



Review

# To What Extent Has Artificial Intelligence Impacted EFL Teaching and Learning? A Systematic Review

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## ABSTRACT

Utilizing artificial intelligence (AI) technologies in EFL teaching and learning has brought about unimaginable opportunities to enhance learners' fluency and proficiency in the target language as it is evident that employing AI tools helps learners develop their language skills, enhance engagement and motivation, ease foreign language anxiety, and ultimately acquire the target language. This meta-analysis aims to find out to what extent AI has impacted EFL teaching and learning by providing a systematic review of research papers published from 2020 to 2023. The review concentrated on four areas of EFL contexts: AI in EFL contexts, learners' and teachers' perceptions of AI tools, EFL learners' motivations and engagements towards AI tools, and the integration of AI tools in language skills. The automated model developed by Guan et al.'s (2020) to collect published work from numerous databases such as Scopus, Web of Science, ERIC, Semantic Scholar, and Google Scholar was adopted. Findings of this review exhibit that employing AI technologies in the EFL settings has significantly benefitted the process of teaching and learning resulting in the mastery of the productive skills on the part of learners. On the other hand, the review shows there is a current lack of research related to receptive skills. As far as the learners' and teachers' perspectives regarding the integration of AI tools are concerned, the review voiced favourable perceptions concerning utilizing AI tools; however, the pedagogical implications of utilizing AI tools from the teachers' point of view have been insufficiently addressed by research conducted so far. Eventually, the current review outlined significant implications that provide a strong foundation for future research.

## I. INTRODUCTION

In today's world, AI technologies are of paramount importance in all spheres of life. Education is not excluded. Presently, due to the surprising advances in AI, education has witnessed remarkable changes (Ahmad et al., 2021; Alam et al., 2022). AI in education offers benefits such as improving learning outcomes, productivity, and student engagement. Adiguzel et al. (2023) state that AI tools, particularly ChatGPT, have the potential to modernize the teaching and learning process, and provide learners with personalized language learning. Paek and Kim (2021) added that AI is revolutionizing education by rethinking its purpose, restructuring content, and innovating

teaching methods, transforming human civilization and the field of education. Moreover, because of AI penetration in all education domains, numerous studies have highlighted the significance of incorporating AI into the educational process, particularly in language teaching and learning (see, for instance, Al-Raimi et al., 2024; Mijwil et al., 2022; Rusmiyanto et al., 2023; Huang, 2022; Jiang et al., 2022). In the EFL contexts, AI tools such as virtual tutors, Chatbots, writing apps, speech recognition systems, translation systems, etc., have greatly influenced the way learners master the target language. It is apparent that such tools hold the potential of boosting learners' foreign language proficiency. Liu and Ren (2022)

proposed that employing artificial intelligence systems in English language teaching and learning has proven favorable outcomes, particularly improving learner participation and achievement. Rukiati et al. (2023) stated that implementing AI tools in English language teaching has the potential to increase effectiveness and efficiency as they offer opportunities for practice and customized feedback, based on learner requirements and how AI tools are utilized. In the same vein, Obari et al. (2020) assert that language proficiency has shown to be enhanced because of the implementation of AI technologies in the process of teaching the English language. Furthermore, AI has the potential to introduce innovative teaching methods and optimize the teaching quality (Liu and Kong 2021).

It is apparent that there is a wealth of literature on the employment of AI tools in the English language teaching and learning contexts, however, systematically reviewing the pedagogical implications of such tools in the EFL scenarios is still not adequately investigated. Given this gap in literature, this review aims to find out to what extent AI has impacted EFL teaching and learning by providing a comprehensive review of approximately 100 research papers published from 2020 to 2023. This meta-analysis is conducted to achieve these objectives: to pinpoint the EFL domains that have significantly employed AI tools and determine the research gap pertaining to the integration of AI tools in EFL settings. The automated model developed by Guan et al.'s (2020) to collect published work from numerous databases, for example Scopus, Web of Science, ERIC, Semantic Scholar, and Google Scholar was employed. The review concentrates on four areas in the realm of EFL situation such as AI in EFL contexts, learners' and teachers' perceptions of AI tools, EFL learners' motivations and engagements towards AI tools, and the integration of AI tools in language skills.

