The Dual Edges of AI in Education: Enhancing ELT and Supporting Students with Learning Difficulties

Konstantina Mathioudaki
PhD c, University of Ioannina, Adjunct Lecturer Aegean College, OLP Aide, American Community Schools
mathioudkon@gmail.com

Abstract
Artificial Intelligence (AI) is transforming education by offering adaptive and personalized learning experiences that enhance traditional pedagogical approaches. This paper examines AI's dual impact on English Language Teaching (ELT) and its role in supporting students with learning difficulties. AI-powered tools, including Natural Language Processing (NLP) applications and conversational agents, are reshaping language acquisition by providing real-time feedback and customized learning pathways. Likewise, AI-driven assistive technologies support students with disabilities by facilitating early diagnosis and delivering personalized interventions. However, while AI's potential is undeniable, its implementation raises ethical concerns, such as data privacy risks, algorithmic bias, and disparities in access. This study emphasizes the necessity of an integrated approach where AI serves as a complement to human instruction, ensuring equitable, ethical, and effective educational experiences. Future research should focus on refining AI's applications, addressing ethical challenges, and optimizing its role in fostering inclusive and high-quality education.

Keywords: Artificial Intelligence (AI), Adaptive Learning Technologies, English Language Teaching (ELT), Natural Language Processing (NLP), Learning Difficulties, Ethics in Education.

1. Introduction

The adoption of Artificial Intelligence (AI) in education is revolutionizing how knowledge is acquired, processed, and applied. No longer confined to theoretical discussions, AI is actively reshaping teaching methodologies and learning experiences across disciplines. By leveraging AI-powered tools, educators and students gain access to more personalized, adaptive, and interactive educational environments, replacing rigid, standardized models of instruction (Binns, 2018; Baker & Smith, 2019). AI's ability to automate tasks, generate immediate feedback, and adjust learning materials in real time has positioned it as a key player in modern education. However, as AI continues to evolve, the question arises: Can it effectively complement human educators while maintaining ethical and equitable learning environments?

One of the most promising aspects of AI in education is its precision in instruction and assessment. Adaptive learning technologies tailor content delivery to match individual student needs, ensuring personalized interventions that address specific strengths and challenges. This approach is particularly beneficial for students who struggle in traditional classroom settings, as AI can provide customized support that enhances engagement and comprehension. However, while AI's adaptability is a major advantage, concerns remain about whether it can fully replace the nuanced insights and emotional intelligence that human educators bring to the learning process (Chen et al., 2020; Heiman & Shemesh, 2021).

2. AI in English Language Teaching (ELT)

The application of AI technologies in English Language Teaching (ELT) has significantly transformed the way languages are taught and learned. AI-driven tools, including Natural

Language Processing (NLP), machine learning (ML), and adaptive learning platforms, are redefining traditional language instruction by making it more dynamic, interactive, and tailored to individual learners (Zawacki-Richter et al., 2019). These technologies allow students to engage with AI-driven systems that simulate real-world communication, fostering a more immersive learning experience. Unlike conventional classroom settings where progress is often dictated by a rigid curriculum, AI facilitates personalized learning that adapts to each student's proficiency level and pace (Pérez-Paredes, 2022).

One of the most impactful AI-driven advancements in ELT is adaptive learning algorithms. Platforms such as Duolingo and Babbel leverage these algorithms to provide customized lessons that respond to learners' progress, ensuring that content remains appropriately challenging yet accessible (Vesselinov & Grego, 2012). This level of personalization is crucial for accommodating diverse proficiency levels, enabling learners to advance at their own pace rather than being restricted by standardized lesson plans. This transition from a one-size-fits-all approach to a learner-centred model represents a fundamental shift in language education.

Natural Language Processing (NLP) and Writing Support Natural Language Processing (NLP) plays a pivotal role in language learning by enabling AI-powered tools to provide real-time feedback on grammar, pronunciation, vocabulary usage, and sentence structure (Li & Li, 2019). Tools such as Grammarly and ProWritingAid assist learners in refining their writing skills by offering detailed corrections and stylistic suggestions. These platforms not only improve grammatical accuracy but also promote independent learning by encouraging students to actively engage with language mechanics. By receiving immediate, constructive feedback, learners develop confidence in their writing abilities and are more inclined to experiment with complex sentence structures and nuanced vocabulary (Zhou & Zhao, 2018).

