Usability of ChatGPT in Second Language Acquisition: Capabilities, Effectiveness, Applications, Challenges, and Solutions

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INTRODUCTION

Chatbots have dramatically influenced the way people learn a new language. They have the potential to be a perfect language partner, enabling learners to learn language anytime, anywhere, and at their own pace (Fryer et al., 2020). A chatbot is a computer system or artificial intelligence (AI) that engages in conversations with users on specific subjects or domains, and it provides intelligent and natural language responses through audio or text (Haristiani et al., 2019). Artificial Intelligence is the capability "that is predicted by machines through the natural cognitive abilities displayed by humans" (Fitria, 2021, p. 1). Previous chatbots, such as Gengobot (Haristiani et al., 2019) and Cleverbot (Fryer et al., 2020), have demonstrated a strong potential for integrating AI-powered chatbots to enhance language learning skills, such as writing skills. However, they were not widely used as a language learning tool due to their technological limitations, such as their inability to understand natural language (Fryer et al., 2020). Since the release of ChatGPT by OpenAI in November 2022, an increasing number of studies (e.g., Imran & Almusharraf, 2023; Athanassopoulos et al., 2023) have been done to examine the role of ChatGPT in second language learning. ChatGPT is an AI-powered chatbot that utilizes a *Large Language Models* (LLMs), which can generate human-like text (Bender et al., 2021). ChatGPT can understand the text input, generate contextual responses, and complete various language-related tasks (Kasneci et al., 2023). The potential of ChatGPT in language learning is diverse, including assisting in language skill development, providing personalized practice materials, and support for writing, research, and problem-solving tasks (Kasneci et al., 2023). The unique capabilities of ChatGPT, particularly its natural language processing (NLP) capabilities, provide a new dimension to language acquisition, enabling timely interactions between humans and chatbots and context-based conversations with users' input. As an AI-powered tool, ChatGPT transcends the limitations of traditional chatbots, enabling learners to have more personalized and engaging language learning experiences (Flores Limo et al., 2023). This has opened doors to exploring its efficacy as a language learning tool, especially in enhancing critical language skills such as vocabulary, grammar, and conversational fluency, in different educational contexts (Flores Limo et al., 2023). While ChatGPT has great potential to be a second language learning tool, it is important to know how learners actually interact and engage with ChatGPT as it exists with generic potentials, "not primarily for language pedagogy" (Bin-Hady et al., 2023, p. 2). This characteristic of ChatGPT brings challenges for second language learners to use ChatGPT as a learning tool. Its strong ability to generate texts and ideas based on LLMs can lead to "academic misconduct" (Jacob et al., 2023, p. 3) and copyright concerns (Kasneci et al., 2023).

Despite the considerable attention ChatGPT has received in language learning, a noticeable gap persists in detailed research focused specifically on its usability in second language acquisition (SLA). While previous studies have laid the groundwork, a detailed exploration into how ChatGPT can be optimally utilized in language education still needs to be explored. This literature review aims to bridge this research gap by systematically investigating the capabilities and features of ChatGPT in the context of second language learning, analyzing its effectiveness from mainly qualitative perspectives, and exploring its diverse applications in various educational scenarios and the concerns it may bring. Therefore, the objectives of this review are fourfold. Firstly, this paper delves into the technical capabilities and features of ChatGPT that make it a suitable tool for language learning. Secondly, the paper reviews literature that demonstrates the effectiveness of ChatGPT in improving language learning outcomes, including language proficiency, learning autonomy and motivation, and contributing factors such as ease of use. Thirdly, this literature review examines the applications of ChatGPT in various educational settings and scenarios. Lastly, the paper identifies challenges faced by learners and potential solutions proposed by scholars.

