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Reviewing Contemporary Trends and Future Directions in English Language Teaching in the Transforming age of Artificial Intelligence

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Abstract : The connective aspect of the English language has been looked back at over and over in a global and multicultural background which has sparked the need for learning the English language. The stiffness in language learning advocated by the traditional approach was expanded by the smartphone and internet access. Of late, the emergence of Artificial Intelligence or AI, especially in education, has further facilitated language learning with its multitude of teaching-learning models branched as ITS, TTS, ASR and many more, combined with popular voice assistants like Siri, Alexa and Google Assistant to provide opportunities for almost native English Language grasp, allowing flexible learning. Language models produce responses resembling human-generated content in a manner, which mirrors natural conversations using extensive textual data on which it is trained to engage with users. The models are designed in a manner, to provide optimum results by taking care of four intrinsic linguistic elements, i.e., reading, writing, listening and speaking, allowing users to advance at their own pace based on their proficiency level. Educators and educational institutions could benefit from this fast-expanding technology since it provides time-saving and effortless student assessment with desired accuracy. Although most of the nods go in favour of the trained machines, this has also raised concerns about unemployment and the lack of human depth when it comes to linguistic nuances as Noam Chomsky addresses it as "high-tech plagiarism" (Stewart, 2023, para. 2). Despite challenges, there is encouragement for further exploration and engagement of AI in language learning. This review takes a broad look at the ongoing and upcoming reforms and structural changes in motion with the extensive use of AI in the field of English language learning. This review especially takes note of the difference in learning between the old and new methods and tries judging them accordingly in the light of AI.

Keywords : **artificial intelligence, language learning, english language, language model**

1. INTRODUCTION :

The connecting aspect of the language is of intrinsic value to the human civilization. For two different cultures or races to meet at one common point, one single language is required to communicate and express. The history of the English language's global acceptance can be traced back to the days of worldwide English colonization which gained significance as a global language over the years and then improvisations were done for a more colloquial and local approach. Thus the importance of English language learning has gained immense popularity among the global mass to feel at home in multicultural environments. Earlier the scope of language learning was only restricted to the four walls of a traditional classroom where the classroom would be under the strict supervision of a language instructor. The emergence of the internet was able to partly abolish this restriction by bringing the world closer, into the palms of our hands. The emergence of AI has pushed all the boundaries and restrictions and provided easy and cheap accessibility to language learning. Artificial Intelligence (AI) is a machine trained through NLP (Natural Language Processing) to help us in routine survival. Commonly, AI is majorly used in the commercial realm for automation. Following recent trends, the use of AI as a linguistic engine has been encouraged globally by integrating it into the field of education. This sets the ground for English Language Teaching through AI. As though the inception of AI saw daylight as written language models, in no time it was integrated into the already existing voice assistants to provide intelligent communicative experience without the requirement of a physical human teacher. The rise of now-common household and personal AI devices has already inspired related debate. Millions of people interact daily with their digital voice assistants such as Amazon's Alexa, Apple's Siri, Microsoft's Cortana, and Google Assistant, and the assistants respond immediately to our questions or commands. This is beneficial to English as a Second Language (ESL) and

English as a Foreign Language (EFL) learners to get an almost native grasp of English. Apart from a traditional classroom, one can now learn language according to their time and still benefit, often better than a human teacher. These possibilities are being explored radically and opportunities are being made to bring AI completely into language learning. Although the potentials are wider, such ideas have been negated by many since they reject human association which goes against human employment. In the last three years, the abundant implementation of AI has been responsible for the unemployment of millions of people working in different sectors worldwide including IT giants like Google, Facebook, Twitter and so on. The age-old notion of language learning revolving around a classroom setting and human association is preferred since it is said that trained machines lack the linguistic and emotional depth to spot colloquial nuances and expressions a language has to offer, recalling the ever-evolving aspect of the English language. Still, the potential cannot be overlooked and thus positive steps are being encouraged.

2. SIGNIFICANCE OF THE REVIEW :

This literature review is a systematic study to assess the influence of AI in the future of English Language teaching and learning. Through an examination of pertinent research, this review aims to uncover the possible advantages, obstacles, and consequences linked to the use of AI in current and upcoming educational domains. So far, there have been numerous research reviews examining AI's role in language education. Some have delved into AI's impact on specific language skills, such as how intelligent tutorial systems affect reading comprehension (e.g., Xu et al., 2019). Others have explored particular technologies like chatbots (Smutny & Schreiberova, 2020). However, comprehensive research reviews on AI's use in language education have been scarce (Liang et al., 2021). Hence, this systematic review concentrates on empirical studies utilizing AI in language learning, aiming to showcase trends in English language learning involving AI. This review also highlights limitations in AI's application in English language learning, offering insights into future research requirements.