Beyond grammar correction, AI-driven NLP tools are increasingly being used to enhance writing fluency. Many platforms now incorporate features that assess coherence, clarity, and tone, allowing students to refine their writing beyond simple error correction (Godwin-Jones, 2021). These tools are particularly beneficial for non-native English speakers, as they provide personalized support that would otherwise require constant human intervention. Additionally, by analysing large datasets, AI tools can predict and suggest contextually appropriate vocabulary, aiding learners in expanding their linguistic range (Heift & Schulze, 2019).

AI Chatbots and Virtual Assistants in ELT AI-powered chatbots and virtual assistants are revolutionizing language practice by offering learners real-time conversational experiences (Serrano et al., 2020). These AI tools simulate real-life interactions and provide immediate feedback, helping students develop speaking and listening skills in a low-pressure environment. Chatbots such as Mitsuku, an award-winning AI-driven chatbot, enable students to engage in spontaneous dialogue, practicing conversational English without the social anxiety that often accompanies human interaction. Research suggests that frequent AI-driven language interactions enhance fluency and comprehension by exposing learners to authentic linguistic patterns and contextually appropriate language use (Chen et al., 2020).

Moreover, AI chatbots can adapt to learners' speech patterns and personalize feedback to correct pronunciation and intonation errors. This capability is particularly beneficial for students who may not have access to native English speakers (Holmes et al., 2019). AI-driven virtual tutors, such as Google's AI-based language assistants, further augment ELT by providing on-demand speaking exercises and real-time speech analysis. As these technologies continue to advance, they hold the potential to bridge the gap between classroom learning and real-world language application. AI's Impact on Educators and Pedagogical Approaches In

addition to benefiting learners, AI also alleviates the workload of educators by automating routine administrative tasks (Luckin et al., 2018). Grading assignments, tracking student progress, and generating personalized feedback are traditionally time-consuming responsibilities that AI can handle with efficiency and accuracy. Automated grading systems, particularly in essay evaluation and comprehension-based assessments, are becoming increasingly sophisticated, allowing educators to focus on more meaningful interactions with students. This shift frees up time for individualized instruction, mentoring, and the cultivation of higher-order thinking skills (Vesselinov & Grego, 2012).

However, while AI enhances efficiency, it is imperative that educators remain central to the learning process. Over-reliance on AI risks diminishing the human element of teaching, which is critical for fostering creativity, emotional intelligence, and critical thinking skills (Baker & Smith, 2019). AI may excel in providing technical corrections, but it lacks the capacity for nuanced interpretation, cultural sensitivity, and the empathetic understanding that human educators bring to language instruction. Thus, rather than replacing educators, AI should be regarded as a collaborative tool that enhances their ability to provide targeted support to students (Binns, 2018).

Balancing AI and Student-centred Learning Despite AI's numerous advantages, its implementation in ELT must be approached with caution to ensure it does not undermine fundamental educational principles (O'Neil, 2016). Language acquisition is not merely a technical process but a deeply social and cognitive experience. Effective language learning involves critical thinking, emotional engagement, and cultural contextualization, aspects that AI, in its current state, cannot fully replicate (Noble, 2018). Consequently, AI should be used as a supplement rather than a substitute for human instruction.

Furthermore, concerns regarding data privacy and ethical AI usage must be addressed. AI-powered ELT tools rely on large datasets to personalize learning experiences, raising questions about how student data is collected, stored, and utilized. Educators and policymakers must ensure that AI integration adheres to strict data protection regulations to safeguard learners' privacy (Cios & Zapata, 2019).

To sum up, AI is undeniably transforming English Language Teaching by offering personalized learning experiences, real-time feedback, and automated instructional support. Tools such as NLP-based writing assistants, AI-driven chatbots, and adaptive learning platforms have expanded opportunities for learners and streamlined educational processes for teachers. However, the true potential of AI lies in how it is integrated into existing pedagogical frameworks. Rather than viewing AI as a standalone solution, its role should be framed as a support system that enhances human-led instruction.