### **AI Tools in EFL Contexts**

In the scope of EFL contexts, AI tools play a significant role in helping learners achieve mastery of the target language. A wide spectrum of research studies sheds light on the gains of utilizing AI tools in EFL domains. Numerous studies have disclosed the benefits of chatbots in the classroom (e.g. Mohamed & Alian, 2023; Silitonga et al., 2023; Yuan, 2023). Chuah and Kabilan (2021)

investigated teachers' perceptions towards utilizing mobile chatbots in the ESL context. The results showed that chatbots were considered beneficial to offer feedback and boost social presence. Yuan (2023) explored the efficiency of utilizing chatbots in EFL settings in China. The study pointed out that the incorporation of chatbots led to significant improvement in learners' oral competence. Ye et al. (2022) used a smart phone chatbot named Microsoft Xiaoying as a partner for interaction practices. The study revealed that it improved students' pronunciation skills, grammar, oral proficiency, and their attitudes towards using AI in EFL situations both inside and outside the classroom. In addition, it can consolidate students' learning once chatbot elements like customized corrections for errors are included in the classroom. Mohamed and Alian (2023) explored the learners' perspectives on adopting chatbots in EFL learning. The findings showed that chatbots enticed learners to study because they could work on their own and become confident, independent, enthusiastic, and willing to interact.

A study conducted by Xiao and Zhi (2023) recommended the implementation of chatbots in the foreign language classroom. The study investigated the role of ChatGPT in learning from the viewpoint of the learners and their practices and it emphasized the efficiency of this chatbot to provide learners with customized learning and immediate feedback. A quasi-experiment was conducted by Silitonga et al. (2023) to find out the impact of AI chatbots on 73 EFL learners' motivation in the writing class. Findings revealed that AI tools are instrumental to motivate learners to write in the target language as such tools can provide instant and extensive feedback better than the teacher. The study recommended the utilization of Chatbot-enhanced learning in the EFL contexts. Ahn's (2022) experimental study on the acquisition of EFL prepositions and articles indicated that learners in the experimental group performed better than those in the controlled group. The study found that learners in the experimental group committed less errors. The reduction in errors was attributed to the effectiveness of AI chatbots in teaching grammar. It was also proposed that chatbots can be developed to be utilized in other grammatical features. Rababah (2023) carried out an experimental study to explore the effect of an intelligent tutoring system on the performance of 60 EFL Jordanian learners. The study findings revealed that learners'

performance in the experimental group exceeded that of the controlled one in reading, grammar and vocabulary. In addition, the learners in the experimental group were found to be highly happier than those in the other group. The study concluded that incorporating intelligent tutoring systems in language learning is effective to enhance the learning process. Koraishi (2023) explored the gains of incorporating ChatGPT in the assessment and material development in foreign language learning and teaching. The study highlighted its significance to offer instant and customized learning and provide learners with contextualized input that meets their needs. In Saudi Scenario, AbdAlgane and Othman (2023) collected data via questionnaires to evaluate the use of Bing Translator and Google Translate in daily tasks. It also examined the extent employment of technologies such as machine translation (MT), automatic evaluation systems (AESs) and computer-assisted language learning (CALL) could foster learners' ability to interact in the target language. The conclusion drawn from the study is that all AI technologies have a significant role to play in facilitating EFL learning. In the Chinese context, Yang et al. (2023) employed a mixed-method technique to explore the impact of machine translation on the writing of EFL learners. The findings revealed that learners conveyed favourable attitudes towards implementing machine translation in writing. The study emphasized its role to enhance writing proficiency in the target language. An intelligent personal tutor known as Blingbang using Microsoft's bot framework was designed by Du et al. (2020) to address learners' problems in writing and speech in the EFL areas. The system was realized to be valuable to deal with such difficulties. Findings showed that learners expressed satisfaction to respond to questions and ultimately communication failures were solved.

