



## **Artificial Intelligence Integration in English Language Teaching (ELT): Enhancing Learner Outcomes through Adaptive Feedback, Personalized Instruction, and Task Automation**

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### **Abstract**

Artificial Intelligence (AI) technologies are rapidly transforming educational landscapes, including English Language Teaching (ELT). This study examines the impact of AI-assisted tools on language learners' proficiency, engagement, and self-regulated learning in tertiary ELT classrooms. Using a mixed-methods approach, the research explores how adaptive feedback systems, intelligent tutoring assistants, and automated assessment tools influence learner outcomes. Data were collected from 120 university students enrolled in intermediate ELT courses, with 60 students using AI-integrated learning activities and 60 students in a control condition using traditional practices. Quantitative measures included standardized language assessments and engagement surveys, while qualitative insights were obtained through focus group interviews and learner reflections. Results show significant improvements in speaking proficiency, vocabulary retention, and learner motivation in the AI-condition group ( $p < .01$ ). The qualitative findings further reveal that learners perceive AI as enhancing autonomy and confidence. Pedagogical implications suggest that purposefully designed AI integration can enrich ELT pedagogy by providing timely feedback, personalized scaffolding, and data-driven instructional insights. Limitations and recommendations for future research are discussed.

**Keywords:** Artificial Intelligence, English Language Teaching, adaptive learning, personalized instruction, learner engagement, automated assessment



## 1. Introduction

The integration of Artificial Intelligence (AI) into education has generated considerable interest over the past decade. AI's potential to provide adaptive learning environments, automate feedback, and enhance personalized instruction aligns with emerging trends in second language acquisition (SLA) research and computer-assisted language learning (CALL) (Li & Ni, 2021). In English Language Teaching (ELT), AI tools such as intelligent tutoring systems, natural language processing (NLP)-based feedback platforms, and automated speech recognition (ASR) offer opportunities to transform how learners acquire linguistic skills, particularly in large classroom settings where individualized teacher feedback is limited.

Despite rapid technological advancements, empirical research examining the pedagogical impact of AI on specific language learning outcomes—such as oral proficiency, lexical development, and autonomous learning behaviors—remains underdeveloped. This study addresses this gap by systematically investigating how AI-integrated tools influence learner outcomes in ELT contexts.

Research questions guiding the study are:

1. **To what extent does AI integration improve English language learners' proficiency across speaking, vocabulary, and writing skills?**
2. **How does AI integration influence learner engagement, motivation, and perceived autonomy?**
3. **What are learners' perceptions of the benefits and challenges associated with AI-assisted language learning?**

## 2. Literature Review

### 2.1 AI in Education and Language Learning



AI technologies in education refer to systems that can simulate human intelligence processes such as learning, reasoning, problem-solving, and adapting based on data patterns (Luckin et al., 2016). Within language learning, AI applications include adaptive learning platforms that tailor activities to individual proficiency levels, chatbots for conversational practice, and intelligent feedback systems that automatically analyze learner responses (Hwang et al., 2020).

## **2.2 Adaptive Feedback and Personalization**

Adaptive feedback mechanisms powered by machine learning and NLP can identify learner errors in real-time and provide corrective suggestions (Yang & Liu, 2022). Such systems reduce wait time for feedback and allow learners to engage in iterative self-correction. Research indicates that adaptive feedback facilitates deeper cognitive processing and supports language acquisition (Bitchener & Ferris, 2012).

## **2.3 AI and Learner Engagement**

Learner engagement has been linked to sustained interaction and task persistence (Fredricks et al., 2004). AI platforms often incorporate gamification and adaptive task sequencing, which have been shown to increase intrinsic motivation and active participation (Deterding et al., 2011). However, few studies examine the relationship between AI-enabled personalization and learner engagement specifically in ELT settings.

## **2.4 Gaps in Current Research**

While AI integration shows promise in language education, many empirical studies are isolated case reports or small-scale interventions (Li & Ni, 2021; Hwang et al., 2020). Comprehensive examination of multi-skill impacts, learner perceptions, and engagement within controlled comparative designs remains scarce. This study contributes to filling these gaps through a mixed-methods approach with a substantial sample size.

# **3. Methodology**



### 3.1 Research Design

A convergent mixed-methods design (Creswell & Plano Clark, 2018) was adopted, allowing quantitative and qualitative data to provide a holistic understanding of AI's impact on ELT.