3. AI and Students with Learning Difficulties

Equally transformative is AI's potential in supporting students with learning difficulties, such as dyslexia, ADHD, and autism spectrum disorders (ASD). AI offers remarkable opportunities to address the needs of these learners by providing tailored, data-driven interventions that improve their academic performance, reduce frustration, and foster greater inclusivity in the classroom. Machine learning algorithms, powered by vast amounts of data, can help diagnose learning challenges early, ensuring that students receive timely and accurate interventions that are specific to their needs. By analysing behavioural and performance data, AI tools can identify patterns indicative of learning disabilities, allowing for early intervention (Holmes et al., 2019; Heiman & Shemesh, 2021). This is particularly critical in the case of dyslexia, where

AI tools can track reading patterns, detecting inconsistencies that may indicate difficulty in processing written language (Petersen et al., 2021).

Once learning difficulties are identified, AI technologies can provide tailored assistive tools to help students overcome barriers and improve their learning experiences. For example, text-to-speech (TTS) software, such as Kurzweil 3000, enables students with dyslexia to access written content audibly, helping them overcome challenges related to reading and comprehension (Dolan, 2021). Similarly, speech-to-text tools, like Dragon NaturallySpeaking, allow students with difficulties in writing to dictate their thoughts, bypassing the physical barriers of handwriting or typing. These tools not only enhance accessibility but also promote greater independence, enabling students to engage more effectively with the curriculum and participate actively in the classroom (Edyburn, 2020).

For students with ADHD, AI-based cognitive training tools, such as Cogmed and Lumosity, provide interactive exercises designed to improve attention, working memory, and executive function. These platforms utilize gamification techniques, integrating rewards and interactive features to keep students engaged, which is especially beneficial for learners with attention-related difficulties (Alloway, 2019). These tools help students build the cognitive skills needed for academic success while also offering them a fun and engaging way to address their challenges. Additionally, wearable AI-driven devices have been developed to track students' focus levels and provide feedback to educators and parents, ensuring timely intervention (Graziano et al., 2021).

Regrading students with autism spectrum disorders, AI technologies can help develop social communication skills by simulating real-world social interactions and providing constructive feedback on appropriate behaviour. AI-powered platforms, such as Robot-Assisted Instruction (RAI), allow students to practice social scenarios in a structured, low-stress environment (Smith et al., 2022). These interventions not only improve verbal communication but also enhance students' ability to interpret nonverbal cues, such as facial expressions and body language (Goodwin, 2020). Such tailored interventions promote greater engagement, learning, and emotional development for students who might otherwise struggle in traditional educational settings.

Despite AI's promise in supporting students with learning difficulties, challenges remain. Ethical concerns regarding data privacy and the potential for algorithmic bias must be addressed to ensure that AI-driven interventions are equitable and accessible to all students (Binns, 2018; Zou & Schiebinger, 2018). Additionally, AI should not be seen as a replacement for human educators and specialists but rather as a complementary tool that enhances their ability to provide targeted, individualized support.

4. Ethical and Efficacy Considerations

Despite the many advantages of AI in education, its adoption also raises several important ethical concerns that must be carefully addressed. Data privacy is a major issue, as AI systems often rely on collecting and analysing vast amounts of personal student data, including behavioural and academic information. Without proper safeguards, this data could be misused, violating students' privacy rights (Binns, 2018). This concern is particularly significant for vulnerable populations, such as students with disabilities, whose personal information may be even more sensitive. To mitigate these risks, AI systems must comply with rigorous data privacy standards, ensuring that student information is securely stored and utilized responsibly (Cios & Zapata, 2019).

Another key ethical issue is the transparency of AI algorithms. Many AI-based systems function as "black boxes", where the decision-making processes behind them are not entirely understood by educators, students, or even developers. This lack of transparency raises concerns about accountability, particularly when AI tools make critical decisions about student learning paths, assessment outcomes, or interventions. If these algorithms are not explainable or auditable, errors or biases may go unnoticed, leading to unfair consequences for certain student groups (O'Neil, 2016; Noble, 2018). Ensuring greater algorithmic transparency is essential for building trust among users and minimizing unintended consequences.

Algorithmic bias poses another significant challenge in AI-driven education. Since AI systems are trained on large datasets, any biases embedded within these datasets can result in discriminatory outcomes. For instance, if an AI system is primarily trained on data from one demographic group, it may struggle to fairly assess students from different backgrounds. This issue is particularly concerning for marginalized communities, where existing disparities in educational resources and technology access already contribute to unequal learning outcomes (Angwin et al., 2016). To combat this, AI developers must ensure that training datasets are diverse, representative, and free of systemic biases (Zou & Schiebinger, 2018). Furthermore, ongoing evaluations of AI performance must be conducted to prevent biases from disproportionately disadvantaging specific student populations.

