

A Review on the Role of Artificial Intelligence in Enhancing EFL Learning: Perspectives from Higher Education

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Abstract- The rapid development of artificial intelligence (AI) into English as a foreign language (EFL) education has sparked a complete shift towards personalized student driven education. This review paper gives a systematic view of the evolving landscape of AI working tools like Intelligent Tutoring Systems (ITS) and AI powered writing to evaluate generative AI and speech recognition with their specific roles for enhancing language ability. By looking at the latest research and technological development together, the study evaluates how AI was improving language learning by giving personalized instructions and instant feedback and reducing anxiety. The paper analyses that technologies make learning more practical and relevant and also accessible for everyone. The paper also reviewed some critical concerns regarding algorithmic bias, unavailability to access digital technologies due to internet shortage and the necessity of maintaining human-centric design. Hence the paper shows that AI is future oriented which emphasizes the teaching model which is humanly friendly. Overall, AI is very helpful in language learning, but only if it is perfectly designed and is used ethically. It must be used carefully to ensure a better understanding and a positive experience.

Keywords: English as Foreign Language (EFL), Intelligent Tutoring Systems (ITS), Artificial Intelligence (AI).

I. INTRODUCTION

The term AI stands for Artificial Intelligence. It functions like a human because it is a computer based human intelligence system. It facilitates teaching in classrooms and higher studies [1]. They have shown how Artificial Intelligence methods can enhance an English as a foreign language, as well as improve vocabulary, intercultural competencies, and productive skills. They showed that the use of Artificial Intelligence in EFL situations is still in early days and more study is needed to determine exactly AI generated lessons affect the affective variables of EFL learners [2]. They have served as both an object and a tool of research into an AI, psychology, pedagogy, applied linguistics, and more, since they make use of several knowledge representation models, computational linguistics and technological artifacts of AI [3].

Improving motivation, foreign language enjoyment (FLE), and student involvement are important for fostering successful learning outcomes in the field of

AI education. There is a dearth of research examining AI effects on different educational constructs because of its increasing use in educational settings [4]. The usage of artificial intelligence learning tools and their platforms in English training has significantly changed the traditional classroom setting. Language teaching has become more efficient and accessible thanks to chatbots, Google translate, automated grading systems and AI powered language learning applications. The company faces many of challenges such as data privacy, ethical concerns, algorithmic biases, as AI becomes more integrated into teaching strategies [5].

The effects of Artificial Intelligence on children's linguistic skills and the significance of teaching students can use AI programs efficiently. The results show the extensive usage of robots in English classrooms and teacher expectations for growing open source language learning web channels. It gives instructors the tools they need to successfully incorporate Artificial Intelligence technologies in the

classroom, with the study suggesting matching professional development programs with language curricular [6]. Since the 1950s, AI has been used as a TEFL (Teaching English as a Foreign Language) and it has advanced considerably throughout the years. However, in the past two years, it has drawn more attention from all over the world with the release of ChatGPT and other related Generative AI (Gen AI) applications. Along with benefits of AI in TEFL learning, they consider many challenges like computational issues, limited language exposure, and lack of human interaction [7].

The AI groups motivation levels significantly increased. Students in the AI group expressed favourable opinions on AI based education, pointing to increase in their level of autonomy, involvement, and writing confidence. Participants considered the platforms for individualized learning experiences and increased the self regulation to be both beneficial and pleasurable [8]. Instructors are apprehensive of the employment of AI technology in the education field broadly, and how its implementation significantly affects English language skills [9]. The ability to develop customized learning resources is one of the major benefits of utilizing AI in the English language learning. AI based systems can assess students learning objectives and language levels to produce resources that address each student's unique requirements and difficulties [10]. This review studies the role of AI in enhancing EFL learning and study the advantages and disadvantages of the AI in EFL learning. They also study the challenges facing by teachers and students to learn English as a foreign language.

II. LITERATURE REVIEW

Technological Implementation in AI for EFL:

Jiang et al [11] found that AI has a perfect platform in education. A multi layered technical framework is the foundation for AI effectiveness in teaching EFL. They outlined the fundamental technologies that power the six key applications found in their review from emotional identification to linguistic modelling. These key applications are Natural Language Processing (NLP) and Speech Technologies, Adaptive Engine and Knowledge Tracing, Neural

Machine Translation (NMT) Architecture, Affective Computing (AC) and Sensor Integration, Intelligent Virtual Environments (IVE). ITS functions consist of four different models, namely Domain Model, Student Model, Pedagogical Model, and Interface Model.

