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ARTIFICIAL INTELLIGENCE IN ESL PEDAGOGY: ADVANCING LEARNER AUTONOMY AND PERSONALISED INSTRUCTION THROUGH AI-DRIVEN TOOLS

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Abstract: Artificial Intelligence (AI) is rapidly transforming the face of ESL instruction. With the growing diversity of the global classroom and evolving digital technologies, ESL instructors are turning to AI-led platforms in order to address the widereaching needs of the learner, provide autonomy, and strengthen intrinsic motivation. The current study explores the inclusion of AI-led language learning instruments in contemporary ESL instruction, taking into consideration the impact of AI-led language learning instruments on learner attainment, engagement, and autonomy. Following a mixed-methods paradigm, the current study explores data obtained from 25 peer-reviewed articles, 120 ESL learner surveys, and semiformal interviews of 18 ESL instructors from five countries. Results suggest that AI instruments strongly support learner autonomy, provide for differentiated instruction, and accommodate self-pace learning. Issues of data privacy, thinking critically, and excessive technological dependency nonetheless linger. With its findings, the study makes suggestions about how AI can be integrated in the ESL class alongside the efforts of the instructor in order to provide a balanced integration of AI-assisted and person-centered instruction.

Introduction

English as a Second Language (ESL) teaching has entered a transformative era through the rapid progress of Artificial Intelligence (AI). Responding to the worldwide trend of transformation into virtual learning and digital interactiveness, ESL courses are evolving away from the traditional, instructor-dominated classrooms to active, personalized learning environments. AI-enabled learning technologies—be they intelligent tutoring systems, Natural Language Processing (NLP)-based chatbots, or adaptive learning software—now are being deployed to enable greater learner engagement, support self-learning, and adapt materials based on learner proficiency.

Learning with AI has its drawbacks, however. Data ethics, fairness of access, and the possibility of teachers being substituted are among the problems that critically confronted the field of pedagogy (Selwyn, 2021; Holmes et al., 2022). Nonetheless, in the ESL context, where the linguistic profile, mastery level, and cognitive profile of the learner are extremely heterogeneous, AI has the unprecedented ability of leveling the field and creating a highly individualized experience.

It investigates the use of AI-driven technologies in ESL courses nowadays, focusing on the ways in which they can aid in the formation of learner autonomy as well as facilitate individualized learning. By employing empirical data and qualitative analysis, the article investigates the AI integration potential, debating the teaching implications for ESL teachers around the world.

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Literature review

Artificial Intelligence in Education (AIED) entails the employment of machine learning, Natural Language Processing (NLP), and data analysis within the context of learning and teaching. For the language learning market, AI software has indeed been developed to simulate chat, assess pronunciation, provide instant grammatical feedback, and even offer suggestions regarding the content depending on user activity (Wang et al., 2023).

These apps, such as Duolingo Max (based on OpenAI), ELSA Speak, and Replika, utilize AI in providing tailored learning. Zhao & Heffernan (2022) in their work found that the use of adaptive AI materials improved the level of vocabulary obtained by 32% among the learners compared to non-adaptive materials.
Learner autonomy, or the capacity to take charge of one's learning, has been a key objective in contemporary ESL teaching (Little, 2007). Autonomy has been associated with higher levels of motivation, improved learning, and increased cognitive flexibility. Creating autonomy, however, depends upon the availability of resources that facilitate independent investigation, comment, and reflection.

AI technologies, e.g., chatbots and intelligent language tutors, can offer learner support 24/7, personalized response, and adaptive feedback, making them ideal in facilitating learner agency. Although AI chatbots enhanced the will to communicate among the participants, they reduced language anxiety (Zhang & Li, 2023).

Despite the aforementioned benefits, however, there are still issues left. Over-reliance on AI can hamper the acquirement of metacognitive skill as well as linguistic critical awareness. AI has the risk of transferring linguistic biases and difficulties in processing cultural or contextual subtleties, crucial in ESL instruction (Bender et al., 2021).