3. LITERATURE REVIEW :

The ongoing research in Technology-Enhanced Language Learning (TELL) has been able to leverage various Educational Technologies within language education (Zou et al., 2018). One of the key challenges in employing technology in language learning remains ensuring that students of varying proficiency levels attain equivalent learning outcomes (Shadiev & Yang, 2020). This challenge could be overcome by introducing personalized learning systems which can be developed using machine learning algorithms and data analysis techniques (Cui et al., 2018). Learners with lower language proficiency could benefit from this by progressing at their own pace, and optimizing their own learning journey (Chen et al., 2021a). Heil (2016) noted that inauthentic speech production in many current language learning applications has led to decontextualized experiences. However, this limitation can be mitigated through AI-enhanced approaches. For instance, the context-aware ubiquitous language learning system by Chen et al. (2019) incorporates GPS functionality for location-based contextualized English learning. The results demonstrated high learner motivation and satisfactory performance, highlighting the potential of AI in addressing existing issues in TELL and enhancing language education.

In researching the utilization of Artificial Intelligence in language education, Gamper and Knapp (2002) explored 40 Intelligent Computer-Assisted Language Learning (ICALL) systems. Their findings highlighted User Modelling, Natural Language Processing (NLP), Natural Language Generation, Automated Speech Recognition (ASR), and Machine Translation as the most common AI techniques employed in language learning systems. In a separate review by Ali (2020), the focus was on the integration of ASR (Automatic Speech Recognition) in language education which involves recognizing human speech, identifying linguistic elements, and facilitating human-machine communication. Concerning ASR, Chatbots were noted for their ability to engage in intelligent conversations using a keyword-matching technique to assess students' speaking skills. Additionally, the incorporation of AI in flipped classrooms was found to effectively enhance students' learning performance and motivation. Therefore, the general expression regarding the benefits of AI in improving language learning has been positive.

Al-Gayyar (2013) emphasized the diverse range of AI applications, with online electronic learning systems standing out as one of the pivotal components of intelligent education. These represent the most significant implementations of AI in the field of education, resulting from the integration of various AI systems and technologies, such as Intelligent Tutoring Systems, Activating Internet, Activating hypermedia, and Activating distance E-education (pp. 503-504).

In a similar vein, Muhammad (2014) discusses a multitude of AI applications, encompassing electronic neural networks, hybrid systems development, the utilization of evolutionary algorithms, electronic self-replication, adaptive electronic platforms, bio-robots, Nano-technology, chemical and organic systems, and advanced control systems (p. 18).

Borge (2016) examines the significance of AI applications by assessing students' performance in both university and pre-university settings. AI simplifies the process for educators by providing precise evaluations of students' proficiency levels, a task that can often be challenging. Additionally, it empowers university faculty to evaluate the effectiveness of educational processes and pinpoint shortcomings in lectures, course content, and educational materials delivered to students. Assignments and individual students' scores based on their abilities and requirements are tailored and monitored by AI, utilizing intelligent algorithms to identify common errors. This technology offers instructors insights into the specific issues students face and delivers immediate feedback through individualized files for each student. Moreover, AI tools and programs can effectively handle crowded classrooms (pp. 10-11).

Radwan (2017) suggested that AI has the potential to address various challenges in English language education. This includes the employment of Information Retrieval methods to enhance reading comprehension, utilisation of Machine Translation for improving translation skills, incorporation of Automatic Speech Recognition for accurate pronunciation learning, implementation of Text-to-Speech technology to assist visually impaired students, integration of open digital language dictionaries to expand vocabulary, utilisation of intelligent software to enhance speaking abilities, and application of a writing evaluation approach to instruct paragraph and essay writing.

4. DISCUSSION :

The present-day research highlights the expanding scope of AI in language education, encompassing programmed learning and various open-source high-tech approaches. The significance of AI applications lies in their capacity to:

1. Adapt to the individual needs and competencies of learners.
2. Operate in alignment with each student's educational preferences.
3. Track the progress of each learner effectively.