Tabrizi et al [12] explained that ITS (Intelligent Tutoring Systems) which function as an intelligent, digital learning environment for language learners are the main means of applying AI. The system is majorly dependent on three technologies which are Knowledge Representation Models, Computational linguistics, and general AI artifacts. Successful ITS models have consisted of a three-core component named the Tutor, the Learner, and the Domain Knowledge. Some basic benefits of ITS system are reduced teacher workload, consistent feedback, 24/7 work support and some major issues like feedback accuracy issues, data privacy concerns, reduced human interactions. Vera et al [13] found that teachers have expressed favourable opinions on the application of AI, recognizing its potential for better teaching and learning. Educators can use AI to create lesson plans, assessments, and role-play scenarios. AI permits teachers to match each student's proficiency by providing twelve different reading levels for the same topic at the same time.

Hsu et al [14] found that many people studying English as a second language frequently find it irritating and challenging to learn spoken English, particularly when they must talk with English speaking foreigners. An interactive chatbot system named TPBOT which stands for TOEIC Practice Chatbot helps EFL students overcome their nervousness of speaking English and gives access to online AI platforms so they can practice speaking the language whenever they want. They analysed that these resources support that Artificial Intelligence can improve traditional EFL instruction by combining intelligent technology and individualized teaching approaches. Chatbots and ITS systems can assist teachers through automation while enhancing learning accessibility, engagement, and personalized education. However, for successful adoption some challenges may be faced such as data privacy,

feedback reliability and maintaining valuable human interaction in the learning process.

Shahid et al [15] took support from the specified AI tools like Duolingo, ELSA, QuillBot, Grammarly, Chapter for the enhancement of their vocabulary, paraphrasing, pronunciation and many more. Through this technological advancement they were able to upskill four major skills which were reading, listening, speaking and writing. While experimenting with this technology, they discovered a barrier in the

people's interaction with machines which is quite not good, also they discovered about the high speed internet issues among locals. The graduates of Pakistan also analysed the contextual errors among humans and the machine as AI do not understand the local or specific Pakistani English contexts as shown in Fig1. This figure demonstrated the satisfaction survey done among students consisting of questions about the use of AI tools while learning English as a foreign language.

	Questions	Mean(S.D.)
1	The TPBOT prompted me to explore new challenges.	4.5 (0.88)
2	Compared to talking directly with foreigners, using TPBOT to practice speaking makes me more confident.	4.7 (0.79)
3	I think my process of TOEIC speak learning on TPBOT is very interesting.	4.6 (0.89)
4	TPBOT can stimulate my thinking ability.	4.5 (0.81)
5	TPBOT is easy to use.	4.3 (0.85)
6	The mobile TPBOT allows me to learn anytime, anywhere.	4.2 (0.82)
7	I think using TPBOT can improve my speaking ability.	4.8 (0.81)
8	Compared to studying alone, I prefer to use TPBOT to learn.	4.8 (0.82)
9	I think to learn will help me get good grades in TOEIC.	4.7 (0.83)

Fig.1. Tabular Representation of satisfaction survey result of students [15]

Li et al[16] explained the intelligent tutoring system for the English language through computer algorithms. The system was built on four major cores of ITS for English language acquisition which were Expert Knowledge Module which contained grammar, vocabulary and linguistic rules, Student Model which contained database tracking of an individual learner, errors and learning pace, Tutoring Module which contained Pedagogical Engine for making strategical learning for students, User Interface which contained the Communication layer. This algorithm was powered by specified AI engines which were Natural Language Processing (NLP), Machine Learning (ML) and Adaptive Learning Algorithms.

Through this technology, the specific English acquisition tasks like error detections with proper feedback irrespective of the answers being right or wrong, great personalization to differentiate between shallow or deep engagements and finally Knowledge Representation with logic based systems to form complex English grammar rules. Dai and Liu [17] analysed how AI is helping in the enhancement of EFL with its pros and cons. They took a phenomenological approach to investigate the implementation of AI in EFL classes. For that, they

took students from different institutions to test it out. They also used AI technologies for four primary educational functions in the EFL classrooms, which were generative content creation, in which they used ChatGPT for generating lesson plans, adaptive learning, which analyses the students' efficiency, feedback systems for corrections and pronunciation, and interactive AI bots to assist them whenever they need.