A related concern is the digital divide, which remains a critical barrier to equitable AI adoption in education. While AI technologies have the potential to make education more inclusive, students from low-income or rural areas may lack the necessary infrastructure, such as access to high-speed internet, personal devices, or technical support, to effectively engage with AI-driven learning tools (Luckin et al., 2018). Without efforts to bridge this divide, AI could inadvertently widen the achievement gap between privileged and underprivileged students. Policymakers and educators must work to democratize access to AI-enhanced learning environments by investing in affordable educational technologies, infrastructure, and training programs (Zawacki-Richter et al., 2019).

Despite these challenges, AI holds tremendous potential in education, particularly in enhancing English Language Teaching (ELT) and supporting students with learning difficulties. However, AI's integration into the educational landscape must be approached thoughtfully, ensuring that ethical concerns such as data privacy, algorithmic transparency, and equitable access are properly addressed.

Furthermore, education stakeholders -including researchers, policymakers, and AI developers- must collaborate to create robust guidelines for responsible AI implementation. By prioritizing equity, accountability, and student-centred learning, AI can fulfil its promise of transforming education for all learners, regardless of background or ability. Only through ethical and inclusive AI adoption can we ensure that AI contributes positively to the evolving educational landscape, creating fair and accessible learning opportunities for students worldwide.

5. AI and ELT: Applications in ELT

The integration of Artificial Intelligence (AI) in English Language Teaching (ELT) has brought about significant transformations in language learning paradigms. AI-powered technologies offer highly personalized and adaptive learning experiences that cater to the unique needs of each student, enhancing traditional teaching methods by fostering engagement, efficiency, and accessibility (Zawacki-Richter et al., 2019). Through sophisticated algorithms and real-time data analysis, AI enables a dynamic and individualized approach to language acquisition,

moving away from conventional rigid instruction models towards more flexible and student-centred methodologies.

One of the most influential AI-powered platforms in ELT is Duolingo, which leverages adaptive learning technologies to create tailored learning paths for students based on their proficiency levels. By continuously assessing learners' strengths and weaknesses, AI algorithms adjust the difficulty of exercises, ensuring that students receive appropriately challenging yet manageable content (Vesselinov & Grego, 2012). This personalized approach ensures that learners remain engaged without feeling overwhelmed, allowing for better retention of language skills.

A key feature of AI-driven platforms like Duolingo is their real-time feedback mechanism, which enables students to track their progress and make immediate corrections to errors in vocabulary, grammar, and pronunciation. This immediate feedback loop fosters greater motivation and supports learners in developing accuracy and fluency in the target language (Li & Li, 2019). If a student struggles with specific linguistic elements, AI can generate additional practice exercises or provide alternative explanations to reinforce understanding before progressing to more complex material. This approach mitigates the stagnation that often occurs in traditional classroom settings, where instructors may not always be able to accommodate the individual pacing needs of each student (López-Méndez et al., 2021).

Another leading AI-powered platform, Babbel, exemplifies how AI can enhance ELT through intelligent lesson customization. Babbel continuously monitors learners' progress and provides tailored feedback based on their performance metrics, such as vocabulary retention, grammar mastery, and pronunciation accuracy (Hamari et al., 2014). These customized adjustments ensure that learners focus on areas where they need improvement, thereby maximizing their proficiency gains. The AI-driven system detects patterns in learner behaviour, adjusting lesson sequences or recommending supplementary exercises based on insights derived from ongoing assessments. Autonomy and Flexibility in AI-Driven Language Learning In addition to personalization, AI-powered tools empower learners to take ownership of their language acquisition journey. Platforms such as Duolingo and Babbel allow students to engage with lessons at their own pace, making language learning more accessible to individuals with varying schedules and learning preferences (Zhou & Zhao, 2018). This flexibility is particularly beneficial for learners who may not have access to consistent classroom instruction or who prefer self-directed study. By enabling access to learning materials and feedback at any time, AI fosters independent learning, which has been linked to higher motivation and long-term retention of knowledge (Pérez-Paredes, 2022).

