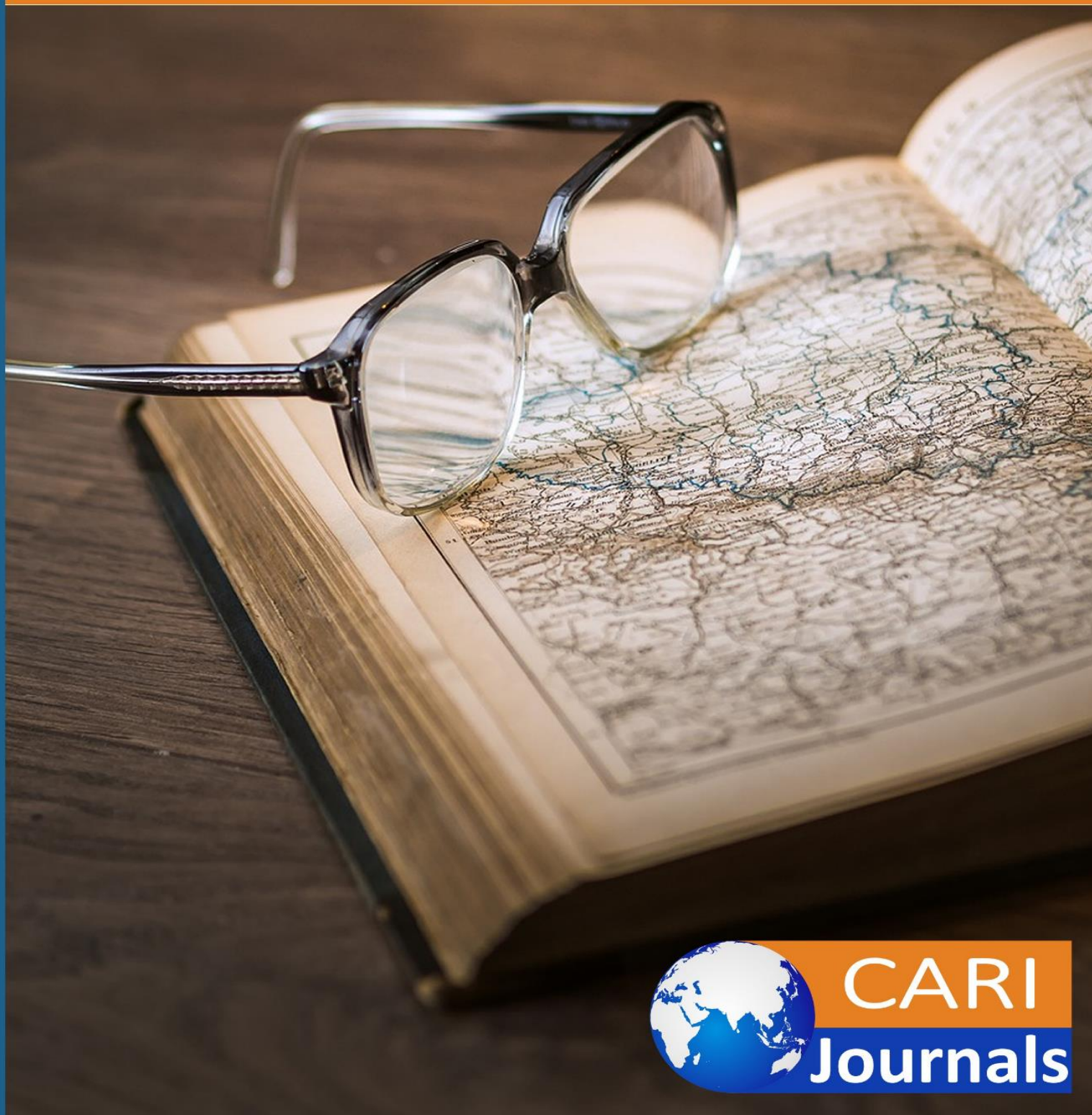
International Journal of
Humanity and Social Sciences
(IJHSS)

AI-Driven Chatbots as Language Tutors: Enhancing Written Proficiency in ESL



CARI Journals

International Journal of Humanity and Social Sciences
ISSN: 3005-5407 (Online)
Vol. 3, Issue No. 5, pp. 78 – 95, 2024
ww.carijournals.org

AI-Driven Chatbots as Language Tutors: Enhancing Written Proficiency in ESL

[1]Jayasri Lingaiah, [2]Siti Norashikin Ishak, [3]Pradip Kumar Mishra

[1]Perdana University (Previous Affiliation), Federal Territory of Kuala Lumpur.

[2]University Poly-Tech Malaysia, Wilayah Persekutuan Kuala Lumpur

[3]Perdana University, Federal Territory of Kuala Lumpur

https://orcid.org/0000-0001-6262-9099

Accepted: 3rd Nov, 2024, Received in Revised Form: 17th Nov, 2024, Published: 17th Dec, 2024

Abstract

Purpose: This research study examines the viability of using Artificial Intelligence chatbots for increasing written performance of ESL students.

Methodology: The research employs a secondary qualitative approach, synthesizing existing literature to identify themes on chatbot applications in language learning.

Findings: As it was found out, the use of chatbots enables learners to get prompt feedback within a session, which helps in correcting the mistakes made and strengthening the applied language learning and acquisition rules and strategies. However, some of the disadvantages include; lack of ability to differentiate culture when giving feedback and some difficulties in maintaining learner's attention over a long-term basis.

Contribution to Theory, Policy and Practice This study shows the ability chatbots have in decreasing learner anxiety and increasing confidence in writing. It is also noted within this study that additional refinement is needed in AI responsiveness to bring chatbots closer to being contextually and culturally aligned with diverse learners. Hence, the study contributes to the discourse on the implementations of cutting-edge technologies into enhancing written proficiency in ESL and calls for further developments of AI-powered systems to tackle challenges surfaced in the ESL teaching and learning processes.