They analysed that most of the literature concludes that such technologies should be utilised as beneficial additions to the classroom rather than as a replacement for professors, despite current studies demonstrating that AI may promote data driven and flexible learning of the English language. To bridge the gap between AI potential and present reality, the industry must address critical difficulties in contextual language processing, digital infrastructure, and equitable access. Future AI educational systems must eventually put cultural adaptability and obstacle removal first to improve learning outcomes, ensuring that students, teachers, and technology work together harmoniously. Zhang et al [18] study focuses on the role of technological literacy in Augmented/Virtual Reality (AR/VR), Artificial Intelligence, and mobile apps in relation to

the level of students' engagement and motivation in learning English as a Foreign Language (EFL). The study design is based on 357 Chinese EFL students through a survey based study with the application of Structural Equation Modelling (SEM). Technology literacy is useful for the development of cognitive skills and critical thinking ability. The incorporation of AR/VR, AI and mobile technology in EFL learning is useful for the enhancement of learning outcomes and the promotion of innovative approaches in teaching.

Sahito et al [19] research on the impact of AI on the improvement of listening skills of students learning English as a Second Language (ESL) by using AI tools such as Virtual Tutors, Speech Recognition Software and Text to Speech Systems. The study used a Quasi Experimental Design by using AI tools for listening practice and listening techniques. The results showed improvement in listening skills, with an increase of 26.15 points in the experimental group compared to an increase of 8.30 points in the control group. There were many challenges identified, such as dependence on AI tools and error in speech recognition systems, and the best results are obtained when AI tools and traditional techniques are used together. On other hand, Yilamz et al [20] studied that vocabulary knowledge is vital for language proficiency and communication in English as a Foreign Language (EFL) learning. Development of Artificial Intelligence (AI) has dramatically changed how vocabulary is taught and learned.

There are types of AI technologies such as automated feedback systems, generative chatbots, object recognition tools and game based learning environments. These technologies support improving vocabulary diversity, feedback, and student engagement. During the study, a lack of literature was found on vocabulary learning for English for Specific Purposes (ESP). Many studies have been conducted on vocabulary improvement indirectly, but with a focus on other language skills, such as writing or speaking.

With all things considered together, it was seen that AI driven interventions greatly help English language learners by enhancing motivation, engagement and

fundamental abilities like grammar and listening in addition to more general cognitive growth. Despite these benefits, the literature advises against relying too much on technology and instead promotes a hybrid strategy that combines AI with tried-and-true teaching techniques. Future research must thus fill up the current empirical gaps, particularly about the use of AI to produce specific vocabulary in English for Specific Purposes (ESP). Arslan et al [21] research aimed to investigate the perception of EFL instructors on the integration of Artificial Intelligence in the teaching of English as a Foreign Language (EFL).

AI has been increasingly used in the teaching of EFL, but the perception and willingness of instructors to use AI in EFL teaching is still largely unexplored as a research area. This research study included 230 EFL instructors in Turkey as participants. Data collection tools used for the study included semi-structured interviews and a survey scale, and the study was based on the Technological Pedagogical Content Knowledge (TPCK) concept. The study found that instructors had an average self perceived competency in using Artificial Intelligence, and the interview results indicated a lack of knowledge and skills of instructors in enhancing Artificial intelligence for learning English as a foreign language.

Challenges in Advanced Technological Implementations:

Kasimi et al [22] observed some challenges like AI frequently falling short of human teachers' emotional intelligence, empathy, and sophisticated comprehension. Idiomatic expressions, humour, and nonverbal cues, all crucial for advanced language fluency are sometimes difficult for tools to handle. Since technology driven studies now dominate in the literature, the lack of research on how to successfully integrate Artificial Intelligence with well-established educational ideas. Many teachers are afraid by the possible dehumanization of the classroom or lack the advanced digital literacy needed to assess AI generated information objectively. Students may become overly dependent on AI for quick fixes, cognitive shortcuts, which may retard the growth of critical thinking and self-control abilities.

Alshumaimeri et al [23] observed that despite AI's 30 years of history, educators are still deeply opposed to it because they do not think it can meaningfully affect fundamental language skills like profound awareness and critical writing. The concern that AI lacks the empathy and social adaptation necessary for language acquisition, which is essentially a social process hinders the development of it. Traditional EFL methods of evaluation are always threatened by the challenge of identifying AI generated content. Systemic inequity in the implementation of AI is caused by digital divide difficulties, such as poor internet connections, expensive premium tools, and a lack of technology.

