasi-social partners, as reflected in their use of polite expressions such as "please." This behaviour aligns with findings from a Future survey reported by TechRadar, where a majority of users in both the US (67%) and the UK (71%) reported interacting politely with AI systems (Hector, 2025). While this suggests a level of social engagement, the pedagogical value of such interactions

ultimately depends on the sophistication of the chatbot. Less advanced systems risk reducing communicative practice to scripted exchanges, limiting authenticity.

Given these affordances, chatbots are increasingly positioned as "learning companions" that assist students in managing tasks and navigating learning environments. However, concerns regarding the reliability and accuracy of chatbot-generated information remain significant. Communication breakdowns may occur when chatbots fail to process complex inputs (Haristiani, 2019) or interpret incomplete language (Yin & Satar, 2020). In addition, their reliance on diverse and sometimes outdated sources makes them susceptible to producing inaccurate or biased information (Mosaiyebzadeh et al., 2023). These limitations highlight the importance of positioning chatbots as supplementary tools rather than replacements for human guidance. Learners must therefore engage critically with chatbot outputs and verify information to ensure that learning remains accurate and meaningful.makes AI chatbots vulnerable to producing erroneous and biased information (Mosaiyebzadeh et al., 2023). These limitations suggest that learners should approach chatbot interactions with caution and treat them as supplementary to human feedback. Consistent verification of information is essential to prevent overreliance on the technology and to ensure that learning outcomes remain accurate and meaningful.

Social Affordances

From a social perspective, chatbot technology can support interpersonal communication by giving learners a space to express their ideas without fear of being judged (Xu & Warschauer, 2020). This is particularly relevant to Foreign Language Anxiety, which has consistently been identified as a key barrier to learners' participation and performance in language learning, especially in speaking (Horwitz et al., 1986). When learners feel less anxious, they are generally more willing to participate and use the target language (Freiermuth & Huang, 2012; Ayedoun et al., 2015).

Chatbot interaction has also been linked to a stronger sense of social presence in online learning environments. Wang et al. (2017) found that learners felt more comfortable engaging with both simple and more complex tasks when interacting with chatbots. In a similar vein, Tai (2024) noted that AI chatbots such as Replika and Ellie may help reduce oral communication anxiety. Taken together, these findings suggest that chatbots can reduce anxiety and create a more supportive environment for language use, particularly for learners who are reluctant to participate in traditional classroom settings, which may, in turn, support more consistent language practice and gradual improvement in proficiency.

However, despite these advantages, chatbot technology still has clear limitations, especially in terms of emotional interaction. Several studies have reported that chatbot responses can feel mechanical or impersonal, which may reduce the quality of interaction and learners' sense of connection (Araujo, 2018; Go & Sundar, 2019). This matters because language learning is not only about practice, but also about meaningful interaction that involves feedback, empathy, and understanding. Fryer et al. (2017) and Hsu (2022) pointed out that limited emotional responsiveness may affect learners' engagement and development in communication. In comparison to chatbot interaction, human communication is more adaptive and responsive to learners' needs, as it involves real-time feedback, emotional support, and contextual understanding. This allows learners to engage in more meaningful exchanges that support not only language accuracy but also pragmatic and interpersonal skills. In contrast, chatbot interaction,

while useful for practice, may not fully capture these aspects, which are important for developing communicative competence.

Unlike human interaction, which is usually more flexible and responsive, chatbot conversations can sometimes interrupt the flow of communication due to their limited ability to interpret context and emotion (Gallacher et al., 2018). For this reason, while chatbots are useful for providing practice opportunities, they cannot fully replace human interaction. Instead, they are better used as a supporting tool, particularly in situations where emotional support and natural communication are important.

FUTURE DIRECTIONS AND INNOVATIONS

The discussion of previous studies highlights both the benefits and limitations of integrating chatbots into language learning. While chatbots have been recognised as useful tools for supporting learning continuity, particularly during emergency situations such as the COVID-19 pandemic (Annamalai et al., 2023), much of the existing literature has focused on their immediate functional benefits rather than their long-term pedagogical impact. For instance, chatbots have commonly been used to provide instant feedback on writing tasks or to simulate simple conversational practice during remote learning. However, there is still limited research examining how chatbot use can be systematically integrated into classroom practices to support specific learning outcomes beyond general engagement.

Another gap in the literature relates to linguistic inclusivity. Many existing chatbot datasets remain heavily centred on English, which limits their effectiveness for learners of other languages. As highlighted by Petrovic and Jovanovic (2021), this imbalance constrains the potential of chatbots as inclusive language-learning tools. Current research has yet to sufficiently address how multilingual chatbot systems can be designed to support learners across different linguistic and cultural contexts, such as allowing learners to switch between languages or engage in culturally relevant dialogue scenarios.

In addition, limited attention has been given to the role of collaboration among key stakeholders in the development and implementation of chatbot technology. While studies have acknowledged the potential of chatbots in education, there is a lack of empirical research exploring how educators, curriculum developers, and chatbot designers can work together to ensure that chatbot functionalities align with pedagogical goals. This gap suggests that chatbot integration is often approached from a technological perspective, with less emphasis on educational design and classroom realities.

Given these gaps, future research should move beyond examining general benefits and focus on how chatbot interaction can support specific aspects of language learning, such as speaking fluency, vocabulary retention, and communicative competence. There is also a need to explore the development of multilingual and culturally responsive chatbot systems. In practice, closer collaboration between educators, curriculum developers, and designers may help ensure that chatbot technology is more effectively aligned with learners' needs and educational objectives.

CONCLUSION

This review highlights the role of chatbot technology as a conversational companion in language learning, offering accessible opportunities for practice and supporting learners' confidence in communication. While chatbots can enhance engagement and interaction, their effectiveness

depends on how they are meaningfully integrated into learning activities rather than used as standalone tools.

The findings also suggest that the impact of chatbots may be influenced by the novelty effect, where initial engagement may not be sustained over time (Fryer et al., 2019; Ayedoun et al., 2019). This highlights the importance of structured and purposeful use in classroom contexts. In practice, chatbots can be incorporated into activities such as guided speaking, vocabulary reinforcement, and writing support, complementing human instruction. At the institutional level, clearer guidelines and teacher training are needed to support effective implementation.

Despite their potential, several gaps remain, including limited attention to long-term learning outcomes and the need for more systematic investigation. This review is also limited by its scope and non-systematic approach. Future research should therefore focus on more sustained and pedagogically grounded uses of chatbot technology in language learning.

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