Keywords: *AI-driven chatbots, ESL learners, Written proficiency, Language acquisition, Culturally Nuanced Feedback.*

International Journal of Humanity and Social Sciences
ISSN: 3005-5407 (Online)
Vol. 3, Issue No. 5, pp. 78 – 95, 2024
ww.carijournals.org

1.0 INTRODUCTION

In the last few years, artificial intelligence (AI) has emerged as a powerful tool in a broad range of contexts, including language education where; in ESL learning environments, AI is currently deeply implemented to overcome traditional obstacles to language learning. ESL students can reach several challenges particularly in the area of writing where a vast amount of academic and career achievement is based. Therefore, the regulatory and functional requirement of writing in English comprehends not only grammar and vocabulary but also structure, coherence and style (Tahir & Tahir, 2023). However, for learners from a second language background, it must often be very difficult to attain such proficiency levels due to the scarce contact with NNS settings, limited practice, and perhaps more significantly, high teacher- to-student ratio. Interactive, adaptive learning AI chatbots are the way to go to fill these gaps and assist learners in enhancing their language skills through tutoring and feedback.

The backdrop of this study is founded on the steady worldwide need for effective English proficiency, and it has increased due to globalization, emergent interconnectivity, and the developing global business world. Khasawneh (2024) conveyed that at the present time about 1.5 billion people are learning English and the non-English speaking individuals at a ratio of 4:1 compared to the native English speakers. The non-English speaking nations are tripping over their chances to gain quality tutelage and practice in writing. Schools often lack funds to incorporate one-on-one learning to cater for the need of various students making it hard for many students to get the much-needed guided practice to master written skills. Such individual tutoring is a great challenge in large classrooms or groups, especially in cases of online learning; however, AI developed chatbots in the tutor such as assistant forms can efficiently supplement this role (Ghorbandordinejad & Kenshinbay, 2024). These chatbots are based on natural language processing (NLP) technologies and, in addition to holding simple conversations, they can assess a learner's text, provide feedback and mark suggestions for improvement, as well as exercises to address specific aspects of language weakness.

However, the use of AI chatbots has certain impressions within ESL learning, there are some issues of implementing such technology in ESL instruction. Teacher-driven conventional approaches of learning depend on the discretionary decision-making process, especially concerning evaluation of complicated and sensitive aspects of writing production such as coherence, tone, and language cultural acceptability (Alrajhi, 2024). This has led to what many ESL educators consider the biggest drawback of normal class learning: there is seldom concerted feedback that can be offered to all members due to differences in class level and respective learning speeds of students. This issue is more so for countries where English is not a first language, and where teachers themselves are either bogged down or not adequately proficient in the English language themselves. In low to middle income countries UNESCO information reveals that in secondary education classes more than 40 students are being taught per teacher indicating scarcity of one-on-one teaching

(Baharuddin & NS, 2024). Unfortunately, for such student's traditional ESL learning does not meet their required level of written proficiency due to the time constraint, limited feedback and lack of practice. In addition, current researches also show the benefits of using the AI-based language program in enhancing language abilities, even though most of the applications mostly address the multiple-choice language areas or oral lessons. On the other hand, one more complex and contextual skill, written proficiency, has not received the same boost in learning yet. Some recent studies from EdTech platforms have revealed that more than 60% of ESL learners consider the apps helpful for learning vocabulary while only 20% reported that they have benefited from the present apps in writing improvement (Jegede, 2024). Therefore, there is a lack of technologies that fit into conscious teaching and learning that is an objective of ESL learners who want to learn how to write better in English. There is no doubt that AI-powered chatbots, if centered around written literacy, could help fill this void besides not being able to offer the constant, flexible, supplementary education that other face-to-face or fixed application environments can provide.

1.1 Problem Statement

The problem that this research seeks to address, therefore, is the lack of effective, scalable tools that support ESL learners in building written proficiency. Current systems of learning especially in developing countries lack the capability to offer one-on-one feedback on writing as a way of filling the gap as each learner needs different attention. ESL learners continue to struggle in producing nice, organized informational and academic as well as grammatically correct texts after years of learning hence limiting their chances at job placements. ETS research also established that students with L3 learners' writing proficiency scores were lower than other language types such as listening and reading skills (Shoukat, Mamoon & Arif, 2024). This situation underlines the differences both in teaching and learning of written English necessary in academic and career-related contexts. Failure in the acquisition of these skills due to lack of supportive practice can result in frustration, low motivation and low language development. Real-time error correction, grammar suggestions and fun ways of interactive exercises that chatbots can provide isolate the flaw of such a system (Luo, Huang & Ke, 2023). The use of these algorithms makes these chatbots capable of correcting mistakes learnt by a learner, recognizing patterns and explaining in simple language a learner would understand. Different studies show that feedback makes it easy for language learners to understand and correct their mistakes better compared to when they are given general information that they merely retain in their memory. Study of Abobaker & Moleta (2024) showed that students with an AI-based writing feedback system increased average writing scores by 25% compared to students who wrote without feedback that involved no interactivity (Martin Mota, 2023). AI-anchored chatbots can thus produce an educational model imitating human contact between tutor and learner which is a plausible and efficient solution to the lack of ESL experts in many countries.

However, these promising embodiments have not seen their AI-based chatbot counterparts explored in detailed insights regarding their ability to enhance written literacy, especially for ESL-students. Although there are apparent benefits in areas such as customer relations and particularly in conversational training there is a need to shed more light in their application in streamlined language training (Shegupta, Schmidt & Hardt, 2023). ESL learners are various in language background, purpose and context, so it seems that a standardized procedure cannot suit most of them. Furthermore, the ways in which chatbots are capable of assessing different aspects of writing coherently and appropriately to the extent to which they are still in debate. In order to answer these questions, this study intends to investigate how the proposed AI-based chatbots can be designed to serve the purpose of ESL learners' written communication specifically and to what extent they can be effective as extant methods of teaching languages.