These applications offer customized learning pathways suitable for all students, irrespective of their proficiency levels, thereby enhancing their motivation to learn and addressing potential attention deficits. They furnish feedback to assess student accomplishments and identify areas of strength and weakness in the academic content. Additionally, they ensure that curriculum topics are seamlessly integrated, with learners mastering one section before progressing to more advanced material. Scientific content can be presented in the form of problems, allowing students to work through them at their own pace. Instructors oversee this process, providing guidance and feedback. AI tutoring systems bear the potential of replacing instructors, as they incorporate programs that deliver automated guidance and incorporate self-study skills into learners. (Kamuka, 2015)

Teaching English as a second or foreign language involves mastering linguistic elements and vocabulary to develop listening, speaking, reading, and writing skills. This also encompasses using language to create texts and comprehend reading materials. Language development centres around fostering communicative competence both as an objective and a process which calls for the incorporation of both traditional and digital communication strategies into teaching and learning activities. This is where the use of AI applications like simulations and communication programs becomes crucial, as they replicate real-life English communication scenarios, offer practical language skill training, and incorporate educational games centred on language. AI-based communication tools facilitate the practice of precise pronunciation of letters and words through oral-aural exercises for describing and interpreting images and everyday situations, by honing listening skills, and guided pronunciation practice. Furthermore, they enable learners to refine their linguistic abilities and offer feedback for additional guidance. Some programs feature language drills that provide communication training, ensuring learners attain proficiency levels (Barnes-Hawkins, 2016) for ESL and EFL learners.

It is observed in a narrative discussion of web speech technology application for language learning, that AI is employed in human interactions. This means that rather than using AI solely for human-computer interactions, the conversation can now be done through a computer. Previously, communication was person-to-person when Computer-Mediated Communication was used between individuals. However, AI enables humans to communicate with machines like conversing with another person. Daniels (2015) illustrates this with the example of Chatterbots or Artificial Conversational Agents, where intelligent conversations can be initiated using a keyword-matching technique. For example, if a person asks the Chatterbots, "What is your name?", the AI will respond based on the answers stored in its database. Consequently, AI has made it possible to assess speech in today's world.

4.1. Using AI In Learning Writing :

AI systems, namely AWE systems and ITS aid students in their writing. Employing NLP techniques, these systems seek to assess student activities, identify errors, and offer feedback, ensuring a thorough grasp of language usage. In Lee et al. (2015), they introduced a correction system called GeineTutor which is specifically designed to enhance English writing by pinpointing grammar mistakes and suggesting suitable expressions. The system actively guides learners in rectifying their errors in real time, proving beneficial for language skill development. Additionally, Lin et al. (2017) developed an ITS (i.e., EJP-Write) to support an academic journal writing system that features functions like referencing and template searching, thereby effectively providing students with phrase and paragraph templates to enhance their language proficiency.

4.2. Using AI In Learning Reading :

ITS was proven to improve the reading comprehension of language learners. For instance, Johnson et al. (2017) created an Interactive Strategy Training for Active Reading and Thinking (iSTART) aiming at adult literacy learners, featuring instructional videos and exercises to teach comprehension strategies, and summarisation techniques, including interactive narratives for reading practices. The outcomes revealed that learners had a favourable opinion of these narratives. Wijekumar et al. (2017) developed an ITS designed to teach the Structure Strategy (ITSS) to enhance reading comprehension. This ITS assists students in identifying text structures and provides hints and feedback during assessment exercises. The results demonstrated that students who utilized the ITS performed better compared to those who did not, as the system aids in structuring textual information.

4.3. Using AI in Learning Vocabulary and Grammar :

Chen and Li (2010) designed a vocabulary learning system with contextual awareness, which could recommend new words for learning based on students' available leisure time. If students had more time available, the system would suggest additional words to learn. The findings indicated that students who utilized this context-aware system outperformed those who did not. In another study, Pandarova et al. (2019) developed an Intelligent Tutoring System (ITS) for English tense practice. This ITS incorporated dynamic difficulty adjustment to adapt to the complexity of grammar exercises. The results demonstrated that the system effectively provided materials with appropriate difficulty levels, allowing students to learn grammar at their own pace, thereby facilitating effective learning.

4.4. Using AI in Learning Speaking and Listening :

AI was also employed to support the development of speaking and listening skills. In Ayedoun et al. (2019), a conversational agent was created to encourage communication, based on communication strategies and emotional responses, allowing learners to enhance their conversational abilities by posing questions to the AI agent, which would respond accordingly. In the work of Johnson (2007), learners honed their speaking skills through gaming, specifically the Mission and Arcade games. In the Arcade Game, players needed to verbally command their avatars, and in the Mission game, they spoke on behalf of their avatars to complete objectives. Automatic Speech Recognition (ASR) techniques were integrated into these games, enabling learners to engage with non-player characters (NPCs) for practising speaking and listening. To a majority of participants, these games were instrumental in acquiring practical language skills.