### **Learners' and Teachers' Perceptions on AI Tools**

In teaching and learning English as a foreign language (EFL), it is of utmost importance to identify the different views of teachers and learners regarding the potentiality of utilizing AI tools to boost learners' achievement in the target language. The worth of exploring the perceptions of learners and teachers has been stressed by a wide range of studies. For instance, Hartono et al (2023) inspected the attitudes of teachers and students towards the incorporation AI technologies in the teaching process. The study revealed that teachers

and learners hold positive attitudes regarding the efficacy of such tools to optimize individualized learning and language skills.

To explore EFL learners' perspectives about AI-based instruction in speaking, Zou et al. (2023) utilized the Integrated Model of Technology Acceptance (IMTA). The study revealed learners' approval and satisfaction. In addition, AI tools were found to be user-friendly. In a Taiwan setting, Chen et al. (2023) investigate the perception of Google Assistant (GA) among EFL college students for second language learning. The results show that GA is an inspiring tool for English learning that improves speaking and listening skills. Wang's (2022) study reveals that students have high expectations for computer-assisted review tools for English writing ability, and they find computer-scoring feedback to be more effective than teacher feedback. In Saudi and South Korean scenarios, Almusharraf and Bailey (2023) surveyed university EFL students to understand their perceptions and practices of machine translation (MT) tools. The results showed a high level of acceptance and utilization of MT tools, with English avoidance behavior, benefits, and foreign language proficiency being the main factors influencing their use. Mohamed's (2023) study on ChatGPT's effectiveness in English language learning at Northern Border University revealed mixed opinions, with some recognizing its usefulness and others expressing concerns about hindering critical thinking.

Researchers conducted a range of studies on the Indonesian contexts. The study by Syahnaz and Fithriani (2023) found that sixth-semester students positively rated QuillBot's use in an EFL academic writing course, highlighting its potential benefits. Salija and Rahman's 2023 study on 100 English Department students revealed high acceptance of artificial intelligence in English language teaching, indicating its positive impact on learning English. Enzelina et al.'s 2023 study found that students have positive perceptions of AI-based applications in post-pandemic learning, while lecturers have negative perceptions, aiming to improve English language skills. Alawadhi and Abu-Ayyash (2021) discovered that Kahoot, a game-based student response system, significantly enhanced motivation, classroom engagement, and learning experience in an English language course in the UAE. Le Phan's (2023) study on students' perceptions of AI technology in English writing

classes at Vietnam National University reveals accessibility, adaptability, and simplicity. Sütçü and Sütçü (2023) highlighted the growing popularity of Artificial Intelligence in Education (AIED), but concerns about its effective adoption persist, with English teachers generally optimistic about AI's potential. Boonmoh et al.'s (2021) study on Thai secondary school teachers found that most had knowledge of technological tools and integrated them into their classes. In the USA situation, Kim and Kim (2022) explored teachers' perceptions of AI in Boonmoh STEM education, revealing that most teachers positively view AI as a superior scaffolding tool. Çakmak's (2022) study on 90 EFL students found negative attitudes towards chatbot-human interaction with Replika, suggesting it may not be a reliable method for reducing L2 speaking anxiety.

To come to the point, the review affirms the significant role of the views of teachers and learners towards AI-assisted teaching and learning. The following section analyses studies that address the role of AI technologies utilized in different EFL situations to motivate learners and engage them in the learning process.

### **EFL Learners' Motivations and Engagements**

Incorporating AI technologies in EFL instruction can be beneficial in achieving learning outcomes as AI-assisted education increases students' engagement and motivation to master the foreign language. This statement is proved by the research findings.