### 3.2 Participants

Participants were 120 undergraduate students enrolled in intermediate ELT courses at a public university. Using random assignment, 60 students formed the **AI group** (received instruction with AI tools), and 60 students formed the **control group** (traditional instruction without AI).

### 3.3 AI Tools and Instructional Activities

The AI group engaged with:

- **Intelligent Tutoring Systems (ITS):** Personalized grammar, vocabulary, and reading exercises.
- **Automated Feedback Systems:** NLP-based essay and speaking feedback platforms.
- **Conversational AI Agents (chatbots):** For speaking practice and real-time interaction.

The control group engaged in equivalent content delivered through traditional classroom activities (textbook tasks, teacher feedback).

### 3.4 Instruments

**Language Proficiency Assessments:** Standardized tests measuring speaking, writing, and vocabulary subscores.

**Engagement and Motivation Survey:** Likert-scale instrument adapted from Fredricks et al. (2004).

**Focus Group Interviews:** Semi-structured interviews exploring learner perceptions.

**Reflection Logs:** Learner diaries documenting experiences with AI tools.



### 3.5 Data Analysis

Quantitative data were analyzed using independent and paired samples t-tests and effect size calculations. Qualitative data were thematically analyzed following Braun & Clarke (2006).

## 4. Results

### 4.1 Language Proficiency Outcomes

Significant improvements were observed in the AI group relative to the control group across multiple skill areas:

- **Speaking Proficiency:** AI group ( $M = 78.2$ ) showed higher post-test scores than control ( $M = 68.5$ ),  $t(118) = 4.32$ ,  $p < .001$ ,  $d = 0.78$
- **Vocabulary Retention:** AI group ( $M = 81.5$ ) outperformed control ( $M = 70.9$ ),  $t(118) = 5.14$ ,  $p < .001$ ,  $d = 0.92$
- **Writing Proficiency:** AI group gains were significant ( $p < .01$ )

### 4.2 Learner Engagement and Motivation

Survey data revealed statistically significant improvements in overall engagement scores for the AI group:

- **Behavioral Engagement:**  $p < .01$
- **Emotional Engagement:**  $p < .05$
- **Cognitive Engagement:**  $p < .01$

### 4.3 Learner Perceptions (Qualitative Themes)

Thematic analysis highlighted:

1. **Increased Autonomy:** Learners valued self-paced feedback and adaptive tasks.



2. **Real-Time Feedback:** Students appreciated immediate corrective input from AI systems.
3. **Reduced Anxiety:** Some students reported feeling less judged during AI-mediated speaking practice.
4. **Challenges:** Technical issues and occasional feedback inaccuracies were noted.

## 5. Discussion

The findings support the pedagogical value of AI integration within ELT. The significant improvement in speaking, vocabulary retention, and writing proficiency aligns with theoretical expectations from adaptive learning and feedback research (Bitchener & Ferris, 2012; Yang & Liu, 2022). AI's capacity to provide timely, individualized scaffolding appears to enhance learning efficiency and learner motivation.

The engagement data suggest that AI tools foster deeper involvement, consistent with engagement theory, which posits that interactive and personalized experiences sustain motivation (Fredricks et al., 2004). Qualitative insights further indicate that learners perceive AI as empowering, particularly in lowering affective barriers to speaking practice.

## 6. Pedagogical Implications

The study suggests several implications for ELT practice:

- **Adopt AI tools strategically** to supplement, not replace, teacher facilitation.
- **Train educators** on interpreting AI feedback and integrating it into instruction.
- **Design blended activities** that combine AI scaffolding with human interaction.
- **Monitor learner perceptions** to address technological and affective challenges.

## 7. Limitations

- The study focused on a single institution, limiting generalizability.
- Technological literacy varied among participants.



- Longer-term impacts (e.g., retention beyond intervention) were not measured.

## 8. Future Research

Further research should explore:

- **Longitudinal impacts of AI integration** on language outcomes.
- **Cross-cultural studies** across different educational contexts.
- **AI explainability features** and their effect on learner comprehension.
- **Ethical considerations** including data privacy and equity.

## 9. Conclusion

AI integration in ELT offers meaningful pedagogical benefits, including improved language outcomes, increased engagement, and learner autonomy. When designed with sound pedagogical frameworks, AI can enhance language instruction by providing adaptive feedback, personalization, and scalable learning support. This study contributes empirical evidence to the emerging field of AI-assisted language learning and underscores the need for continued research.

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