This investigation is significant not only for understanding the role of ChatGPT in language education but also for providing an empirical basis for the broader effectiveness of AI tools in educational contexts. In addressing these objectives, this paper will contribute to the existing body of knowledge by providing insights into the practical applications and potential of ChatGPT in second language acquisition. It will explore the technical capabilities of the chatbot, such as its natural language processing capabilities, the qualitative impact it has on learners, and the issues that remain to be solved during the application. By analyzing various educational contexts and learner experiences, this review aims to offer a comprehensive understanding of ChatGPT's role in modern language education and pave the way for future research and development in *AI-assisted Language Learning* (AIALL).

BACKGROUND

Technology-based tools have played a crucial role in enhancing second language education, both by supporting instructors and enriching students' learning experiences. Prior to the rise of AI technologies, the educational field saw the integration of various non-AI technological tools aimed at improving language learning processes. For example, automatic writing evaluation (AWE) tools and automatic scoring systems were introduced, allowing teachers to efficiently assess students' assignments for grammar and spelling accuracy (Alharbi, 2023). Additionally, platforms like Quizlet have significantly enhanced engagement and learning efficiency in vocabulary classes within English language learning programs across the United States (Cunningham, 2017). Furthermore, resources such as YouTube have served as invaluable online corpora, offering authentic language learning materials to students in these programs, thus broadening their exposure to real-world language use (Fuchs & Akbar, 2013). Each of these examples underscores the transformative impact of technology on language education before the integration of advanced AI solutions. Building on the established groundwork of non-AI technologies like AWE systems and interactive platforms such as Quizlet, the progression towards incorporating AI in language education marks a significant shift. This transition signifies an evolution from established methods to innovative, AI-driven approaches, offering a deep level of engagement and personalized learning experiences in language education.

Before the advent of ChatGPT, the integration of AI into second language education tools had already begun to transform teaching and learning experiences. For example, AWE has become AI-powered. It can not only be used for grammar or spelling checks but also to provide assistance in identifying issues in writing and offering writing suggestions (Alharbi, 2023). The corrective feedback (CF) provided by AWE is now primarily based on AI systems that collect a large amount of data and then process them by using "artificial neural networks and machine learning technologies" (Alharbi, 2023, p. 1). Other types of tools, such as Bing Translator, which also applies AI algorithms, are used to improve language learners' writing abilities. This AI-powered machine translation using artificial intelligence and natural language processing (NLP) techniques turns out to provide more effective and accurate word choice compared to dictionaries (Lee, 2020).

Apart from writing abilities, AI has also demonstrated its potential to improve second language learners' capabilities to conduct conversations. For example, Hill et al. (2015) compared human-human online conversations and human-chatbot (Cleverbot) conversations, and found that people communicated with Cleverbot for longer durations. Similarly, Ayedoun et al. (2015) utilized a semantic approach to showcase the positive influence of incorporating a conversational agent in the context of English as a Foreign Language (EFL). They used the conversational agent to create an immersive environment, enabling learners to simulate diverse daily English conversations. The results indicated a reduction in learners' anxiety and an increase in their self-confidence when using English. While these previous AI-supported tools, including Cleverbot, have exhibited the potential of incorporating AI techniques into personalized and engaging language learning, they were not widely used as language-learning tools due to their technological limitations, such as their inability to understand natural language (Fryer et al., 2020). ChatGPT, however, as an LLM that has been trained on a large set of data, allows it to be a more suitable tool for language learning. Its underlying sophisticated AI algorithms provide a subtle comprehension of language details and learner interactions.

While there is an increasing number of studies describing how ChatGPT may benefit second language learners due to its advanced AI techniques, there is a lack of comprehensive research on ChatGPT's specific applications in second language learning or its effectiveness across different educational settings.

TECHNICAL CAPABILITIES AND FEATURES OF CHATGPT IN SLA

ChatGPT is designed for generic use rather than solely for language learning purposes (Bin-Hady et al., 2023). Yet, some of its key features, such as robust NLP capabilities, adaptability, and interactive features, make it well-suited to provide personalized and engaging second language learning experiences. While NLP models, the technology underlying ChatGPT, have existed since the mid-20th century, their potential in applications for language learning had not been not fully realized until recent advancements in deep learning and the availability of large datasets (Kang et al., 2020). These technological innovations have significantly enhanced the effectiveness of tools like ChatGPT in educational settings, particularly for language instruction.