Using a mixed-method approach, Moybeka et al.'s (2023) study on the effect of AI tools on learners' motivation in the Indonesian EFL contexts. The research findings highlighted the efficacy of these innovative tools to enhance motivation, individualized learning, and self-confidence. In the same EFL situation, Sumakul and Hamied (2023) investigated the aspects of learners' motivation when employing AI tools in the classroom. The data gathered from 133 EFL learners by means of questionnaires and interviews. Findings indicated that more than a quarter of the learners were motivated due to factors such as lesson design, user interface, and intelligence. Wei (2023) inspected the influence of AI-assisted language learning on 60 EFL learners' motivation, self-regulated learning and achievement in the Chinese contexts. Compared to the controlled group, learners in

the experimental group achieved better learning outcomes in reading, writing, vocabulary, and grammar. In addition, learners employed greater self-regulated learning tactics, and higher levels of motivation. In the Chinese context, Lin et al. (2021) investigated students' motivation while learning AI and the gender motivation differences among learners. The study revealed that intrinsic motivation impacted learners' motivation the greatest. Regarding the gender, male learners scored better than the female ones.

In Zhang et al.'s (2023) study, chatbots were found to be effective in EFL writing, improving motivation, high-quality interactions, study plan making, and accessibility, potentially influencing self-regulated learning. Wang et al.'s (2022) study on AI coaches in primary schools found cognitive presence, learners' affection for AI's appearance, English shadowing, and teaching presence all positively influenced L2 learning outcomes. Wang et al. (2023) found that satisfaction, university support, enjoyment, and interactive rewards influence student participation intention and interactivity in intelligent teaching using AI. In a Taiwan setting, Huang et al.'s (2023) study utilized AI to enhance students' motivation and engagement in a systems-programming course, finding that AI-enhanced video recommendations significantly improved academic achievement and active participation. Chen et al.'s (2021) study of 84 engineering majors found that integrating VR into problem-based learning significantly improved vocabulary acquisition and motivation for future careers, emphasizing the importance of immersive environments in contextualized learning. A study in the Saudi context by Ali et al.'s (2023) revealed that ChatGPT positively influences English language learning, promoting reading and writing skills development, but further research is needed to understand its benefits and drawbacks.

Han (2021) conducted a study to inspect the effect of AI chatbots on the performance of 23 EFL students in South Korea. The study findings indicated decline in foreign language anxiety, increased interest and motivation to learn and significant development in the target language proficiency. Another study in the South Korean EFL context was carried out by Jeon (2021) to explore the influence of chatbots on students' motivation in the classroom. The study examined the utility of AI tools whether they impact learner

psychological states and restrict language learning or foster learning. In Taiwan setting, Tai and Chen (2023) carried out a study to examine the efficacy of a Google Assistant, an intelligent personal assistant to boost 112 EFL learners' readiness to interact and communicate. The findings indicated that the Google Assistant improved communication and mitigated learners' anxiety to speak due to a significant increase in motivation and engagement. Muñoz et al. (2023) inspected the influence of employing ChatGPT on 350 teachers' and students' motivation in the Peru scenario. A strong correlation was reported between listening skills acquired by students, and instructors' experiences. Furthermore, the study revealed that ChatGPT is an instrumental tool in optimizing student engagement, interest and motivation.

To recapitulate, systematically reviewing research work regarding the relation between utilizing AI tools in the EFL contexts and learners' engagement and motivation, shows that such innovative strategies are crucial to enhance foreign language acquisition. The following section deals with the employment of AI technologies in language skills learning.

### **Integration of AI tools in language skills**

The gains and benefits of incorporating artificial intelligence technologies in EFL instruction to help learners improve language skills and ultimately attain proficiency in the foreign language have been emphasized by a wide range of studies (see, for instance, Al-Raimi et al., 2024; Bin-Hady et al., 2023; Fitria, 2021; Hasibuan et al., 2023; Wu and Wang, 2021). Language acquisition requires learners to develop mastery of the productive and receptive language skills: namely writing, speaking, reading, and listening. The subsequent sub-sections elaborate on the use of AI in language learning and teaching. The researchers divide the following sub-sections based on commonly known terms, specifically productive skills (speaking and writing skills) and receptive skills (listening and reading skills).