The lack of ability of AI systems to replicate human emotional intelligence, empathy, contextual awareness and understanding of idiomatic phrases, humour, and nonverbal communication limits their effectiveness in promoting advanced language proficiency. Furthermore educators question artificial intelligence capacity to assist more complex language skills like critical thinking and deep language understanding since language development is essentially a social activity requiring human interaction. Academic integrity is also called into doubt by the growing usage of AI especially when it comes to detecting AI generated work during assessments. In the end, infrastructural limitations including the digital divide, poor internet connectivity, limited access to sophisticated AI applications, and unbalanced technological resources make it difficult to use AI fairly in education.

Alhalangy et al [24] notice that educators and students now have the ethical responsibility instead of simply institutions. This makes it challenging to uphold consistent moral norms across a range of educational contexts. Differentiating between AI assisted learning and AI facilitated cheating has become a major challenge for engaging academic excellence due to the increasing number of latest new AI tools. Despite being tech-savvy, students frequently lack the metacognitive abilities necessary to effectively employ AI for Self-Regulated Learning (SRL) and instead use cognitive shortcuts. Moybeka et al [25] elaborate that students from diverse

linguistic backgrounds may be marginalized if AI systems are trained on particular accents or dialects. The danger of pupils being reliant on artificial intelligence technologies such as grammar checkers or real-time translators instead of gaining autonomous language proficiency. Teachers may find it difficult to strike a balance between the conventional curriculum and test requirements characteristic of EFL programs and customized AI-driven pathways making sure that every student has equitable access to AI resources in order to stop the learning outcomes gap from growing.

Fedoriv et al [26] found that teachers can find it challenging to distinguish between a student's use of an LLM for relief such as correcting grammar and replacement such as creating the main point. When the final AI generated product frequently catches the lack of student cognitive effort, it is challenging to implement a system that guarantees human creativity and critical thinking remaining as the key drivers. Traditional plagiarism detection is rendered useless by the increasing sophistication of AI models, which make it practically hard to discern between a highly skilled EFL writer and an AI assisted text. Higher education credentials run the systemic danger of being devalued if the AI writing assistant undertakes the heavy lifting because the degree might no longer accurately represent the students linguistic or analytical aptitude.

The use of AI in the framework of English as a Foreign Language possess several complex issues from systemic biases to academic integrity. According to studies it is now practically difficult to tell the difference between AI supported learning and AI facilitated cheating endangering the reliability of educational evaluations. Additionally, the development of autonomous language abilities and critical thinking is hampered by students propensity to utilize AI for cognitive respite. The widening technological gap in AI access, algorithmic biases against other languages and the challenge of coordinating customized AI paths with traditional standardized testing all exacerbate these educational dangers.

III. CONCLUSION

Artificial intelligence can be used in the teaching and learning of English as a Foreign Language (EFL) and is the transformative shift in modern education. As such the study observed that the review of the studies indicated that new AI technologies such as Large Language Models and language learning applications have greatly contributed to the improvement of the overall learning experience. This is a critical factor in the improvement of the overall proficiency of EFL learners in speaking, writing, listening, and reading. However, it is important that despite these advantages, the number of limitations and challenges that need to be taken into evaluation. This overdependence is likely to cause a situation where students knowledge is fragmented. The study also observed that AI tools have difficulties in understanding context and culture, idioms, and emotional aspects of communication all of which are crucial in language development.

The AI in the classroom raises a number of ethical concerns, algorithmic biases, data privacy, and academic dishonesty. Although AI can offer 24/7 availability and helpful feedback tools, but it is unable to provide the human touch in teaching likely as empathy, cultural understanding and the capacity of meaningful learning experiences. Therefore, the future of EFL teaching may see teachers and AI working in cooperation. In addition, students need to be trained on the use of AI technologies to avoid any form of abuse and to promote self-directed learning. In conclusion, although AI technologies have a significant potential to revolutionize language teaching in the future, it should be noted that it all depends on a number of considerations. More emphasis can be given to an understanding of the long term effects of AI technologies on language acquisition. This should be done in a way that addresses various issues that might arise in ensuring that AI technologies are harmoniously integrated into teaching to promote a better understanding of languages.

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