2.0 LITERATURE REVIEW

2.1 Theoretical Review

There has been an increase in the number of publications focusing on possible application of the AI in language instruction with special emphasis on chatbots. These currently popular chatbots with NLP and machine learning features present new opportunities for language learning by supporting learners with real time NLP and machine learning. Within the context of ESL, chatbots have attracted interest for their capability of approaching certain of the classic concerns that characterize the acquisition of written English. This research presents a systematic analysis of the prior AI-based chatbot research in ESL learning con- text, specifically the findings on written language improvement, individualized approach in language instruction, and the issues addressed by adopting chatbot-based education. It also discusses theories of second language acquisition and of adaptive learning technologies to give a background to the role of AI and its potential and drawbacks in the context of ESL. Studies show that the main benefit of automated language learning through chat- bots is the focus on the learning preferences of the learner. While compared to conventional classrooms where learning is institutionalized, and hence the student to teacher ratio is usually rather high, the chatbot is capable of giving instantaneous answers to learner questions and concerns, with simultaneous editing of essays, improvements on grammar, vocabulary, and even syntactical construction missteps. The study of Annamalai et al. (2023) showed that the levels of learners' engagement and retention increase when using the chatbot-based language applications to learn languages with AI tutoring assisted to be more interactive and personal. Othman (2023) demonstrated that the ESL students in their study utilizing the chatbot received improved feedback and, in consequence, displayed a reduction in their recurrent grammatical mistakes; AI can also provide for the incremental, scaffolding learning expected from the ZPD theory of Vygotsky.

Furthermore, the authors' study examines the possibility of using AI-supported chatbots to engage learners and improve their accomplishments in the area of written language skills, which are

usually more difficult than oral or aural skills. Chatbots are suitable for communication as the main form of interaction since the simulation of real-world language use enables students to achieve realistic interaction with texts. This allows the interaction to enhance relevance and applicability which is most often lacking in other ritualistic language drills. Jeon (2024) explained how students expressed higher confidence in their writing when they employed the use of chatbots with feedback on the use of language and sentence synthesis. According to Hoang, Han & Le (2023), following the feedback given by the chatbots, students can adhere to the sort of feedback they would likely get in one-to-one tutoring settings, which can have a positive impact on the improvement of their language skills in a more relaxed learning environment. This supports Krashen's Input Hypothesis in which he notes that input is valuable when used in the L2 classroom in a comprehensible manner and in an environment that is motivating.

Also, there is little known on how these AI-driven chatbots would act in different cultures and languages as learners learning English as a second language hail from distinctive cultures and languages, and have distinct experience with English. Anh (2024) explored the effectiveness of the AI chatbot with Arabic-speaking ESL learners and found the participants received benefits in matters of grammar and vocabulary in the texts and in the conversation however, they were challenged, when it comes to the stylistic features in texts, which are more far from the Arabic norms yet rather closer to the English ones. From the study of Qasem et al. (2023), the general idea of the chatbot can provide Western learners with the advantage to the disadvantage of learners of other origins since some of these chatbots do not address the specific linguistic and cultural barriers these learners experience. This leads to the idea of contextual design of AI language tools to enable programmers to pump in these distinct cultural features into chatbots to enable more supple responses (Alharbi & Khalil, 2023). AI in language learning has been rapidly growing and as a result, it has steered researchers toward the identification of theoretical frameworks for assessing the instructional applicability of these systems. According to Nguyen & Pham (2024), whereby learning should be active and centered on the learner, chats presented to the learners as exercises indeed enable meaningful practice in the language in question through chats. In this context, the literature has also reviewed how AI enhances the constructivist epistemological perspectives.

The understanding of Son, Ružić & Philpott (2023) considers chatbots compatible with constructivism in that learners complete ideas based on mimicked interactions with actual people. The sort of communication described by Chen (2024) promotes engagement, as students practice actual language in contextualized ways, and is thus especially beneficial to writing. However, the study also indicates that with no human input, the feedback given by chatbot cannot contain the evaluation and synthesis which the trained ESL teacher offers as part of input for enhanced cognitive learning. Another issue is whether AI chatbots can also help free certain burdensome logistically traditional problems in ESL education. ESL classes are often densely populated, and

educators are sometimes overstressed, so AI chat- bots can help learners supplement their practice after class or between lessons. High-density ESL classrooms in South Korea have been examined by Klímová & Ibna Seraj (2023), and the students who were using AI chatbots for independent practice reported that they were confident in their writing. This extra practice time turned out to be important since any learning that happened outside the classroom was limited among learners, more so the us- age of English language (Tai & Chen, 2024). Chatbots can thus fill a complementary function to traditional pedagogy by always being available for language practice round the clock, in addition to addressing the issues of resource availability in the concerned regions. From the study conducted by Muthmainnah et al. (2024), it was agreed that AI chatbots present a probable solution for the deficiency of ESL resources in learning institutions all over the globe at a low cost and easily scalable. However, concerns relating to accessibility and inclusiveness have not been deprecated in discourses about the deployment of AI- powered chatbots in language learning. Even though there is an increased use of chatbot based language tools, this means that such resources are not easy to come across and depend on one's social, economic status. As per Ghorbandordinejad & Kenshinbay (2024), digital literacy and technologies' access are still challenges in the low-income country, where students cannot afford AI-supported language activities. This inequality hinders AI technologies for a great part of the global ESL learner population, especially in areas that can stand to gain most from AI's flexibility (Sander, 2024). Thus, in spite of the possibilities offered by AI-disclosed chatbots, the application of which will significantly depend on the equity and support by infrastructure in educational systems. The report of Wang & Xue (2024) also highlighted the fact that for AI to achieve the kind of impact in technology enhanced ESL education, the advancement in the use of technology-based teaching tools has to go hand in hand with improvements in the availability of technology tools.

2.2 Research Gap

However, applying AI-driven chatbots for writing in particular within ESL situations has its prominent benefits together with some issues and constraints. This leads to a further question, namely, the trustworthiness of feedback given by chatbots and, particularly, regarding the choice of style, tone, and coherence. Thus, although conventional AI algorithms have proven successful in performing such tasks as error identification and correction, a number of research studies assert that they fail to provide deeper analysis of text for language assistance. In the study by Shegupta, Schmidt & Hardt (2023), the authors looked into the application of chatbots with ESL learners and discovered that while basic grammar and vocabulary mistakes can be corrected, there was a weakness in allowing the bots to gauge when it is culturally appropriate or using the right idiom or a rather more sophisticated syntactic style. This limitation is germane to written fluency where ESL learners do not only have to write correctly and error free, also comprehensible and contextually accurate. According to Yuan (2023), there is still much improvement needed when it

comes to AI models providing coverage that can help with chatbot based instruction for higher level language users.