ChatGPT is one of the latest advanced deep learning models in the series of Generative Pre-trained Transformers (GPTs) developed by OpenAI, released in 2022 (Kim et al., 2023). It is capable of processing and analyzing extensive textual data, including scholarly articles,

educational texts, and other learning materials, as it has been exposed to a large amount of data at the pre-training stage (Flores Limo et al., 2023). As Kim et al. (2023) point out, the specific model that contributes to ChatGPT's strong NLP technique is the Deep Bidirectional Transformer-based Language Model (DBTLM). It is distinguished from other models, as it enables ChatGPT to analyze the text from two directions (left to right and right to left) simultaneously, which allows for a deeper understanding of context and meaning within a sentence or paragraph (Kim et al., 2023). What is more, ChatGPT has demonstrated exceptional performance in a range of NLP tasks, including capabilities in text completion, translation, summarization, and responding to questions (Kim et al., 2023). In the realm of SLA, research (e.g., Kasneci et al., 2023) has shown that ChatGPT is effective in aiding the development of language skills, offering customized practice resources, and offering support in writing, researching, and tackling problem-solving activities. Additionally, building on its robust NLP skills, ChatGPT has technical strengths in adaptivity and interactivity due to its fine-tuning process and its transformer architecture, which allows it to facilitate more personalized and engaging second language learning experiences. For example, in a language classroom where learners are preparing for an upcoming oral exam in Spanish, they can use ChatGPT as a virtual conversation partner for each student. Each student interacts with ChatGPT by typing or speaking in Spanish, and the model responds in kind, simulating a natural conversation. In this way, students receive individualized practice tailored to their language level, enabling them to refine their conversational skills in a low-pressure environment. Meanwhile, the real-time feedback that they receive will make the learning process more engaging.

Recently, ChatGPT has been enhanced by a process known as ChatGPT reinforcement learning with human feedback (RLHF), where human specialists refine the AI's output, making it more attuned to specific user needs (Chen et al., 2023). This technological foundation allows ChatGPT's LLM-powered chatbot to be able to adapt to each student's unique learning style, needs, and proficiency level, which facilitates personalized learning (Flores Limo et al., 2023). This aligns with research which suggests that students have distinct learning preferences, such as visual, auditory, and kinesthetic modalities (Lin, 2023). ChatGPT can determine the preferred learning styles of users through the analysis of their interactions (Flores Limo et al., 2023). For learners who request more visualized feedback, for instance, it tends to create targeted visual aids like charts and diagrams, enhancing their memory retention and understanding (Flores Limo et al., 2023). The fine-tuning also enables users to ask specific follow-up questions and refine the responses to align more closely with their specific educational objectives or other needs (Flores Limo et al., 2023). For instance, consider a student using ChatGPT to study French. The student initially asks, "Can you explain the use of subjunctive mood in French?" Then, ChatGPT provides a general explanation. However, suppose that the student needs more specific guidance and asks a follow-up question, "Can you give examples of the subjunctive mood in sentences related to health topics?" Acknowledging this request, ChatGPT can then offer tailored examples and exercises (e.g., "Il est important que tu te reposes pour améliorer ta santé"; It is important that you rest to improve your health) and align its response more closely with the student's interest in health vocabulary. In this case, ChatGPT demonstrates its ability to cater to specific educational needs, providing more personalized and relevant learning experiences. In addition, it can provide learning opportunities for learners with different proficiency levels (Xiao & Zhi, 2023). In this sense, it is capable of offering the learner "personalized customized solutions and suggestions" based on their current language level and ability (Liao et al., 2023, p. 41).

