

EVALUATING STRATEGIES FOR LARGE LANGUAGE MODEL (LLM) INTEGRATION AS PERSONALIZED ESL PEDAGOGICAL TOOLS

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Annotatsiya. Ushbu maqolada Google Gemini va ChatGPT kabi yirik til modellarini (LLM) ingliz tilini o'rganuvchi talabalar uchun shaxsiy repetitor sifatida qo'llash samaradorligi tahlil qilinadi. Tadqiqotda o'zaro ta'sirning uchta asosiy strategiyasi ko'rib chiqiladi: "Sokratik uslubdagi savol-javob", "Kontekstual skaffolding" va "Tezkor tuzatuvchi teskari aloqa". Natijalar shuni ko'rsatadiki, *prompt*-muhandisligidan to'g'ri foydalanilganda, talabalarning murakkab sintaktik konstruksiyalarni o'zlashtirish ko'rsatkichi 22% ga oshadi va til o'rganishdagi hayajon sezilarli darajada kamayadi. Xulosa qilib aytganda, LLM o'qituvchining o'rnini bosuvchi emas, balki talabalardan "*prompt*-savodxonlik" ko'nikmalarini talab qiladigan yordamchi kognitiv vositadir.

Kalit so'zlar: ESL metodikasi; yirik til modellari; personallashtirilgan ta'lim; ta'lim texnologiyalari; sun'iy intellekt; *prompt*-muhandisligi; Sokratik uslubdagi savol-javob.

Introduction

The provision of a personalized tutor for every student—Bloom's "2 Sigma Problem"—has long been the ideal in English language teaching. Traditional CALL (Computer-Assisted Language Learning) software often lacked the flexibility to address individual learner nuances. However, Large Language Models (LLMs) have introduced a paradigm shift. These models do not merely translate; they simulate human-like conversation and adapt to CEFR levels. This article investigates specific strategies to transform these models from static query tools into dynamic pedagogical partners, focusing on bridging the gap between passive consumption and active production.

Methods

The present study employed a mixed-methods research design, combining quantitative performance metrics with qualitative longitudinal observations to evaluate the impact of Large Language Model (LLM) integration on ESL learners. The study was conducted over an eight-week instructional period during the 2025-2026 academic year.

2.1. Participants and Sampling

The study population consisted of 60 adult students (Ages 18–35) enrolled in an intensive English program. Using a pre-intervention diagnostic test based on the Common European Framework of Reference for Languages (CEFR), all participants were verified at the B1 (Intermediate) level. Participants were randomly assigned to two groups to ensure statistical parity:

- Experimental Group (Group A, n=30): Received specialized "*Prompt* Literacy" training.

- Control Group (Group B, n=30): Used LLMs as a general-purpose digital dictionary and translator.

2.2. The Pedagogical Intervention (*Prompt* Engineering Protocols)

While Group B used the LLM in an unstructured manner, Group A was instructed in three specific interaction protocols designed to trigger higher-order thinking skills:

- The Socratic Persona Protocol: Students were taught to "prime" the model with a specific pedagogical identity. A typical prompt used was: "Act as a supportive English tutor. I will write a paragraph. Do not correct my mistakes directly. Instead, highlight the sentences with errors and ask me questions that help me realize my own grammatical mistakes."

- The Contextual Simulation Protocol: To develop pragmatic competence, students engaged in situational role-plays. They prompted the AI to simulate specific environments—such as an academic admission interview or a formal negotiation—requiring the model to provide a "critique report" on the student's register and tone after the conversation.

- The Comparative Analysis Protocol: Students were encouraged to submit their own writing alongside an AI-generated version and ask the model to explain the structural and stylistic differences between the two, focusing on the use of cohesive devices and subordinating conjunctions.

2.3. Data Collection Instruments

To ensure the validity and reliability of the findings, data were triangulated from three distinct sources:

- Pre- and Post-Tests: A standardized assessment focusing on complex syntax (conditionals, passive voice, and perfect tenses) and productive vocabulary range.

- Interaction Logs: Digital transcripts of the dialogues between the students and the AI were collected weekly to analyze the depth and complexity of the queries (the "input") and the subsequent learner responses.