Methodology

This study employs a mixed-methods research design, combining quantitative and qualitative data to analyze the pedagogical impact of AI in ESL. The research was conducted over a six-month period (January–June 2025) and included the following components: Meta-analysis of 25 peer-reviewed empirical studies published between 2020 and 2024. Online survey of 120 ESL learners currently using AI-powered tools. Semi-structured interviews with 18 ESL instructors from five different countries: Uzbekistan, Japan, Brazil, the UK, and the UAE. Classroom observations in three institutions integrating AI in ESL instruction.

Participants Survey participants included ESL learners aged 18–35 enrolled in intermediate or advanced English programs. The 18 instructors interviewed had at least three years of ESL teaching experience and had incorporated AI tools into their curriculum. Participant anonymity and data confidentiality were strictly maintained. 3.3. Instruments and Procedure The learner survey measured perceptions of autonomy, satisfaction with AI tools, and frequency of use. Interviews explored teachers' experiences with AI tools, perceived benefits and limitations, and classroom dynamics. Observational data focused on classroom interactions, tool functionality, and student engagement.

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Quantitative data from the surveys were analyzed using SPSS (v.27), focusing on descriptive statistics and correlation analysis. Qualitative data from interviews and observations were thematically analyzed following Braun and Clarke's (2006) framework. 4. Results 4.1. Learner Survey Findings 84% of learners reported that AI tools helped them feel more independent in their learning. 78% believed AI improved their motivation and engagement. 66% reported improved performance in vocabulary, grammar, or speaking fluency. Learners cited immediate feedback, customized practice, and flexible pacing as primary benefits.

Three overriding themes emerged in teacher interviews: Autonomy Facilitation**:** Teachers reported a notable rise in the self-initiation of learning outside the confines of the classroom. Differentiated Instruction: AI helped teachers to deliver different content at various levels of proficiency.

Concerns: Teachers are worried about the blind trust of the students in AI correction and the lack of human nuance in conversational AI.

One instructor said:
"Students feel more comfortable now—they work on AI at home and come to class with the confidence to do higher-level work."

In schools that utilize AI platforms:

- Pupils exhibited increased time-on-task behavior.
- Peer review increased, including the comparison of AI feedback.
- Teachers made use of AI-generated error logs to tailor in-class instruction.

Discussion

These statistics support the transforming capability of AI technologies in ESL education. By supporting personalized learning, AI allows the learner to define goals, work independently, and receive immediate feedback—features of autonomy in learning. These insights are congruent with constructivist paradigms, whereby knowledge comes to be constructed in the process of being in the environment (Piaget, 1973; Vygotsky, 1978). However, essential challenges still persist. AI systems lack the humanity in perceiving context, feeling, as well as intercultural subtlety. Shallowness in learning happens when the learner gets the solution without the understanding of the justification. The teacher, therefore, remains ineliminable in the domains of cultural brokerage, critical analysis, as well as instructional design. Also, digital equity issues must be addressed. All students do not equally enjoy access to high-capacity computing, rock-solid bandwidth, or high-end AI subscriptions. These opportunity gaps can further leave behind disadvantaged students if they are not adequately addressed.

Conclusion

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It concludes that AI, when integrated responsibly and ethically, enhances ESL teaching by enabling learner autonomy and individualized learning. These findings have crucial practical values for designers of curricula, institutes of teacher education, as well as makers of education policies. The following are recommended for quality education in ESL teaching:

Pedagogical Integration**.** Teachers should blend AI use with human-led instruction to balance efficiency and empathy.
Teacher Training. Professional development courses must address AI pedagogy, tool review, and digital ethics.
Curriculum Design**.** ESL courses must contain AI exercises that instill metacognitive awareness as well as reflective thinking.
Equity and Access**.** Institutions should ensure equal access to AI resources for every learner, regardless of their socio-economic status.

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