Underlying the remarkable capabilities discussed above, ChatGPT employs a Transformer-based architecture that enables parallel processing and text generation, leading to quick response times and facilitating more immediate interactions (Wang et al., 2023). This technological advancement enables ChatGPT to offer students interactive and engaging learning experiences, aligning with both Long's (1980) Interaction Hypothesis and Krashen's (1982) Input Hypothesis, which, respectively, suggest that meaningful interaction and comprehensible input are crucial for language acquisition. ChatGPT can also create authentic learning materials, such as dialogues, news articles, or reading passages, that match and challenge learners' proficiency levels through human-ChatGPT interactions (Baskara, 2023). The authentic and comprehensible input just above the learner's current level provided by ChatGPT can facilitate effective language learning according to Krashen's (1982) input hypothesis. Similarly, by engaging students in interactive conversations and offering immediate feedback, ChatGPT "allows language learners to enact new meaning-making practices" (Liu & Ma, 2023, p. 2). Through the feedback provided by ChatGPT, learners would be able to see how their language production is perceived by the LLM and how they can improve their language use for different purposes, which corresponds to Long's (1980) interaction hypothesis. These technical strengths of ChatGPT, including the NLP capabilities, adaptability, and interactive features, build a solid foundation for its being an effective language learning tool despite its generic usage. This section has outlined the theoretical potential of using ChatGPT in language learning, drawing on its technical capabilities. Its strong NLP abilities, adaptability and interactive elements can make second language learning experiences more personalized and engaging. In the following section, the empirical studies demonstrating how ChatGPT enhances learners' language skills, autonomy, and motivation in real-world settings are presented and reviewed.

IMPROVING LANGUAGE ABILITIES, LEARNING AUTONOMY AND MOTIVATION THROUGH CHATGPT

Despite ChatGPT being released quite recently in 2022, there is empirical evidence indicating that ChatGPT aids learners in enhancing their acquisition of grammar, vocabulary, and writing skills. For instance, in a quasi-experimental study, Haggag (2023) observed third-year EFL majors at an Egyptian university using ChatGPT over a period of time to learn grammar and found a significant improvement in their English grammar scores. This enhancement was evident when comparing pretest and post-test results, with scores markedly higher in the post-test, following the participants' engagement with ChatGPT. Likewise, Xiao and Zhi's (2023) study examined the impact of ChatGPT on learners language proficiency and found that most of the participants reported during interviews that ChatGPT has improved their "grammar, vocabulary, and essay coherence" (p. 6). Specifically, one of the participants claimed that ChatGPT provided suggestions on the logical structure of her essays written for IELTS preparation, pointing out her well-connected ideas and highlighting areas that needed improvement (Xiao & Zhi, 2023).

Other studies confirm that ChatGPT can be used to improve second language learners' writing skills. Yan (2023) utilized methods of class observation and interviews, finding that ChatGPT enhanced students' writing abilities by offering interactive feedback on their compositions. It provided grammatical corrections, suggestions for stylistic improvements, and guidance on their writing structure for the students. A similar outcome was found in Athanassopoulos et al. (2023), conducting a quasi-experimental study that revealed that Greek

high school students with immigrant and refugee backgrounds were able to write emails with more diverse vocabulary and complex grammar after interacting with ChatGPT. In both empirical studies, ChatGPT was found to be effective in enhancing students' second language writing abilities, providing empirical support for the potential uses of ChatGPT in improving language proficiency.

Other scholars argue that ChatGPT can also improve second language learners' reading, listening, and speaking skills. Baskara (2023) claims that learners can improve their reading and comprehension skills through exposure to authentic language materials generated by ChatGPT, such as reports, newspapers, recipes, and so on. Atlas (2023) similarly argues that ChatGPT can enhance learners' listening and speaking skills. ChatGPT is able to facilitate learners' vocabulary acquisition by providing real-time translation from their native languages to English, through which students can check their understanding of the vocabulary and improve their comprehension (Atlas, 2023). ChatGPT can also offer a personalized vocabulary lists and exercises depending on the topic chosen by learners, allowing learners to focus on the words that are relevant to their needs and interests efficiently (Atlas, 2023).