AI-Based Recommendation Systems for Targeted Learning AI-powered platforms further enhance ELT by employing intelligent recommendation systems that suggest content based on learners' previous performance. These recommendations may range from additional exercises targeting weak areas to entirely new topics aligned with learners' developmental trajectories (Luckin et al., 2018). For example, if a student demonstrates proficiency in vocabulary but struggles with pronunciation, AI algorithms can prioritize phonetic training exercises to address this gap. By continuously analysing student performance, AI ensures that learners remain engaged with appropriately challenging material, avoiding both redundancy and excessive difficulty (Serrano et al., 2020).

Gamification and Motivation in AI-Enhanced ELT Gamification is another crucial aspect of AI-powered language learning tools. Platforms like Duolingo and Babbel integrate game-based elements, such as points, levels, and rewards, to enhance motivation and engagement. Research suggests that gamification in education not only increases students’ willingness to

engage with the material but also improves their learning outcomes by encouraging frequent and sustained practice (Hamari et al., 2014). These game-based mechanics tap into students' intrinsic motivation, transforming language acquisition into an enjoyable and rewarding experience.

Furthermore, AI-driven language learning applications often include interactive exercises, such as simulated conversations, vocabulary challenges, and pronunciation drills, which provide real-world context to language practice. By embedding AI-driven gamification elements, ELT platforms enhance both engagement and cognitive reinforcement, making language acquisition more effective and enjoyable (Baker & Smith, 2019).

5.1. Real-Time Feedback and Corrective AI Mechanisms

Another advantage of AI in ELT is its ability to offer instantaneous and precise feedback on language use. Unlike traditional learning environments where feedback is often delayed, AI tools enable real-time responses to errors in grammar, vocabulary, and pronunciation. For example, Natural Language Processing (NLP) technologies facilitate immediate corrections by analysing sentence structure, word choice, and fluency (Godwin-Jones, 2021). This type of rapid feedback helps learners internalize language rules more effectively and prevents the reinforcement of incorrect habits (López-Méndez et al., 2021).

Immersive AI-Driven Language Learning Experiences AI also plays a significant role in language immersion, a critical component of effective ELT. Through NLP technologies, AI-powered platforms enable learners to engage in simulated real-world conversations, improving their ability to apply language skills in authentic contexts (González-Lloret & Ortega, 2014). These conversational exercises enhance fluency and build confidence by allowing students to practice speaking and listening in an interactive environment. AI chatbots and virtual assistants, such as Google's AI language tutor, further bridge the gap between classroom instruction and real-world application by facilitating spontaneous, contextualized language practice (Serrano et al., 2020).

AI-driven virtual reality (VR) applications are also being developed to enhance immersion in ELT. VR environments allow students to practice conversations in simulated settings, such as ordering food in a restaurant or navigating a foreign city, making language learning more experiential and engaging (Godwin-Jones, 2021). These immersive experiences have been shown to improve retention and fluency by providing learners with meaningful, context-driven language practice

Additionally, AI enables immersive and contextualized language learning experiences, equipping students with practical communication skills applicable in real-world settings. However, while AI offers unprecedented opportunities for enhancing ELT, its integration must be guided by pedagogical best practices and ethical considerations to ensure its effectiveness and accessibility for all learners (Zawacki-Richter et al., 2019). As AI technologies continue to advance, their role in ELT will likely expand, further bridging the gap between traditional language education and digital innovation.

5.2. AI and Natural Language Processing (NLP) Tools in ELT

The integration of Natural Language Processing (NLP) tools into English Language Teaching (ELT) has significantly transformed language learning. These AI-driven technologies have improved writing, grammar, vocabulary, and pronunciation, making language acquisition more interactive and efficient. By leveraging machine learning and real-time data processing, NLP tools empower learners to refine their language skills both inside and outside the classroom

(Kukulska-Hulme, 2020). This shift represents a fundamental change from traditional language instruction to a more autonomous, adaptive, and learner-centred approach.

One of the most notable applications of NLP in ELT is the use of writing enhancement tools such as Grammarly and ProWritingAid. These platforms utilize AI to provide real-time feedback on spelling, grammar, sentence structure, and writing style. Grammarly, for example, analyses text using advanced NLP algorithms, identifying patterns and suggesting refinements based on clarity, tone, and formality (Zhou & Zhao, 2018). Unlike conventional grammar checkers, AI-powered writing tools offer contextual suggestions, allowing learners to self-correct and refine their writing autonomously. The continuous feedback loop provided by these tools fosters greater confidence in writing and promotes long-term skill development (Biber et al., 2016).