4.5. Generative AI in English Language Learning :

The rise of generative AI models such as ChatGPT and Google Bard is currently in charge of the global linguistic field. Generative AI broadly refers to technology capable of generating an almost limitless amount of fresh content by analyzing textual data and producing unique responses based on user inputs. Users can engineer prompts in various ways to tailor responses to different language proficiency levels, adapt to users' content knowledge, mimic the voice or style of historical figures, or adhere to specific rhetorical formats. Despite the evolution of AI tools over many years, generative AIs have rapidly disrupted linguistic fields, partly due to their swift development and widespread accessibility to the public (Holmes & Tuomi, 2023). While its primary function is to emulate human conversation, its capabilities go far beyond that; it can generate actual original works like poems, stories, or novels and can mimic various roles within its capabilities (Tlili et al., 2023). The diverse potential of generative AI carries significant implications for educators and learners of language.

5. ADVANTAGES OF USING AI IN ENGLISH LANGUAGE LEARNING :

The continual advancement of AI technology has been proven extensive across various domains, with education being no exception. AI emulates human functions in listening, including machine translation and speech recognition, (Delić et al., 2019), speaking, encompassing speech synthesis and dialogue between humans and computers (Chiba, Nose, Kase, Yamanaka, & Ito, 2019), observing, such as text and image recognition and computer vision, cognition, like theorem proving (Sarma & Hay, 2017), learning, involving machine and intelligent adaptive learning (Colchester et al., 2017), and even physical actions, as seen in robotics. In particular, AI technologies like computer vision, natural language processing, and intelligent adaptive learning have ushered in transformative changes within traditional pedagogy and language learning. These technologies have introduced novel concepts for linguistic reforms, offering universities and educators innovative approaches to achieving educational goals (Yufei, Saleh, Jiahui, & Abdullah, 2020).

5.1. AI in Personalized Tutoring :

AI can offer tailored guidance and feedback to students according to their unique learning requirements and advancements. Research has illustrated that a conversational agent rooted in a generative model effectively delivered individualized math tutoring to students, ultimately leading to enhanced learning results (Chen et al., 2020). The study revealed that this conversational agent could furnish customized explanations that addressed students' misunderstandings and adjust its communication to match their comprehension levels.

5.2. AI in Automated Essay Grading :

AI has the potential to assess student essays, enabling educators to allocate more time to other teaching-related tasks. Research has demonstrated that AI, trained using a dataset of essays graded by humans, effectively assessed essays authored by high school students, achieving a strong correlation of 0.86 with human grading (Kim et al., 2019). The study underscored the model's capacity to recognize essential attributes of well-crafted essays and deliver feedback closely resembling that of human graders.

5.3. AI in Language Translation :

AI can facilitate the translation of educational content into various languages, increasing accessibility to a broader audience. Research has illustrated that AI, trained on a dataset containing bilingual sentence pairs, proficiently conducted language translation, achieving top-tier performance on multiple translation evaluation standards (Johnson et al., 2016). The study underscored the model's capacity to comprehend sentence meanings in one language and produce precise translations in another language.

5.4. AI in Interactive Learning :

AI holds the potential to establish interactive learning scenarios, enabling students to engage in conversational interactions with a virtual tutor. In a research, a conversational agent based on a generative model effectively offered valuable assistance to second-language English learners, leading to enhanced language skills (Peng et al., 2019). The study emphasized the agent's ability to comprehend students' inquiries and furnish suitable and pertinent responses.

5.5. AI in Adaptive Learning :

Artificial intelligence can be harnessed to construct adaptive learning systems that tailor their instructional approaches following a student's advancement and achievements. AI-driven adaptive learning systems could supply more efficient assistance to programming students, leading to enhanced results in programming evaluations (Chiang et al., 2021). The study highlighted the model's capacity to gauge students' knowledge and adapt the complexity of the problems it presented accordingly.

5.6. AI in Authentic Use of Language :

In many EFL settings, students have limited opportunities to use the target language outside of the classroom, leading to artificial language practice that doesn't reflect real-life usage, especially in exam-focused places like Macao (Hong, 2021a). AI with its ability to emulate human interactions, allows learners to engage in authentic conversations with the chatbot. This provides learners with real queries and the opportunity to engage in authentic conversations, involving summarisation, follow-up questions, clarifications, and information sharing. This offers a more comprehensive language practice experience compared to traditional classroom activities.