3.0 MATERIAL AND METHODS

In order to advance this research study, the research work adopts a secondary qualitative research approach that will enable the researchers to understand the potential of AI-driven chatbots as language tutors on improving writing skills of ESL learners. This approach has been chosen as it is appropriate in reviewing the literature and integrating the findings drawn from the available studies in the provision of appropriate understanding of the issue at hand. The methodology supports the analysis of the literature within the respective field of study in order to find trends, missing links and features that answer the general research questions (Mbanaso, Abrahams & Okafor, 2023). In regards to data collection, the scientific procedure has involved a review based on research context relevance and accessible journals and articles from Google Scholar and ProQuest. Such sites have been used in identifying and accessing quality, peer-reviewed materials which respond to some of the research questions including the utility of AI-based chatbots into language learning, impact on writing skills as well as other relevant literatures within ESL context. Thus, using the mentioned credible databases, the researcher has made an assurance of the reliability of the collected data.

These involved works which have documented gains as well proliferation of shocks connected to the implementation of the AI chatbots in ESL setting. Articles under consideration reveal to what extent the application of the chatbots enables differentiation of the learning process, immediate feedback, and engagement in students' writing process (Chali, Eshete & Debela, 2022). Besides, the researchers have looked at articles and journals which explain the drawbacks of using chatbot systems especially in certain aspects such as complex feedback as well as the contemporary linguistic elements and cultural considerations. Such an approach taken in this literature review has enabled them to evaluate the existing literature with respect to the present knowledge of the subject under study. In order to analyze the data collected from the literature, secondary qualitative research design has been adopted to classify themes developed from the study. This analytical frame has enabled understanding how the participants, the ESL learners, perceive and engage with the AI-chatbot as well as the pedagogical implications of use of the AI-service (Habu & Henderson, 2023). Organization of synthesis has been done to address the research questions adequately in a way that findings from studies under review will have a coherent synthesis. Ethical issues have also been considered before conducting the research as well as in the research process. Self-generated ideas: All works reviewed in this research have been duly cited and hence the researchers have not violated anyone's intellectual property rights (Delios et al. 2023). In addition, the fact that only secondary data would be analyzed excludes risk to participants' identity and research data credibility, as the study does not include any contact with people (Sundqvist, 2024). The approach used in this study has been carefully developed to provide an extensive examination

of AI based chatbots as language teachers. In order to this extent, whilst the methodological reliance on secondary qualitative re- search and high-quality academic sources was a deliberate approach to enriching the academic literature on ESL education and the changing nature of technology supported language learning, the discussion that follows seeks to provide some added value to this literature base. The conclusions and recommendations arising from this methodological approach will contribute to further research and practical work with regard to improving the written language of ESL learners by using a range of new technological tools.

4.0 FINDINGS

4.1 Effectiveness of AI-Driven Chatbots in Personalized Learning for ESL Students

AI-based chatbots are considered to be extremely effective of which is a major consideration gathered from the existing literature. As opposed to conventional classrooms where teachers have to forecast the difficulties and mistakes that every learner would make in order to provide well-deserved remarks, chatbots can provide responses to weak- knowledge demonstrations and diverse mistakes as per the assessments of each learner. A study by Alrajhi (2024) has provided evidence that the feedback from chatbots tailor-made for learners can enhance their capacity to fix grammatical mistakes and to enhance the general structure of their sentences. AbuSahyon et al. (2023) argued that the decrease of repetitiveness of the students' mistakes as exposed to language AI feedback showed that adaptive AI can self-adapt to the needs of the student in question and enhance the learning of grammatical structures. The literature of Ghorbandordinejad & Kenshinbay (2024) also reiterates how AI chatbots' ability to adopt an individual learning approach commiserates well with modern principles of language learning, especially the ZPD theory. The zone of proximal development (ZPD) postulates that learning happens when teaching falls into a learner's thumb, or just outside their reach, however, within reach with assistance, as per Tahir & Tahir (2023). In the case of AI driven chatbots, by responding immediately with special, professional preparation for the particular error that a student made or a certain area they find difficult, the tools act as scaffolds. It is essential to fill the gaps in their knowledge and thus encourage an incremental process of language acquisition, in which specific aspects of language, whether grammatical structures or phrases which have caused the student some trouble, are tackled. Khasawneh (2024) conveyed, it specifically applies to the development of written language as the sort of feedback learners get directs them towards the next developmental stage of written language. Every learner gets feedback related to his/her learning profile hence providing the learner with the structured approach of mastery rather than the generalized approach which most language classes adopt.

However, there is evidence that suggests that the level of impact that this type of artificial stimuli applied in AI chatbots has, is in relation to the NLP innovation of the chatbot. Only when implemented in Chatbots with enhanced NLP abilities are the patterns of a particular student's mistakes recognized, the context interpreted, and responses fine-tuned over time, as presented by

Baharuddin & NS (2024). If a learner seems to encounter specific problems in a certain grammar or everyday language expressions that are used in speech, an advanced chatbot can purposely give the learner more practice in those areas until they show learning, as per Jegede (2024). This not only enhances the rate of learning, also ensures that the learner gets a more personal approach that makes learning more interesting to an individual as compared to the case where the tutor just records similar responses repeatedly. Alrajhi (2024) conveyed, the implementation of the new advances of the NLP enables chatbots to make fine-grained changes, and that results in better engaging the learners through challenging them with higher levels of tasks as they advance through their learning. Concerning the development of AI technology, there is a possibility that the degree of personalization in AI chats can be developed more prominently, which will improve the contributions of the chatbots to the teaching of ESL, highlighted by Shoukat, Mamoon & Arif (2024). Possibly, in future, NLP capabilities can be advanced further to include advice that complements the ZPD concept such that the chatbots can provide feedback on tone, style, or context of the language used. Such a progression would result in a more enhanced approach for ESL at district level making chatbot to be even effective for enhancing fluency of learners, as per Luo, Huang & Ke (2023). Consequently, the development of NLP for AI- powered chatting bots can move these bots from mere language translators and generators to smart tutors who can actually assist ESL learners to learn progressively and effectively for a long time through effective writing and other advanced language applications.