NLP tools also reduce learners' dependence on educators for grammatical and stylistic corrections, enabling them to engage in self-directed learning. This is especially beneficial in large classroom settings where individualized feedback from instructors may be limited (Joubert et al., 2018). With 24/7 accessibility, students can practice writing asynchronously, improving their language proficiency beyond formal instructional hours. Additionally, AI-powered writing assistants analyse lexical diversity, cohesion, and coherence, offering learners deeper insights into their language use and helping them develop more natural and effective communication skills (López-Méndez et al., 2021).

NLP and Pronunciation Enhancement Beyond writing support, NLP technology plays a crucial role in improving pronunciation and spoken fluency. AI-driven speech recognition systems, such as Google Assistant, Siri, and Amazon Alexa, allow learners to engage in real-time conversational practice. These systems provide instant feedback on pronunciation accuracy, intonation, and fluency, helping students refine their spoken English skills (Li & Li, 2019).

For learners who lack access to native speakers or language instructors, NLP-powered speech recognition tools bridge the gap by offering simulated, real-world conversations. By analysing voice input and comparing it to native pronunciation models, AI provides actionable corrections and personalized pronunciation exercises. This ensures that learners can systematically work on phonetic accuracy and speech rhythm, improving their overall spoken proficiency (González, 2019).

One of the key advantages of speech recognition tools is their ability to track progress over time. AI-powered platforms can analyse pronunciation patterns, detect recurring mistakes, and tailor exercises accordingly. This personalized feedback loop allows learners to systematically address pronunciation challenges, making their spoken English more natural and confident (Chen & Hwang, 2021).

NLP Tools and Learner Confidence in Speaking An essential but often overlooked aspect of AI-driven pronunciation tools is their impact on learner confidence. Many language learners experience anxiety and hesitation when speaking in front of others due to fear of making mistakes. NLP-based pronunciation tools offer a safe, non-judgmental environment for learners to practice their speech at their own pace. This reduces communication apprehension and encourages more active participation in conversational practice (Hao et al., 2020). As students build confidence in their pronunciation abilities, they become more willing to engage in spontaneous spoken interactions, reinforcing their fluency development.

Beyond Pronunciation, NLP tools contribute significantly to learners' grammatical accuracy and comprehension. By analysing vast amounts of text, NLP systems can detect grammatical inconsistencies, syntax errors, and misused expressions, offering learners

targeted corrections and explanations (O'Reilly, 2021). ProWritingAid and Ginger Software, for example, emphasize sentence coherence and clarity, helping learners refine sentence structures and improve readability.

Moreover, AI-powered tools help students understand language patterns and nuances that may not be explicitly taught in conventional grammar instruction. These tools encourage implicit learning, allowing students to internalize grammatical structures and apply them effectively in communication (Pérez-Paredes, 2022). Through adaptive learning algorithms, NLP systems customize grammar exercises based on individual learners' weaknesses, ensuring that students focus on areas requiring improvement (Godwin-Jones, 2021).

The Role of NLP in Autonomous Language Learning One of the greatest benefits of NLP-driven tools is their role in autonomous learning. Traditional classroom settings often limit student engagement with language outside of instructional hours. However, AI-powered NLP applications allow learners to practice at any time, reinforcing language skills beyond the classroom (Luckin et al., 2018). Whether students are refining their writing, practicing pronunciation, or improving grammatical accuracy, NLP tools enable them to take control of their language development in an independent, structured manner (González-Lloret & Ortega, 2014).

The accessibility of NLP tools also enhances inclusive learning, accommodating diverse learning styles and abilities. For example, text-to-speech (TTS) technology supports students with reading disabilities, enabling them to listen to written content rather than relying solely on visual processing (Dolan, 2021). Likewise, speech-to-text (STT) tools assist learners with writing difficulties, allowing them to dictate their thoughts instead of typing, thereby improving their overall communication skills (Edyburn, 2020).

5.3. AI-Powered Conversational Agents and Virtual Assistants

AI-powered conversational agents, or chatbots, also offer significant benefits for language learners. These AI systems simulate natural dialogues, providing learners with an opportunity to practice speaking and comprehension skills in a controlled environment. For example, Mitsuku, an award-winning chatbot, allows users to engage in conversation, helping them improve their conversational English skills. Such AI tools support learners by mimicking real-world interactions, enabling them to practice in a low-pressure setting. According to Li and Li (2019), these tools offer essential opportunities for learners to practice English in a context that encourages spontaneous language use, helping them transition from textbook-based learning to practical communication.