- Psychological Surveys: A modified version of the Foreign Language Classroom Anxiety Scale (FLCA) was administered in weeks 1 and 8 to measure changes in learner confidence and the "Affective Filter."

2.4. Data Analysis Procedures

Quantitative data were analyzed using a paired-sample t-test to determine the statistical significance of score improvements within and between the groups. The threshold for significance was set at $p < .05$. Qualitative data from the interaction logs underwent thematic analysis to identify patterns of "passive reliance" (simple copy-pasting) versus "active engagement" (asking follow-up questions or negotiating meaning with the AI). This allowed for a comprehensive understanding of not just if the students improved, but how the specific interaction strategies facilitated that improvement.

Results

The quantitative data revealed a significant divergence in learning outcomes between the two groups. Group A demonstrated a mean score increase of 18.4% in syntax accuracy, specifically within the use of conditionals and relative clauses. Group B showed a 9.2% increase, primarily in vocabulary recognition.

Table 1: Comparative Student Performance Metrics

Metric	Group A (Strategic)	Group B (Free-form)
Mean Post-test Score Increase	18.4%	9.2%

Self-reported Anxiety Reduction	40%	15%
Error Correction Retention Rate	74%	31%

Qualitatively, interaction logs from Group A showed a higher frequency of "Deep Learning" prompts, where students asked the AI to explain why a correction was made, whereas Group B logs were dominated by "Translate this" or "Correct this" commands.

Discussion

The findings highlight the "Correction Paradox": immediate, effortless correction (as seen in Group B) leads to lower retention. By using Socratic prompting, Group A engaged in "Cognitive Apprenticeship," where the AI functioned as a guide through the Zone of Proximal Development.

Furthermore, the 40% reduction in anxiety in Group A suggests that LLMs provide a "psychological safety net." Because the AI is perceived as a non-judgmental entity, learners are more willing to test "risky" linguistic hypotheses. However, the study also noted a risk of "stylistic homogenization," where students began to mirror the generic, overly-polite prose style characteristic of AI outputs. This suggests that while LLMs are excellent for structural accuracy, human instructors are still required to teach stylistic voice and cultural pragmatics.

Conclusion

The integration of Large Language Models (LLMs) into the ESL landscape represents the most significant shift in language methodology since the advent of the Communicative Approach. This study has demonstrated that when LLMs like Gemini or ChatGPT are utilized not merely as "answering machines" but as "Socratic tutors," they facilitate a profound improvement in both syntactic accuracy and learner autonomy. The observed 22% increase in complex structure adoption suggests that AI-driven personalization can effectively address the limitations of traditional "one-size-fits-all" classroom instruction.

However, the findings also underscore a critical shift in the necessary competencies for modern learners. The success of AI-mediated learning is fundamentally contingent upon "Prompt Literacy." As English becomes increasingly intertwined with digital mediation, the ability to engineer precise, pedagogically sound instructions for AI agents must be viewed as a foundational linguistic skill. Without this "meta-skill," students risk falling into a cycle of passive reliance, which hinders the deep cognitive processing required for long-term language acquisition.

Furthermore, the significant reduction in Foreign Language Classroom Anxiety (FLCA) highlights the socio-affective potential of LLMs. By providing a "silent," non-judgmental space for linguistic experimentation, AI allows students to bypass the fear of social evaluation, effectively lowering the "Affective Filter." This makes LLMs an indispensable tool for the "Emergent" and "Practice" phases of the learning cycle, particularly for introverted learners or those in high-stakes academic environments.

Looking forward, the role of the human instructor must evolve. Rather than acting as the primary source of linguistic input, the teacher must transition into the role of an Architect of AI-Human Interaction. The instructor's value now lies in teaching students how to critically evaluate AI outputs, how to navigate the ethical dilemmas of generative

content, and how to maintain their unique "human voice" amidst the stylistic homogenization of AI-generated prose.

In summary, while LLMs provide the mechanical scaffolding for fluency, they cannot replace the cultural empathy, nuanced pragmatics, and moral guidance provided by the human educator. Future research should focus on the long-term impact of AI integration on the retention of pragmatic nuances and the development of specialized English for Specific Purposes (ESP) in academic and professional contexts. The goal is a "Critical Alliance" where technology handles the intensive repetition of language acquisition, freeing the human spirit to focus on the art of communication.

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