4.2 Impact of Instant Feedback on Written Proficiency

As a theme, the efficacy of instant feedback in increasing the ESL students' written skills is revealed as an important aspect of the literature in relation to AI chatbots. Using these chatbots provides actual feedback which is an unusual feature of any instruction compared to feedback which instructors can provide due to the time they have or the amount of work they are able to do, as presented by Abobaker & Moleta (2024). As a result of using the AI in chatbots, learners are able to receive feedback immediately as they are corrected on the spot on any mistake that they may have made. This has been seen to be beneficial to acquisition as well as maintenance of language in incidents of African languages. Martin Mota (2023) proposed that immediate feedback would enhance learners' appropriations of accurate language forms since they can directly understand and incorporate the changes without delay that is usual in normal classroom teaching-learning environments. Such an immediate correction is especially beneficial for elementary and post-elementary students as it pro- vides an opportunity to correct the mistakes that learners can otherwise over time turn into automatized or routine errors, conveyed by Shegupta, Schmidt & Hardt (2023).

The usefulness of immediate feedback correlates well with Krashen's Input Hypothesis in so far as feedback must be prompt and comprehensible for it to have the desired language acquisition impact. In line with this hypothesis learners are best placed to learn when they are presented with

input that is slightly beyond their level of understanding, as per Annamalai et al. (2023). This is sold by AI development chatbots that offer inputs as well as suggestions which are corrective extreme feedback that is tuned to the student's capability thus enabling him or her to interact with language at a certain level of difficulty. Just by choosing the right level of difficulty, learners acquire an effective foundation in language gradually strengthened by improvements in grammar, vocabulary, and syntax, presented by Othman (2023). Another advantage of instant feedback is that it decreases the risk of fossilization, when learners, due to failure to correct them, will automatically retain wrong forms. Anytime one makes an error, a chatbot comes in and inhibits learners from making other errors resulting in a neat mastery of languages. On the other hand, Jeon (2024) stated that the advantage of instant feedback, with encouragement and instant response to the right answer, some literature also outlines the following limitations of current AI chatbot applications; largely, the limits denote high and complicated feedback demand. The large majority of the chatbots is very accurate in terms of spotting the obvious grammatical, spelling, and syntax mistakes. Hoang, Han & Le (2023) showed that chatbots have issues with language functions more advanced than simple translation, including feedback on vocabulary selection based on practical context, alterations to the writing style, and intonation. How- ever, for the higher-level ESL learners, who are generally aiming at improving their written English more particularly for academic, professional or for specific purposes, this absence of subtle feedback presents a major drawback, highlighted by Shegupta, Schmidt & Hardt (2023). Advanced learner's need information that is off style, given more than grammar rules and even at that, the current AI technology lacks depth in aspects such as style, language use and even proper word usage in given contexts. In other words, while receiving instant feedback through the medium of chatbots is highly advantageous for lower-level ESL learners, the lack of more sophisticated feedback ultimately limits the tool's capability as a learning aid for learners who require additional sup- port to progress to written advanced honed proficiency, according to Yuan (2023). In these cases, chatbots remain more useful as additional tools, rather than primary language learning tools. These results reaffirm the need for further growth in AI technologies and adaptability to a more diverse set of language learners' needs. It thereby indicates that future developments of the AI chatbots can integrate complex language understanding that will be applied toward the offering of support for a wide range of language skill levels.

4.3 Challenges in Addressing Advanced Linguistic and Cultural Nuances

A common issue mentioned in the literature is that the AI-based chatbots have problems with handling complex linguistic and cultural aspects in the foreign language acquisition process. Written English for ESL learners is not just equivalents of other language's grammar, syntax, idioms, and expressions yet choosing right words and tone too. As shown by Alharbi & Khalil (2023), this is attributable to the inability of most chatbots to incorporate context in matters ranging from language to culture, which in turn makes the feedback they give technically correct, however,

socially unfit for some cultures. The research of Anh (2024) on Arabic-speaking ESL learners illustrates a critical limitation of AI-driven chat- bots: despite the fact that they are usually most efficient and reliable when it comes to pointing out the errors in grammar, they fail to give hints about the inadmissible use of the culturally sensitive language. In particular, this deficit presents a significant problem for ESL learners who need more than mere structural know-how to use English in genuine, target-culture contexts, according to Qasem et al. (2023). The development of English language comprehensiveness entails mastery of the stylistic analysis as well as the pragmatic features which are larger than mere grammar; they include expressions in accordance with culture, how, when and where language can be used, and how one should conduct their own. For learning English for professional, academic, or social purposes, failure to receive culturally sensitive feedback means that learners will offend or fail to appreciate culture when using the language to interact with native English speakers which can be embarrassing and counterproductive.

For a long time, the lack of cultural sensitivity in chatbot answers has been blamed on the general dataset used to train an AI system. Most of the chatbots depend on the sizable, publicly available datasets that do not sample all the varieties of the English language, or cultures, or idioms. These datasets can be more inclined towards what some of these language varieties are, which are usually the American or the British English, as per the literature of Nguyen & Pham (2024). As a result, these models do not differ enough to address the variability patterns of cultural context on language. A certain something that is okay in one culture is probably completely different in other raised cultures or was completely wrong to use. Hence, without such exposure during training, chatbots are deficient in a vital facet of the fluency process, which is leading ESL learners on the correct cultural way to use language, according to Son, Ružić & Philpott (2023). This limitation points at the need for development of advanced Language AI models especially, their ability to accommodate different linguistic and cultural data. Improving on cultural sensitivity in the present chatbots, would mean using a more diversified dataset that incorporates different forms of intonation, accent, and spoken language retention, conveyed by Chen (2024). This would give the chatbots the opportunity to pass feedback that not only matches the language grammar, yet also the cultural and contextual one; ultimately facilitating a holistic learning process that helps ESL learners. For those wanting to gain real life interactions, particularly in written format, the opportunity to get feedback from cultural perspective would close an important gap, ultimately increasing readiness of learners to respond to realistic scenarios, as per Klímová & Ibna Seraj, (2023). In fulfilling this need, AI chatbots can become enhanced and enhanced language tutors who not only teach ESL learners more techniques to become better in the use of language yet pragmatic competence so that they will not be limited or ill-prepared in specific contexts of communication.