Additionally, virtual assistants such as Alexa and Google Home serve as valuable tools in the language classroom. These devices use AI to facilitate a wide range of activities, from answering questions in English to guiding learners through educational games and tasks. By engaging with these assistants, learners can improve their pronunciation, vocabulary, and comprehension in a more interactive and dynamic manner. Virtual assistants encourage learner autonomy, allowing students to practice English outside of traditional class hours, fostering continuous language improvement (Serrano et al., 2020).

6. Benefits for Learners and Educators

The integration of Artificial Intelligence (AI) in English Language Teaching (ELT) has brought about transformative benefits for both learners and educators, redefining the learning environment and enhancing instructional practices. AI-powered tools provide personalized,

adaptive learning experiences that cater to individual learning needs, ultimately making education more inclusive, efficient, and engaging (Baker & Smith, 2019).

For learners, AI-driven personalization is a major advantage. AI tools analyse students' language proficiency, learning styles, and progress to tailor content that aligns with their specific needs. This ensures that students, regardless of whether they are beginners, intermediate, or advanced learners, engage with materials that challenge them at an appropriate level (Vesselinov & Grego, 2012). Unlike traditional teaching methods, which often rely on standardized curricula, AI allows for flexible, learner-driven progress, ensuring that each student is neither overwhelmed nor under-stimulated (Baker & Smith, 2019).

Immediate Feedback and Adaptive Learning One of the most significant contributions of AI in ELT is its ability to provide real-time feedback. In traditional classrooms, feedback on writing, pronunciation, and grammar is often delayed due to teacher workload, which can slow down the learning process. AI-driven platforms such as Grammarly, Duolingo, and Babbel offer instant feedback, allowing learners to correct errors as they occur and reinforce their learning in real-time (Li & Li, 2019). The ability to receive immediate corrections and suggestions enables learners to refine their writing, speaking, and comprehension skills efficiently and independently (López-Méndez et al., 2021).

Moreover, AI-powered tools adapt dynamically to students' progress, adjusting lesson difficulty based on performance. For example, if a learner struggles with verb conjugations, the system may provide additional exercises or explanatory tutorials to strengthen their understanding before moving on to more complex topics. This adaptive learning approach ensures that learners receive the right level of challenge, preventing frustration or stagnation (Pérez-Paredes, 2022).

Self-Paced Learning and Growth Mindset Development AI-driven platforms also promote self-paced learning, an essential feature in modern education. Unlike traditional settings where students must adhere to fixed lesson schedules, AI tools allow learners to progress at their own speed. This is particularly beneficial in heterogeneous classrooms, where some students may require additional time for comprehension, while others may advance more quickly. With AI, students who grasp concepts faster can move ahead, while those who need reinforcement can revisit topics without feeling left behind (Zhou & Zhao, 2018).

Another critical advantage of AI in education is the availability of real-time data analytics. AI systems continuously collect and analyse student engagement levels, learning patterns, and performance trends. These insights help educators identify students who may be struggling with specific concepts, allowing for early intervention before gaps in understanding become significant (Luckin et al., 2018). With data-driven insights, teachers can refine their lesson plans, making their instruction more targeted and effective (Zawacki-Richter et al., 2019).

Customized Teaching Materials and AI-Driven Instructional Support AI also supports educators by providing customized teaching materials that align with students' learning needs. AI-powered platforms generate personalized lesson plans, vocabulary exercises, and grammar drills, ensuring that students receive the appropriate level of instruction based on their performance and progress (Serrano et al., 2020). By leveraging AI-driven insights, teachers can focus on facilitating meaningful learning experiences rather than spending excessive time on manual curriculum adjustments (Godwin-Jones, 2021).

Moreover, AI's ability to track longitudinal progress allows educators to measure student growth over time, making it easier to identify learning trends and instructional gaps (Luckin et al., 2018). By integrating AI into formative and summative assessments, educators can develop more effective interventions that cater to students' evolving needs (Godwin-Jones, 2021). The

integration of AI in English Language Teaching (ELT) benefits both learners and educators by offering personalized learning experiences, adaptive instruction, and enhanced data-driven decision-making. For learners, AI provides instant feedback, self-paced learning, and progress tracking, which fosters greater autonomy and motivation. AI tools enable students to improve their language proficiency independently, ensuring more efficient and engaging learning experiences.