#### ***Productive Skills***

Researchers have conducted a wide spectrum of research in the realm of productive skills to understand the impact of AI applications on the acquisition of writing and speaking skills. In the Saudi context, Al-Mahmud's (2023) study explored the impact of AI-powered writing technologies like

Wordtune on Saudi EFL writing, finding consistent improvements in lexical and syntactic gains and final exam performance. In Egypt, Marghany's (2023) study found that AI-based Grammarly instruction significantly improved the FL writing skills of 100 Egyptian higher education students, indicating its potential for effective essay teaching. Abdalkader's (2022) study found that AI activities, including Minecraft games, Semantris vocabulary games, and virtual reality, significantly improved EFL writing fluency in 33 preparatory stage students. The study by Abrenilla et al. (2023) found that integrating AI writing tools can enhance the quality of EFL student writing. The study by Marzuki et al. (2023) found that integrating AI writing tools can enhance the quality of EFL student writing. Harunasari's (2022) study investigates the use of ChatGPT in EFL writing classes for fourth-semester students in Jakarta, Indonesia, highlighting strategies like clear usage policies and recording student queries. Gayed et al.'s (2022) study in Japan suggested that AI KAKU, an AI-based web application, can help EFL learners reduce cognitive barriers in writing. In the Saudi context, Alotabi's (2023) study explored the impact of AI on English writing skills, revealing Grammarly's effectiveness in identifying errors and instilling confidence among students. In the Chinese scenario, Yang et al.'s (2023) study on Chinese university-level English as a foreign language students' interaction with Pigai, the largest AI-programmed automated writing evaluation, found that learners primarily focused on error corrective feedback, with lower take-up rates for linguistic resources. Tsai's (2022) study on Google Translate's use in EFL writing reveals that GT texts offer enriched content, advanced vocabulary, and fewer errors. Liu et al.'s (2023) study suggested that an AI-supported English writing approach could improve EFL writing skills, resulting in better performance, self-efficacy, self-regulated learning, and reduced cognitive load. Chang et al. (2021) found that students using Grammarly significantly enriched their EFL writing performance compared to those who received traditional instruction without Grammarly.

In the case of the speaking abilities, utilizing AI tools can have a leading role in fostering the EFL learners' speaking skills in a way to help them communicate effectively in different situations and contexts outside the classroom. Zou et al. (2023) conducted a study to explore the effects of social network-enhanced instruction on the utilization of

AI speaking applications to encourage speaking practice among EFL learners in China. The study showed developments of the learners' speaking skills in the experimental group. In the same context, Zou et al. (2023) investigated the role of AI-assisted speech evaluation systems in enhancing 40 EFL learners speaking abilities. Findings demonstrated that learners greatly improved their speaking skills. In the China situation Qiao and Zhao (2023) studied the efficiency of AI-assisted instruction in developing students' speaking skills. The data collected from 93 EFL students and the results indicated the speaking skills of the students in the experimental group significantly developed greater than that of the controlled group. Kim (2021) analysed three types of chatting: AI text-chatting, AI voice-chatting and face-to-face chatting. 110 EFL South Korean learners were divided into three groups and the findings showed that learners' performance in the voice--chatting group was significantly better than the other two groups. Chen et al. (2022) utilized an AI-assisted system called dynamic assessment-based speech recognition (DA-SR) in the Taiwan EFL context. The study stated that such tool is effective not only in developing the learners' speaking capabilities, but also mitigating anxiety to speak in the target language. While Tai (2022) revealed that Google Assistant significantly enhances EFL learners' oral proficiency by providing high-quality input, immediate feedback, and reducing anxiety. Makhoulouf's (2021) study at Albaha University, Saudi Arabia, found that AI significantly improved non-English major engineering students' fluency and accuracy skills, recommending AI as a teaching tool. Kang's (2022) study in South Korea revealed that while AI avatars and native speakers enhanced ESL learners' oral performance and speaking abilities, interactive activities did not boost motivation or reduce stress. Karim et al. (2023) found that the Indonesian English Language Speech Application significantly boosted EFL students' speaking abilities, with 90% feeling confident and 95% recognizing it as a motivational tool. Noviyanti (2020) revealed an AI-based pronunciation checker improved students' pronunciation by 30 points, but they still emphasized the importance of regular communication with natives for faster learning. Lin and Mubarak (2021) found that AI technologies, particularly chatbots, can improve English learning for EFL students in university flipped classrooms, enhancing speaking, and