4.4 Engagement and Motivation through AI Chatbot Interaction

The use of AI in the term of the chatbots is beneficial for increasing the students' participation and motivation, which can be the great factors influencing the success of the language instruction. According to Tai & Chen (2024), conversational chatbots are even effective as the students are able to learn interactively in a more fun-learning approach since they are honing their practice in an actual conversational-like environment. Such an approach is consonant with constructivism learning theories that acknowledge students as active and constructive participants in the construct of knowledge through talk and exploration. Muthmainnah et al. (2024) literature also supports the psychological aspect of calling AI-based chatbots in language learning as safe practices that can minimize stress which is common to ESL practice. Essentially, for many learners, especially those who are learning a new language, they experience increased nervousness and self-consciousness in traditional classroom delivery systems especially when feedback is presented in public or critical methods, according to Sander (2024). However, the availability of a chatbot for an individual is a convenient option as it allows the person to interact with someone without being known while the conversational partner does not get upset when the main conversationalist leaves. Mohammad Ali (2024) made a great concern on this aspect arguing that the students who practiced writing using chatbots noted an improvement in their writing proficiency. Such an environment can be more helpful for the adult and professional students who can be more susceptible to the attitudes towards their language skills and who often have to cope with other life or work-related pressures. In order for such learners, the chatbot provides a self-directed and sanction-free environment that enables them to develop abilities slowly and consequently develop a positive outlook towards language practice.

In addition, the communication of the chatbots, makes the learners able to take risks in language use such as using new words or structures without being punished in any way. This method promotes innovation and increased interest in the subjects since students are allowed to make as many wrong decisions as possible yet these are rapidly corrected. This is flexible in comparison with the approaches used in traditional class settings where learners can refrain from giving suggestions for the fear of being wrong before their peer students, presented by Aysu (2024). That is how the usage of chatbots helps learners establish the intermediate steps interlinking the lower skill level with the higher one, minimize stress associated with performance, and provide the convenient approach to the formation of language competence. Yet, concerning engagement, and confidence levels, it found that those aspects enhance in the first few lessons, yet it observed that maintaining motivation over time cannot be easily achievable. Tian (2024) noticed the decrease of student motivation where the chatbot questions were routine or contained little information. When no differentiation is made or the feedback does not change with the learner's improvements, users can start perceiving the experience as boring, and the passion they had will decline. According to Arani (2024), learner engagement can be compromised as well, particularly if chatbots do not

possess high adaptability; or more specifically, if learners' interactions with the chatbots create responses that they can anticipate, which decreases the challenge and novelty that is important for sustained learning. Thus, it seems that chatbots shouldn't only help to minimize language anxiety; they also need to provide various and various types of feedback to keep the learner operational for as many hours as it takes, as per Wang & Xue (2024). In order to overcome this weakness, better algorithms can be designed to alter, not only, the initial level of user proficiency yet also the advancement of proficiency of the user in due course. Chatbots should be able to present new enhancements or alter the feed- back that learners receive; as their fundamental level of competence increases, they should start to add style, tone, or context into the exercise, as per the literature of AbuSahyon et al. (2023). Such capacity to self-regulate in response to dynamic learner necessities would also serve to keep learners motivated again and again by offering challenging utility tasks that are purposeful and not repetitive. Consequently, AI-driven chatbots can preserve the function of reliable and non-phrased learning assistants and at the same time provide an interesting learning environment that would help learners develop further interest in language learning.

5.0 DISCUSSION

The findings of this research offer significant implications of gaining fresh knowledge about the incorporation of chatbots as a language teaching tool for ESL writers as well as other L2 learners. The research results provide some insights into the far-reaching positive effects and the current drawbacks of the chatbot application in language learning and therefore present a rather complex view of the subject. One of the strengths pointed out in the results is the flexibility of learning through chatbots. It is not like a face-to-face setting or in class where a teacher is correcting grammatical errors as well as poor sentence construction within a few seconds after the mistake has been made. This aspect of chatbot interaction better fits Vygotsky's Zone of Proximal Development as chatbot provides a type of 'scaffolding' that gradually helps learners learn with incremental changes. Another major plus is in its type where feedback can be provided immediately and learners are able to learn the correction better with time. Instant feedback appears to be consistent in Krashen's Input Hypothesis, with learners developing an understanding of receiving input that is both comprehensible and correct, which drives language acquisition through correction. However, as the sophistication of the chatbot increases, the usefulness of this feedback also increases. A large number of chatbots are developed to correct simple grammatical and syntactical mistakes in the text ignoring feedback areas such as style, tone, and the appropriate choice of words depending on the context of a particular situation. This limitation tends to manifest for ESL learners, and especially those in the higher level, who may be in need of language features that current chatbot applications cannot capture well enough.

The results also show some factors regarding cultural and context relevance on chatbot feedback. Since most of the AI-based chatbots are developed on the basis of fairly generalized data resources,

their capacity to handle culturally specific language usage is quite small. This can lead to responses which are correct in a script however, prove irrelevant in some cultural or contextual situation pointing out a limitation on the instructional useful- ness of the chatbot. Solving this concern would necessitate the addition of more diverse datasets to enhance the possibility of the chatbots to answer to the variety of cultural and linguistic differences. This is especially important for ESL learners who plan to employ English in contexts that are culturally different when language employment is closely linked to social context. Besides, additionally it ascertained that even though chat bots seem to be particularly useful in increasing engagement and motivation the results speak about the necessity of adding complexity to the responses of the chatbots and the change of their format to enhance the long-term motivation. Anecdotal evidence also reveals that some learners are disengaged when the chatbot interactions are routine or basic. In order to overcome this, future advancements in the concept of chatbot should decode the immediacy of adaptiveness in a fashion that challenges the learner as the individual advances through the various language tasks. AI moderated chatbots have the potential of being used as supplementary equipment in teaching of English as a second language especially in aspects of individualized instructions and formative assessments. Yet, inadequacies in sophisticated language and cultural differences, plus longer-term interaction requirements, mean that chatbots are best employed in addition to conventional language learning. The results of this study provide directions for the next step in the development of chatbot techniques, that is, flexibility, cultural sensitivity, and careful consideration of fundamental language aid as well as special, sophisticated linguistic tools to enhance the writing skills of ESL students.