While there is a lack of empirical studies showing the influence of ChatGPT on students' listening and speaking skills, research has suggested that it has potential. For example, Atlas (2023) argues that ChatGPT can be a virtual language partner for students to practice their speaking and listening skills through conversations. To be specific, learners can ask a question or make a statement in English, and ChatGPT can respond appropriately or ask follow-up questions as if students were conversing in real-life settings. In this way, students can practice their speaking and listening skills in a more immersive environment (Atlas, 2023). Nevertheless, to achieve this goal, ChatGPT's speech synthesis and recognition functions need to be activated through the installation of "human-computer pair training of listening and speaking in Google Chrome control" (Liao et al., 2023, p. 42). While these conceptual studies indicate ChatGPT's strong potential in facilitating language learning, whether these methods are effective or not needs to be verified through empirical studies and statistics.

Empirical studies have indicated that second language learners' learning autonomy (Agustini, 2023) and motivation (Yildiz, 2023; Ali, et al., 2023) can be improved with the aid of ChatGPT. Drawing on Krashen's (1982) Affective Filter Hypothesis, which argues that emotional factors such as motivation, self-confidence, and anxiety levels can either facilitate or hinder language acquisition, these enhancements in learning autonomy and motivation are crucial, as they lower the affective barriers to language acquisition, creating an optimal environment for the intake of comprehensible input and facilitating more effective second language learning. To illustrate the impact of ChatGPT on learner autonomy, Agustini (2023) carried out semi-structured interviews with Indonesian high school English learners and performed a thematic analysis. The results showed that ChatGPT increases the learning autonomy of the participants by providing tailored language learning support, promoting self-reflection and self-evaluation, enabling practice in language skills, and offering instant feedback to learners (Agustini, 2023). These features of ChatGPT help students "take ownership of their learning process" (Agustini, 2023, p. 930) and be more self-directed in their language acquisition.

Other recent studies have found similarly positive outcomes on learner motivation. For instance, a quasi-experimental study by Yildiz (2023) showed that students are more motivated to engage with the vocabulary learning materials for the post-lesson activities with ChatGPT-generated dialogs compared to the ones without the assistance of ChatGPT. Specifically, the

study found that the usage of ChatGPT positively impacts learners' "self-regulation, intrinsic value, and test anxiety in language learning" (Yildiz, 2023, p. 592). Similarly, Ali et al. (2023) claim that ChatGPT enhances English learning motivation by providing learners with a tool to develop their reading and writing skills based on students' out-of-class usage experiences. These studies together underscore the intersection between ChatGPT's capabilities and Krashen's (1982) theory, illustrating how the tool's support for autonomous learning and motivation can directly contribute to lowering the affective filters associated with second language learning. By providing an environment that nurtures autonomy and motivation, ChatGPT effectively facilitates the acquisition of language skills, aligning with Krashen's principles for optimal second language learning.

The ease of use of ChatGPT emerges as a significant facilitator for enhancing learners' motivation and autonomy in English language learning, as evidenced by recent investigations (Shaikh et al., 2023; Ahmed, 2023). These studies delve into users' experiences with ChatGPT, particularly focusing on its applicability in formal English language learning environments. A notable finding across these studies is the consensus among users on ChatGPT's user-friendliness and accessibility. Shaikh et al. (2023) highlight that EFL learners of varied ages and genders uniformly describe ChatGPT as "user-friendly and easily accessible," attributing to it a positive impact on their language learning journey (p. 1952). The platform's "effortless, seamless, and friendly interface" not only facilitates a superior user experience but also fosters an engaging learning environment (Shaikh et al., 2023, p. 1952). Furthermore, Ahmed (2023) notes that EFL learners in Saudi Arabia specifically appreciate the ease of use offered by ChatGPT over traditional teacher-mediated writing sessions, suggesting a preference for the autonomy and flexibility that digital learning tools can provide.