learning performance. Han's 2020 study found that voice-based AI chatbots, 'Echodot', significantly developed Korean EFL middle school students' speaking competence and affective domains, suggesting the need for EFL teachers to incorporate AI chatbots into classrooms. Chen's (2022) study found that technology-enhanced learning reduced EFL learners' public speaking anxiety.

### *Receptive Skills*

Decoding the received message, whether it comes in written or verbal form, is crucial for achieving effective communication. Hence, EFL learners have to nurture their receptive abilities, namely in reading and listening. A range of research has been carried out to examine the effect of AI on EFL learners' receptive skills. Regarding reading skills, a study by Khasawneh and Jadallah (2023) shows that 80% of undergraduates and lecturers utilize AI models in teaching foreign languages, with 70% claiming it enhances receptive skills performance. Alshriedeh and Mohammed's (2021) study examined the influence of AI programs on English students' reading skills, emphasizing the significance of understanding author content through linguistic terminology. Dong et al. (2022) proposed multi-criteria decision support systems (MCDSS) for AI-enabled production and application of English multimode online reading. This study has demonstrated the use of the super-decision tool to facilitate experimental work. This will enable researchers to identify and develop innovative solutions for the subject matter. In the Indonesian context, Lestari et al.'s (2021) study at the Islamic University of Kalimantan found a high correlation (0.67) between students' AI and their English reading skills achievement, indicating that mobile applications significantly improve these skills. Estaji and Saedian's (2020) study examined the impact of computer-mediated dynamic assessment (DA) on L2 learners' reading comprehension. The study revealed that the effects of both human-only and computer-only types were similar, indicating the effectiveness of computer-mediated mediation.

Several studies have focused on the listening skill. A study by Al-Mawaly and AL-Jamal (2022) found that AI significantly enhances the listening comprehension and attitudes of Jordanian EFL sixth-grade students, recommending its use. In Indonesian sitting, Suryana et al.'s (2020) study explored students' perceptions of AI mobile

applications for improving English listening skills. The study found Netflix to be the most effective and efficient AI mobile application for improving English listening skills among students. Another study in the same sitting, Arini et al.'s (2022) study, revealed that AI-based mobile learning significantly enhances English proficiency among EFL University students, indicating the need for further enhancement in NoVo Learning implementation. Tai and Chen's (2022) study found that intelligent personal assistants (IPA), particularly via Google Nest Hub, positively impacted adolescent EFL learners' listening comprehension by offering interactive listening, multimodal responses, peer collaboration, and meaningful interaction. The study explores students' perceptions of AI mobile applications for improving English listening skills, using an interdisciplinary approach.

### III. DISCUSSION

This review incorporates around 100 research papers, after excluding those that do not correspond to the study's aims. It was noted that there is a significant rise in the quantity of published papers in AI in EFL studies between the years 2020 to 2023, with the largest number of research published in 2023 and the lowest in 2020. The researchers conducted the search using four domains: AI in EFL contexts, learners' and teachers' perceptions of AI tools, EFL learners' motivations and engagements towards AI tools, and the integration of AI tools in language skills. Overall, the majority of the existing literature highlighted the fact that AI has significantly enhanced contemporary EFL teaching and learning, resulting in a generally positive impact and feedback. This finding aligns with previous discussions on the topic (see, for instance, Al-Raimi et al., 2024; Mijwil et al., 2022; Rusmiyanto et al., 2023; Huang, 2022; Jiang et al., 2022; Sumakul et al., 2022; Xin, 2021; Yu and Nazir, 2021).

