

DEVELOPING ADAPTIVE LEARNING STRATEGIES USING ARTIFICIAL INTELLIGENCE FOR STUDENTS FACING CHALLENGES IN LEARNING ENGLISH

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Abstract. *This research explores the effective use of Artificial Intelligence in crafting customized learning strategies aimed at students who regularly face difficulties in mastering the English language. As AI-enhanced educational tools continue to develop, the potential for delivering personalized instruction has greatly improved. The research explores key obstacles encountered by such learners, analyzes current AI-based educational interventions, and introduces a flexible model for implementing AI-driven adaptive methods tailored to individual learning profiles. The results indicate that AI significantly contributes to enhancing English learning outcomes through individualized support, prompt responses, and continuous encouragement.*

Keywords: *Artificial Intelligence in Education, Adaptive Learning, English Language Acquisition, AI-powered Language Tools, Learner Motivation, Personalized Instruction, NLP in ELT, Data-Driven Language Learning, Learner Autonomy, Feedback Systems.*

Introduction. In today's rapidly evolving digital landscape, Artificial Intelligence (AI) is reshaping educational practices across the globe. Among its most impactful uses is the creation of adaptive learning systems, particularly in English language instruction. Although numerous English learning materials are available, many students still struggle due to limited language exposure, diverse learning preferences, low confidence, or cognitive obstacles. This thesis investigates how AI tools can assist these learners by offering customized solutions aligned with their personal learning profiles and objectives.

Challenges Faced by Students in Learning English. English language learners often face multiple barriers, especially when traditional instruction fails to accommodate their specific learning needs. Some of them:

Lack of Motivation: One of the fundamental psychological factors influencing the success of English language learners is motivation. When learners are not sufficiently motivated—either intrinsically or extrinsically—their willingness to engage with the language meaningfully tends to decline. According to Dörnyei (2001), lack of motivation can severely hinder classroom participation, persistence, and progress, especially in environments that fail to stimulate curiosity or offer personalized support.

Language Anxiety: Fear of making mistakes hinders active participation.

Limited Vocabulary and Grammar Retention: “Traditional memorization methods may not suit all learners. Traditional memorization strategies, while still prevalent in many English classrooms, often fail to promote deep learning or long-term retention, especially when disconnected from meaningful context and communicative use” (Nation, 2001, p. 96).

Ineffective Feedback: One of the persistent barriers in language education arises from the delivery of poorly constructed feedback, which may be too general, delayed, or disconnected

from the learner's specific performance. As noted by Shute (2008), feedback that is vague or delayed can be ineffective and may even negatively impact learners' motivation and progress.

Delayed or generic feedback instead of constructive one can fail to address learners' actual errors.

Time Constraints: Many students struggle to balance language learning with other responsibilities.

These challenges necessitate a more individualized and dynamic educational approach.

Role of Artificial Intelligence in Adaptive Learning. AI offers dynamic solutions by adapting teaching content and strategies based on learner behavior and performance. Major contributions of AI to language education include:

Natural Language Processing (NLP): Tools like Grammarly and ChatGPT offer grammar correction and conversational practice. NLP-based tools, as Pérez-Marín and Pascual-Nieto (2011) note, allow learners to receive immediate and context-aware language corrections, enhancing their grammatical and semantic competence.

Machine Learning: AI algorithms identify patterns in learner responses to personalize lessons.

Speech Recognition and Feedback: Apps like ELSA Speak improve pronunciation by providing instant correction.

Chatbots and Virtual Tutors: These provide 24/7 interaction and guidance.

Learning Analytics: AI systems track progress and suggest next steps based on performance metrics.

Data-driven learning: Recent advancements in AI-powered educational tools have also enabled learners to engage with *corpora*-based resources, providing authentic language input and data-driven insights for developing lexical and grammatical competence (Green, 2018). Beyond conventional AI applications like virtual tutors and NLP-enhanced feedback systems, corpora-based learning introduces a powerful, data-rich dimension to language acquisition. Artificial Intelligence can be trained to extract and present contextually relevant corpus data based on individual learner errors, facilitating autonomous correction and deeper engagement with authentic English usage. According to Green (2018), exposure to real-world linguistic input through corpora significantly enhances learners' ability to grasp collocations, idiomatic expressions, and grammatical accuracy—especially for those who struggle with abstract language rules or memorization techniques.

These technologies form the backbone of adaptive learning strategies, where instruction dynamically changes to meet the learner's level and preferences.

Proposed Framework for AI-Assisted Adaptive Strategies. To address the challenges of struggling English learners, the following AI-supported framework is proposed:

4.1 Needs Assessment. Graves (2000) defines needs assessment as “a systematic process for gathering information about learners and using that information to make decisions about course content, teaching approaches, and assessment” (p. 98). Initial AI-driven diagnostics to identify gaps in grammar, vocabulary, and comprehension.

4.2 Personalization Engine

A machine learning model that adjusts:

Content difficulty level

Skill-based tasks (e.g., listening, speaking, writing)

Feedback modality (visual, textual, auditory)

4.3 Interactive Feedback Loops

Using NLP and voice recognition, the system offers instantaneous error correction and motivational messages tailored to learner input

4.4 Learner Dashboard

A user-friendly interface visually tracks progress, highlights weak areas, and awards achievement markers to encourage consistency.

4.5 Continuous Adaptation

Based on ongoing interaction, the AI updates learning strategies and content to match changing learner performance.

4.6. Learner Autonomy. One of the most valuable contributions of AI in English education lies in its support for learner autonomy. As learners are given the ability to choose content, pace their own progress, and receive tailored feedback, they gradually develop independent learning habits. Wang and Warschauer (2010) highlight how AI technologies facilitate this shift by decentralizing the role of the teacher and empowering learners to manage their own linguistic growth.

5. Case Studies and Applications

Several platforms have effectively demonstrated the impact of AI-integrated adaptive learning in language education. For example

Khan Academy incorporates intelligent guidance and embedded feedback to support grammar and reading development.

Lingvist applies predictive algorithms to identify memory decay patterns, while tools like

Duolingo maintains user engagement through gamified activities and adjusts task difficulty based on real-time performance.

ChatGPT simulate interactive dialogues and assist with writing. As Godwin-Jones (2018) notes, such systems are capable of tailoring learning pathways to the individual, enhancing both retention and learner motivation.

6. Ethical and Practical Considerations

Despite its advantages, AI integration raises concerns such as:

Learner data privacy

Bias in algorithmic decision-making

Overdependence on automated systems.

Moreover, successful implementation requires professional development for teachers, reliable infrastructure, and inclusive design that accommodates diverse learners.

7. Conclusion

Artificial Intelligence presents transformative possibilities for supporting students with persistent difficulties in English learning. By delivering customized strategies and timely interventions, AI bridges learning gaps, builds learner confidence, and enhances outcomes.

However, responsible deployment and ongoing evaluation are essential to ensure ethical, effective, and inclusive adoption of AI in language education.

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