6.0 CONCLUSION AND FUTURE SCOPE

The research also supports the possibility of AI in chatbots to act as viable additional aids in improving the written skills of the second language learners. The observation therefore shows that via access chatbots, the learners enjoy timely feedback, correction and most importantly an interactive learning environment as they learn and these are fulfilling or meet the needs of learners especially those learning at the lower level or at the intermediate level. These features help facilitate achievement of language acquisition by allowing the learner to correct mistakes instantly and strengthen grammatical understanding. However, there are restrictions: the models are adequate in advanced language and culture aspects and details only in certain cases. Although AI-based chatbots can be an effective approach to promote ESL written skills, the current technologies of chatbots are appropriate to supplement traditional instruction of ESL in teaching their first-tier language proficiency rather than re- place conventional teaching methods.

6.1 Future Scope

The future work follows from this study and presents several directions of enhancing the existing AI-based language tools. The refinement of NLP can help the chatbot give smarter feedback, recommendations on the language appropriate for the given level and the tone and cultural

references that learners at that level need to acquire. Expanding the cultural data sets to include during the training of the chatbot would rectify the deficits regarding context and culture, thus enabling the chatbots to meet more of the linguistic needs of learners from diverse settings. Furthermore, feedback complexity can be made adaptive learning algorithms can be developed for changing the level of feedback over time, which can proactively address some of these critical questions and help sustain long-term engagement and motivation in students. More research can investigate the interaction between a chatbot and other technologies such as VR or AR to establish language learning scenarios, which are completely realistic. This development would have benefited ESL learners by providing both the linguistic content and social practice that the learners need. Lastly, investigations describing the efficacy of the developed AI-driven chatbots for various age, cultural and language learning levels can shed light on how these tools can be best implemented for the learners with the various characteristics. With the ongoing development in AI technology there is a high likelihood of better incorporation of chatbots into ESL education with the capability of enhancing not only the basics of English however, also raising the learners' functional level to advanced /fluent writers.

7.0 REFERENCES

Abobaker, R., & Moleta, S. (2024). ESL 4.0: A Practical Guide to Benefits, Challenges, and Best Practices for AI-Enhanced Learning. In *AI Applications and Strategies in Teacher Education* (pp. 71-134). IGI Global. 10.4018/979-8-3693-5443-8.ch004

AbuSahyon, A. S. A. E., Alzyoud, A., Alshorman, O., & Al-Absi, B. (2023). AI-driven Technology and Chatbots as Tools for Enhancing English Language Learning in the Context of Second Language Acquisition: A Review Study. *International Journal*, 10(1), 1209- 1223. https://doi.org/10.15379/ijmst.v10i1.2829

Alharbi, K., & Khalil, L. (2023). Artificial intelligence (AI) in ESL vocabulary learning: An exploratory study on students and teachers' perspectives. *Migration Letters*, 20(S12), 1030-1045. 10. 1741-8992/1741-8984

Alrajhi, A. S. (2024). Artificial intelligence pedagogical chatbots as L2 conversational agents. *Cogent Education*, 11(1), 2327789. https://doi.org/10.1080/2331186X.2024.2327789

Anh, L. T. Q. (2024). AI Chatbots in English Language Learning: A Critical Review. *Journal of Knowledge Learning and Science Technology* ISSN: 2959-6386 (online), 3(2), 185-195. https://doi.org/10.60087/jklst.vol3.n2.p195

Annamalai, N., Ab Rashid, R., Hashmi, U. M., Mohamed, M., Alqaryouti, M. H., & Sadeq, A. E. (2023). Using chatbots for English language learning in higher education. *Computers and Education: Artificial Intelligence*, 5,100153. https://doi.org/10.1016/j.caeai.2023.100153

Arani, S. M. N. (2024). Navigating the Future of Language Learning: A Conceptual Review of AI's Role in Personalized Learning. *Computer-Assisted Language Learning Electronic Journal*, 25(3), 1-22. https://callej.org/index.php/journal/article/view/78

Aysu, S. (2024). The use of AI-Powered Tools in Language Learning. *Dil Eğitimi ve Öğretiminde*, 1. 10. doi.org/8625-0663-5454-2032

Baharuddin, K. H., & NS, M. N. (2024). Leveraging Artificial Intelligence for Enhanced Language Learning Among ESL Students. https://doi.org/10.5281/zenodo.12792140

Chali, M. T., Eshete, S. K., & Debela, K. L. (2022). Learning How Research Design Methods Work: A Review of Creswell's Research Design: Qualitative, Quantitative and Mixed Methods Approaches. *The Qualitative Report*, 27(12), 2956-2960. 10.46743/2160-3715/2022.5901

Chen, M. R. A. (2024). The AI chatbot interaction for semantic learning: A collaborative note-taking approach with EFL students. https://doi.org/10125/73586

Delios, A., Welch, C., Nielsen, B., Aguinis, H., & Brewster, C. (2023). Reconsidering, refashioning, and reconceptualizing research methodology in international business. *Journal of World Business*, 58(6), 101488. https://doi.org/10.1016/j.jwb.2023.101488

Ghorbandordinejad, F., & Kenshinbay, T. (2024). Exploring AI-Driven Adaptive Feedback in the Second Language Writing Skills Prompt: AI Technology in Language Teaching. *EIKI Journal of Effective Teaching Methods*, 2(3). https://journals.eikipub.com/index.php/jetm/article/view/264

Habu, A. A., & Henderson, T. (2023). Data subject rights as a research methodology: A systematic literature review. *Journal of Responsible Technology*, 100070. https://doi.org/10.1016/j.jrt.2023.100070

Hoang, N. T., Han, D. N., & Le, D. H. (2023). Exploring Chatbot AI in improving vocational students' English pronunciation. *AsiaCALL Online Journal*, 14(2), 140-155. https://doi.org/10.54855/acoj.231429