Furthermore, additional noteworthy findings in this review include the fact that AI has had a significant impact on the realm of English language teaching and learning in the period following the pandemic. The bulk of research has shown that learners and teachers alike hold positive perceptions and attitudes regarding the incorporation of AI tools in the teaching process, resulting in a beneficial influence on EFL learning sittings. These findings converge with previous studies by Mohamed's (2023), Silitonga et al. (2023), Mohamed and Alian

(2023), Xiao and Zhi (2023), and Han (2020). On the other hand, according to Sumakul et al.'s (2022) findings, AI in the EFL context tends to vary from being positive, which is consistent, to being conservative. Moreover, research has demonstrated that the inclusion of AI tools plays a crucial role in enhancing learners' motivation, which ultimately leads to fruitful outcomes and improved performance in the target language. While there are few studies investigated the utilizations of AI in EFL learners' engagement. In addition, very few studies have investigated the ethical implications, considerations, and risks associated with applying AI in EFL contexts.

Regarding the language skills, this review has revealed that utilizing AI in the teaching process improves the learning and mastering of the four language skills, leading to fluency as well as comprehension of the target language (see, for instance, Marghany's, 2023; Abrenilla et al., 2023; Harunasari, 2022; Zou et al., 2023; Chen et al., 2022; Makhlof, 2021; Khasawneh and Jadallah, 2023; Alshriedeh and Mohammed, 2021; Suryana et al., 2020).

The current analysis adds to the previous reviews conducted by other scholars in various domains in the EFL environment (see for instance, Ali (2020), Yang and Kyun, and Sharadgah and Sa'di (2022)). New insights have been attained because of others' work on analyzing the effectiveness of AI tools in teaching and learning. The review indicates that AI technologies such as Machine Translation, Wordtune, ProWritingAid, Google Translate, Google Assistant, Grammarly, Avatars, QuillBot, ChatGPT, etc., have all been utilized in the EFL situations proving their efficacy in enhancing learning the foreign language (Ahn, 2022, Al-Mahmud, 2023; Chen et al., 2023; Syahnaz and Fithriani, 2023; Tsai, 2022; Yang, 2022; Xiao and Zhi, 2023). Despite the findings, it is important to acknowledge that the current review does not address other aspects of EFL, including grammar, vocabulary, learners' anxiety, and styles.

### IV. CONCLUSION

In closing, the current review teased out the impact of AI on EFL teaching and learning, focusing on four dominant AI domains: AI in EFL contexts, learners' and teachers' perceptions of AI tools, EFL learners' motivations and engagements towards AI tools, and the integration of AI tools in language

skills. The automated model developed by Guan et al.'s (2020) to collect published work from 2020 to 2023 from numerous databases, for example Semantic Scholar, Web of Science, Google Scholar, Scopus, and ERIC was adopted for the purpose of the current review. The main findings drawn from the current meta-analysis stress the contributory influence of AI tools in the EFL contexts. Such AI tools become an indispensable part of the teaching and learning process. Regarding the productive skills, the review reveals that integrating AI tools has significantly influenced English language productive skills teaching and learning. However, there is a noticeable scarcity of research work associated with the receptive skills. Moreover, AI tools when incorporating them in the EFL education, are found to be vital in motivating learners to acquire the foreign language. About learners' and teachers' perspectives on employing AI tools, the review mostly expressed positive views towards these innovative approaches.

In addition, having thoroughly and systematically analyzed the existing literature, the review identifies a research gap as most studies have focused on the productive skills, learners' and instructors' perceptions, and engagement, and

motivation; however, there is a dearth of literature concerning the receptive skills, namely listening and reading. Consequently, it is of utmost importance to address this knowledge gap in the research literature. In addition, further research studies are required to investigate the impact of implementing AI technologies to enhance EFL evaluation and assessment, mitigate learners' anxiety, develop grammar and vocabulary acquisition.

### **ETHICS STATEMENTS**

The authors have read and followed the ethical requirements for publication in Jurnal Arbitrer and that the current work does not involve human subjects, animal experiments, or any data collected from social media platforms.

### **CREDIT AUTHOR STATEMENT**

All authors contributed equally.

### **DECLARATION OF COMPETING INTERESTS**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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