7. AI and Learning Difficulties: Diagnosis and Support

AI has the potential to assist students with learning difficulties, such as dyslexia, ADHD, and autism spectrum disorders, by providing early diagnosis and personalized support. AI systems can analyse patterns in student performance to detect signs of learning disabilities at an early stage, enabling timely interventions (Smith et al., 2022). For example, AI-based reading assessment tools can identify students with dyslexia by analysing reading patterns and providing customized exercises that focus on areas where students have difficulty. This early detection is crucial for ensuring that students receive the necessary support and accommodations as soon as possible.

Assistive technologies powered by AI, such as text-to-speech software and speech-to-text tools, are particularly beneficial for students with reading and writing difficulties. Text-to-speech programs, such as Kurzweil 3000, read text aloud, helping students with dyslexia improve their reading comprehension and retention (Dolan, 2021). Similarly, speech-to-text software helps students with writing difficulties to articulate their thoughts without the physical barrier of writing, offering a more efficient way to complete assignments and express ideas.

Finally, AI can also support learners with attention difficulties, such as ADHD, by offering cognitive training exercises that help improve focus and memory. AI-driven tools can adapt to the learner's unique needs, providing exercises that challenge their cognitive abilities while maintaining their attention and engagement (Heiman & Shemesh, 2021). These tools help students develop better executive functioning skills, which are critical for academic success.

8. Ethical Considerations and Policy Recommendations

As AI continues to reshape educational support systems, ethical concerns must be at the forefront of its development and implementation. One of the most pressing concerns is data privacy. AI-powered tools collect vast amounts of student data, including learning behaviours, cognitive patterns, and personal information. Without proper safeguards, this data could be misused or compromised, posing risks to student confidentiality and security (Cios & Zapata, 2019). To mitigate these risks, AI systems must comply with strict privacy regulations, such as the General Data Protection Regulation (GDPR) in Europe and the Family Educational Rights and Privacy Act (FERPA) in the United States. Educational institutions must ensure that AI applications are designed with strong privacy protections, that data collection is transparent, and that student information is stored and used responsibly.

Another major ethical concern is algorithmic bias. Since AI systems are trained on large datasets, they may inadvertently replicate and reinforce biases present in the data. For instance, speech recognition systems have been found to perform less accurately for speakers with regional accents or speech impairments, leading to unfair feedback and potentially hindering progress for certain students (O'Neil, 2016). To prevent such biases, AI developers must ensure that training datasets are diverse, representative, and inclusive of students from various linguistic, cultural, and cognitive backgrounds (Luckin et al., 2018). Furthermore, AI-

driven learning assessments should undergo continuous monitoring to detect and correct any bias that may disproportionately disadvantage specific student groups.

Bridging the Digital Divide in AI-Powered Education Equity remains a significant challenge in the implementation of AI-based educational tools. The digital divide continues to limit access to AI-powered learning resources, particularly for students in underserved communities. Many learners, especially those from low-income or rural areas, lack access to necessary technology, such as high-speed internet, personal devices, or assistive software (Zou & Schiebinger, 2018). If left unaddressed, this gap could lead to further educational disparities, where only students with access to advanced AI tools benefit from their capabilities.

9. Conclusion

AI holds immense potential in supporting students with learning difficulties by providing early diagnosis, personalized interventions, and assistive tools tailored to individual needs. From text-to-speech software and cognitive training programs to AI-powered social interaction tools, these technologies empower students to overcome learning barriers and engage more effectively in education. However, for AI's full potential to be realized, it is crucial to address ethical concerns related to data privacy, algorithmic bias, and equity in AI-powered education. Implementing strong privacy protections, ensuring inclusivity in AI development, and bridging the digital divide, educational institutions and policymakers can maximize the benefits of AI while minimizing risks.

Continued collaboration between AI developers, educators, and specialists in learning disabilities will be essential in refining AI-driven interventions and ensuring that students of all backgrounds and abilities receive equal opportunities to succeed in their learning journeys. Through thoughtful and ethical AI integration, the education system can become more inclusive, accessible, and effective, ultimately creating a more equitable learning environment for all students.

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