By reducing barriers to access and interaction, ChatGPT significantly lowers the cognitive load on learners, allowing them to focus more on the substantive aspects of language learning rather than navigating the tool itself. Consequently, this ease of engagement with the platform can lead to increased motivation, as learners find the process less overwhelming and more rewarding. The enhancement of motivation and autonomy also lays a crucial foundation for second language learning in different learning contexts.

PRACTICAL USAGE OF CHATGPT IN DIFFERENT LEARNING CONTEXTS

The technical capabilities and strengths of ChatGPT, as well as its effectiveness in enhancing second language learning outcomes, allow it to be used in diverse language learning contexts. This section explores the dual role of ChatGPT in language learning environments as (i) its conventional use under teacher supervision in structured classroom settings and (ii) its emerging potential in facilitating autonomous learning among second language learners. While traditional approaches emphasize the indispensable role of teachers in guiding and enriching the learning experience, recent studies suggest that ChatGPT can extend beyond mere assistance to actively enhance key language skills independently. For instance, research during the COVID-19 pandemic highlighted technology's pivotal role in supporting second language learning as teaching and learning shifted online at all educational levels due to lockdowns (Klimova, 2021). However, Ariebowo (2021) found that students were less motivated to learn due to a lack of engagement in tasks such as blogging. Despite recognizing the effectiveness of online courses,

students still emphasized the crucial role of teachers in learning second languages, particularly in providing pedagogical, intellectual, social, technical, and managerial support.

In structured classroom settings, ChatGPT has been utilized under teacher guidance to enhance students' language learning. Researchers, such as Bin-Hady et al. (2023), who emphasize the teacher's role in using ChatGPT for language learning, argue that ChatGPT could mainly just assist language learning by "providing teaching material and answering students' questions" (p. 2). Those researchers holding this perspective argue that ChatGPT can only replace the pedagogical and intellectual role of teachers. However, empirical studies have also shown that ChatGPT can be integrated into structured classes with teachers' instructions by giving students intellectual feedback on their questions or requests. For example, in Yan's study (2023), students used ChatGPT during a teacher training program to receive feedback, improving their writing skills under the observation of the instructors. While Yan's research (2023) did not implement a specific curriculum, the study illustrated how instructors used ChatGPT to fulfill a variety of roles in the classroom (e.g., tracking student progress and areas for improvement). They gave students instructions on how to interact with ChatGPT and made sure they had reflection after using ChatGPT to promote the complete learning process. Similarly, Athanassopoulos et al. (2023) argue that ChatGPT mainly provided feedback to improve students' grammar and vocabulary, playing pedagogical and intellectual roles. What is more, instead of letting students directly interact with ChatGPT, the instructors obtained the feedback and gave it to the students. In this case, the teachers provided much more support in the technical aspect. These studies demonstrate how ChatGPT can be used in structured class settings, under teacher guidance, offering valuable feedback on language skills such as writing, grammar, and vocabulary.

Contrary to the idea that ChatGPT can only assist teaching, studies have shown successful usage of ChatGPT in autonomous language learning. For instance, research by Xiao and Zhi (2023) explored Chinese EFL undergraduate students' use of ChatGPT for out-of-class language learning tasks. The results showed that by using ChatGPT, learners perceive improvements in grammar, vocabulary, and essay coherence (Xiao & Zhi, 2023). One participant highlighted how ChatGPT offered insights on organizing her essays for IELTS preparation, noting the coherence of her ideas and identifying improvement areas. During this process, ChatGPT played different roles for teachers. From the pedagogical and intellectual perspective, it provided effective suggestions on student writing, especially for its organization. Meanwhile, ChatGPT also played the social role of the teacher by responding to the student's follow-up questions in a friendly way, providing students with a pleasant learning environment. Moreover, the user-friendly interface of ChatGPT requires fewer technical skills of the student. Finally, its managerial and organizational ability can be showcased when it helped students list out the areas that they needed to improve, setting the objectives for her.