Jegede, O. O. (2024). Artificial Intelligence and English Language Learning: Exploring the Roles of AI-Driven Tools in Personalizing Learning and Providing Instant Feedback. *Universal Library of Languages and Literatures*, 1(2). https://doi.org/10.70315/uloap.ullli.2024.0102002

Jeon, J. (2024). Exploring AI chatbot affordances in the EFL classroom: Young learners' experiences and perspectives. *Computer Assisted Language Learning*, 37(1-2), 1-26. https://doi.org/10.1080/09588221.2021.2021241

Khasawneh, D. M. A. S. K. (2024). Improving the Learning of Language Proficiency at Tertiary Education Level Through AI-Driven Assessment Models and Automated Feedback Systems. *Migration Letters*, 21(2), 712-726. 10.1741-8992712-726

Klímová, B., & Ibna Seraj, P. M. (2023). The use of chatbots in university EFL settings: Research trends and pedagogical implications. *Frontiers in Psychology*, 14, 1131506. https://doi.org/10.3389/fpsyg.2023.1131506

Luo, R., Huang, L., & Ke, N. (2023, November). A Review of Opportunities and Challenges of Artificial Intelligence Chatbots in Second Language Acquisition. In *International Symposium on Emerging Technologies for Education* (pp. 70-77). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-97-4246-2_6

Martin Mota, S. (2023). Video feedback and foreign language anxiety in online pronunciation tasks. https://openaccess.uoc.edu/handle/10609/148031

Mbanaso, U. M., Abrahams, L., & Okafor, K. C. (2023). Research philosophy, design and methodology. In *Research Techniques for Computer Science, Information Systems and Cybersecurity* (pp. 81-113). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-30031-8_6

Mohammad Ali, A. (2024). Enhancing Inclusivity in Swedish ESL Classrooms: Integrating Generative AI for Personalized Learning. https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1872077&dswid=377

Muthmainnah, M., Cardoso, L., Alsbbagh, Y. A. M. R., Al Yakin, A., & Apriani, E. (2024, June). Advancing Sustainable Learning by Boosting Student Self-regulated Learning and Feedback Through AI-Driven Personalized in EFL Education. In *International Journals on Explainable Artificial Intelligence in the Digital Sustainability* (pp. 36-54). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-63717-9_3

Nguyen, N. H. V., & Pham, V. P. H. (2024). AI Chatbots for Language Practices. *International Journal of AI in Language Education*, 1(1), 56-67. https://doi.org/10.54855/ijaile.24115

Othman, K. (2023). Towards implementing AI Mobile application chatbots for EFL learners at primary schools in Saudi Arabia. *Journal of Namibian Studies: History Politics Culture*, 33, 271-287. https://doi.org/10.59670/jns.v33i.434

Qasem, F., Ghaleb, M., Mahdi, H. S., Al Khateeb, A., & Al Fadda, H. (2023). Dialog chat- bot as an interactive online tool in enhancing ESP vocabulary learning. *Saudi Journal of Language Studies*, 3(2), 76-86. https://doi.org/10.1108/SJLS-10-2022-0072

Sander, A. A. (2024). The Effectiveness of Artificial Intelligence Chatbots to Improve English Language Learning. *SIMPLE: International Journal of English Education*, 2(2), 1-6. https://orcid.org/0009-0006-5134-2037

Shegupta, U. U., Schmidt, R., & Hardt, W. (2023). MENTORING BOT FOR SCALABLE REVIEW SUPPORT. In *EDULEARN23 Proceedings* (pp. 5368-5376). IATED. https://doi.org/10.21125/edulearn.2023.1409

Shoukat, S., Mamoon, R., & Arif, M. F. (2024). Enhancing Language Proficiency Through TPACK Model and AI Applications A Study on Effective Integration Strategies in English

Language Instruction. *Pakistan Languages and Humanities Review*, 8(2), 540-554. https://doi.org/10.47205/plhr.2024(8-II)47

Son, J. B., Ružić, N. K., & Philpott, A. (2023). Artificial intelligence technologies and applications for language learning and teaching. *Journal of China Computer-Assisted Language Learning*, (0). https://doi.org/10.1515/jccall-2023-0015

Sundqvist, P. (2024). Extramural English as an individual difference variable in L2 re- search: Methodology matters. *Annual Review of Applied Linguistics*, 1-13. https://doi.org/10.1017/S0267190524000072

Tahir, A., & Tahir, A. (2023, June). AI-driven Advancements in ESL Learner Autonomy: Investigating Student Attitudes Towards Virtual Assistant Usability. In *Linguistic Forum-A Journal of Linguistics* (Vol. 5, No. 2, pp. 50-56). https://doi.org/10.53057/linfo/2023.5.2.8

Tai, T. Y., & Chen, H. H. J. (2024). Improving elementary EFL speaking skills with generative AI chatbots: Exploring individual and paired interactions. *Computers & Education*, 220, 105112. https://doi.org/10.1016/j.compedu.2024.105112

Tian, M. (2024). Application of Artificial Intelligence in ESL Curriculum Design for Mandarin Speaking *Learners. Science and Technology of Engineering, Chemistry and Environmental Protection*, 1(8). https://doi.org/10.61173/6nk1h734

Wang, Y., & Xue, L. (2024). Using AI-driven chatbots to foster Chinese EFL students' academic engagement: An intervention study. *Computers in Human Behavior*, 108353. https://doi.org/10.1016/j.chb.2024.108353

Yuan, Y. (2023). An empirical study of the efficacy of AI chatbots for English as a foreign language learning in primary education. *Interactive Learning Environments*, 1-16. https://doi.org/10.1080/10494820.2023.2282112

Acknowledgments

We would like to extend our sincere gratitude to University Poly-Tech Malaysia for funding this research. Although this study was based on publicly available online resources, the financial support facilitated the smooth running of our research. We also acknowledge previous research, their insights and findings from which greatly contributed to this research. Finally, we would like to thank CARI Journals USA LLC for providing us the opportunity to share our findings.

Conflicts of Interest Declaration

The authors declare no conflict of interest.