5.7. AI as Personal Language Tutor :

Linguistic generative AI like ChatGPT is valuable for generating discussion topics and creative writing prompts for students (TESOL International Association, 2023). It's particularly adept at integrating various learning resources like Grammarly, Wikipedia, Google Translate, and Quillbot, offering instant feedback to students. ChatGPT identifies language and organizational problems in student writing, provides writing suggestions, and explains vocabulary usage with examples (Ohio University, 2023). This instant feedback contrasts with teacher feedback, which often comes with a delay (Hong, 2021b), reducing the chances of students remembering their previous writing issues.

6. DISADVANTAGES OF USING AI IN ENGLISH LANGUAGE LEARNING :

Considering the multifarious utilization of AI, the aforementioned modifications in language learning systems may see the potential to significantly enhance the effectiveness of language instruction and boost student performance and accomplishments. Although there are numerous disadvantages associated with the utilization of AI within the realm of language learning essential to acknowledge them as they are backed by research findings.

6.1. Limitation in Human Interaction :

AI models cannot replicate the depth of human interaction provided by a genuine teacher or tutor. This absence of human connection can be a drawback, especially for students who thrive with a personal rapport with their instructors. Research has indicated that students who engaged with a virtual tutor displaying human-like emotional responses had superior learning outcomes compared to those who interacted with a virtual tutor lacking such behaviour (D'Mello et al., 2014).

6.2. Limited Understanding :

Generative AI models rely on statistical data patterns during training and lack genuine comprehension of the concepts they assist students in mastering. This limitation can be a drawback in terms of offering customized explanations and feedback to address a student's specific requirements and misunderstandings. Research revealed that a tutoring system based on generative models could not furnish tailored explanations for students' misconceptions (Wang et al., 2020).

6.3. Training Data Bias :

The effectiveness of generative models is directly linked to the quality of their training data, and if this data carries biases, the model will inherit those biases. For instance, if a model is trained on essays primarily authored by students of a specific demographic, it may struggle to accurately assess essays from different demographic groups. Research revealed that a generative model trained on a substantial body of internet text displayed gender bias in its language generation (Bolukbasi et al., 2019).

6.4. Data Dependency :

AI undergoes extensive data training which influences the model's qualitative and quantitative effectiveness. When the data is inadequate or relevant compromises the performance of the model. Research indicated that a question-answering system based on generative models delivered subpar results when the training data did not align with the specific task (Kocaguneli et al., 2019).

6.5. Lacks Contextual Understanding :

The AI models' incapability to grasp context and circumstances results in inappropriate or unrelated replies. Research demonstrated that a dialogue system based on AI had a constrained capacity to comprehend and produce contextually suitable responses within a conversation (Gao et al., 2019).

6.6. User Privacy Concern :

Privacy and data security issues are also taken into account while employing AI models in language learning due to their dependence on user data to deliver pertinent outcomes (Ribeiro & Vala, 2020).

7. CONCLUSION :

In the contemporary multicultural world, English language eliminates the linguistic barrier for greater global communication. The third world, primarily Indian subcontinent has witnessed a rise in English language learning where English holds the dual role of Lingua Franca and a symbol of sophistication. With more individuals aspiring to learn English for personal, academic or vocational requirement, challenges and opportunities are being addressed with increased sensitivity. As Artificial Intelligence tools are gaining popularity with multiple sectors reaping the benefits, education sector is not far behind of which language learning is a major part. AI significantly impact language education by fostering a more learner-centric environment rather than a teacher-centric one, which proves more beneficial than the four walls of traditional classroom setting, where teacher dominance often leaves students with below-par grasping capacities behind. As recent times have seen a shift towards a more integrated approach, AI could facilitate language education by incorporating customisability. This new generation technology definitely demands teacher training for technical skill development, researching innovative teaching methods to create favourable learning environment and increase ICT involvement in language education, which allows for better student participation rather than mechanical conditioning. Barriers in education such as lack of infrastructure, updated ICT tools, trained faculty, monetary support, relevant policies, and public awareness could be mitigated by AI, to grant learners the freedom to access information at their fingertips using smartphones and mobile devices anytime and anyplace. Modern technologies, when used wisely, have the potential to transform the way we learn and interact with education. With AI paving the way, approach to language education becomes more flexible, eclectic, and innovative, putting behind the rigidity and dogmatism that surrounded language learning. However, this requires a complete overhaul on our part, encompassing the reconstruction and availability of syllabi, course materials, teaching and evaluation methods, as well as students' attitude towards achieving educational goals through the new generation tech.

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