Overall, these studies suggest that ChatGPT has the potential to play the multifaceted roles of teachers and become a tool for second language learners' autonomous, self-driven learning. However, without the guidance of instructors, ChatGPT's strong capability in text-generating raises concerns for its autonomous use in schoolwork.

CHALLENGES AND POSSIBLE SOLUTIONS

While ChatGPT's advanced technical features offer significant benefits for language learners, they also present considerable challenges that could undermine educational integrity and learning outcomes. ChatGPT's sophisticated text-generating capabilities allow it to produce detailed and contextually appropriate responses based on user prompts. For instance, with a prompt such as "Write me an essay on the topic of Old English," ChatGPT can generate complete essays. This feature poses a risk, which is that students might rely on ChatGPT to complete assignments. By using ChatGPT in this way, students will miss the learning opportunities intended to develop their language skills and critical thinking. Unfortunately, at this time, current techniques are not able to fully detect the text generated by AI (Lancaster, 2023). As a result, second language learners can use ChatGPT to generate homework, such as essays, at a low risk of being caught. To prevent such cheating from happening, some scholars (e.g., Kasneci et al. (2023), argue that the use of ChatGPT should be restricted in academic contexts. However, other researchers (e.g., Warschauer et al., 2023; Xiao & Zhi, 2023) argue that its usage should not be prohibited since it is possible to use it wisely and appropriately for language learning. However, beyond the issue of cheating, several other practical concerns regarding the use of ChatGPT in academic writing by second language learners warrant consideration and discussion. These include the challenge of crafting effective prompts and the emergence of new forms of academic dishonesty.

While ChatGPT is user-friendly, students face challenges in effectively utilizing it for language learning. For example, Warschauer et al. (2023) highlight the difficulty second language learners have in crafting effective prompts to produce useful content for supporting writing skill development. Meanwhile, the strong text-generation ability of ChatGPT can tempt learners to use AI-generated text to complete their assignments as a shortcut, which may lead to plagiarism or academic dishonesty (Warschauer et al., 2023, p. 8). Considering this unfortunate role of ChatGPT in cheating, Yan (2023) has proposed an extension of the term "plagiarism" to include the use of AI-generated text and automatic paraphrasing with AI-based tools, including ChatGPT. Warschauer et al. (2023) also indicate that some learners who want to develop their language proficiency may unintentionally misuse AI-generated writing tools, such as patchwriting, which can also lead to academic dishonesty, since they fail to engage in real learning and skill development.

These challenges for learners to effectively use ChatGPT as a second language learning tool emphasize the importance of developing AI literacy. Warschauer et al. (2023) propose an AI literacy framework that involves understanding, accessing, prompting, corroborating, and incorporating AI in the language learning and writing process. To be specific, students need to understand the capabilities, strengths, and limitations of AI writing tools to make good use of them. For example, students need to understand that AI is trained by big data, and things that AI generates may have biases depending on the quality of the data. According to Warschauer et al. (2023), students also need to learn to "access and navigate the AI-writing tools across specific communication tasks" (p. 12), by considering contextual factors and aligning AI functions with their specific writing needs. For instance, a student might use ChatGPT to get help with vocabulary for a basic language exercise. They type simple sentences as input and use ChatGPT to explore different word choices, enhancing their understanding and new vocabulary in context. Such usage shows how students can align their learning needs with AI tools like ChatGPT. What is more, prompting is also crucial to achieve the learning goals. Effective prompts lead to useful and relevant content. Moreover, learners need to corroborate the accuracy of AI-generated output. They need to understand the underlying mechanism of AI-writing tools to help them

make decisions about their use in language learning and writing tasks (Warschauer et al., 2023). ChatGPT, as an LLM, can produce input with potential biases and low quality (Kasneci et al., 2023), generate generic and vague responses, and create fake citations due to the probabilistic nature of its predictions (Jacob et al., 2023). By understanding how it works, learners may evaluate the input more critically and avoid academic dishonesty without using fake citations. Finally, students need to be able to "incorporate AI-generated text in their own writing ethically and effectively" (Warschauer et al., 2023, p. 15). They need to learn how to acknowledge the use of ChatGPT without compromising the integrity of their writing.

As a starting point, the AI literacy framework created by Warschauer et al. (2023) provides a structured approach for ELL learners to use ChatGPT for their English learning tasks, especially writing tasks, in an effective way, while maintaining academic integrity. In support of Warschauer's ideas, Jacob et al (2023) examined a student's appropriate usage of ChatGPT in a case study tracking one doctoral student's use of the AI tool. This study found that the doctoral student effectively collaborated with ChatGPT across various writing stages, including brainstorming, outlining, and editing, while preserving her distinct authorial voice and agency throughout her doctoral studies (Jacob et al., 2023). The student managed her use of ChatGPT by carefully revising the output to ensure that it aligned with her own voice and writing style. This example reflects a practical and beneficial use of ChatGPT in academic writing, demonstrating its potential as a tool for English language learning and writing tasks. However, the doctoral student was also aware of the eloquent tone of ChatGPT-generated texts and the importance of keeping her own voice in the writing (Jacob et al., 2023).

Such awareness is referred to as AI literacy by Warschauer et al (2023), which is important yet often lacking among many second language learners. While the doctoral student's case demonstrates how AI literacy can enable second language learners to effectively utilize ChatGPT as an assistant tool in their academic work, it is important to note that this is just a single example and may not represent the broader experiences of all learners. Yet, developing AI literacies of language learning could be a possible solution.

DISCUSSION AND CONCLUSION

Through a systematic exploration of its technical capabilities, effectiveness, practical applications, challenges, and solutions, this literature review has uncovered valuable insights that shed light on the transformative potential of ChatGPT in language education. Firstly, this study emphasized ChatGPT's robust NLP abilities, adaptability, and interactive features as key technical capabilities or features. These attributes enable personalized and engaging language learning experiences by facilitating a deeper understanding of context and meaning within conversations. The reinforcement learning with human feedback (RLHF) process enhances ChatGPT, allowing it to adapt to individual learning styles and proficiency levels. The capability and features support the creation of tailored learning materials and interactive experiences that align with the learners' needs.

Secondly, this paper addressed the effectiveness of ChatGPT through the demonstration of empirical research and studies, which show significant improvements in language learning outcomes, including grammar, vocabulary, and writing skills. The incorporation of ChatGPT into language learning has been shown to enhance learning autonomy and motivation among learners, crucial factors that lower the affective barriers to language acquisition. The application of

ChatGPT is discussed in two different learning contexts. In the context of SLA, ChatGPT can be applied in both structured classroom settings and autonomous learning environments. In structured settings, ChatGPT assists by providing teaching material and intellectual feedback, while in autonomous learning, it serves as a multifaceted tool that supports various aspects of language learning without direct instructor intervention. This dual application underscores ChatGPT's versatility as a language-learning tool.

In the context of real-world applications, the challenges of applying ChatGPT in academic settings and the possible solutions have been identified. Despite its potential, the use of ChatGPT in language learning raises concerns about academic dishonesty and the need for AI literacy among learners. The challenge of crafting effective prompts and the risk of misuse highlight the necessity for structured guidance in using AI tools ethically and effectively. With AI literacy, ChatGPT can be used appropriately and become a beneficial tool for second language learners in different contexts.

As we look forward to the future, the possibilities for using ChatGPT to enhance language education are vast. Its flexibility and interactive capabilities open up new opportunities for teaching methods, offering more accessible, personalized, and effective language learning experiences for learners across the world. However, realizing this potential requires a collaborative effort between educators, researchers, and technologists. In conclusion, this research highlights the significant role that ChatGPT can play in transforming how languages are learned. It invites the educational community to grab the opportunities that this technology offers, while also considering the ethical implications of its use. This paper contributes to the growing field of second language acquisition and technology-assisted learning, setting the stage for further investigation and innovation in this area.

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