

ARTIFICIAL INTELLIGENCE-DRIVEN FEEDBACK SYSTEMS FOR DEVELOPING CRITICAL THINKING SKILLS IN ENGLISH LANGUAGE LEARNING

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Today development of students’ critical thinking skills has become one of the main objectives in modern education. According to researchers, critical thinking involves the ability to analyze, evaluate, and interpret information independently, making it essential for effective language use and meaningful communication (Yang & Niu, 2026). Critical thinking is especially important in foreign language learning, as it allows students to not only memorize words and grammar rules, but also analyze their use in context, understand the nuances of meaning, and apply them in their own speech. This contributes to a deeper understanding of language and its subtleties. Additionally, students with developed critical thinking are able to better understand the interlocutor, argue their point of view, conduct discussions, and find compromises, which makes them more effective communicators (Baranovska et al., 2020). Moreover, critical thinking encourages students to actively search for information, analyze different sources, and form their own opinions, which contributes to the development of independence in learning. In the English language learning environment, critical thinking can be enhanced through incorporating AI technologies, as they can offer unique opportunities.

The purpose of the research is to study the effectiveness of Artificial Intelligence driven feedback systems in fostering student’s critical thinking in the process of learning English language.

Artificial Intelligence is continuously changing modern education, providing up to date pedagogical platforms that reshape how students engage with knowledge, especially in learning foreign languages. Boichuk (2025) argues that modern students are increasingly using AI tools such as language models (ChatGPT), text proofreaders (Grammarly), vocabulary trainers (Quillbot, Reverso), or interactive applications (Duolingo, Elsa Speak), which not only help improve English language skills, but also shape new approaches to educational interaction.

AI-driven feedback systems may be considered as one of educational innovations. They appeared as a powerful tool to support language acquisition through personalized and immediate responses. According to Engeness and Gamlem (2025), these tools are based on adaptive algorithms, so they offer continuous assessment and can guide learners on their way of language skills improvement. Their fundamental feature is that they are focused not only on evaluating the results, but also on supporting the learning process through constant formative feedback.

Among the pedagogical advantages of application of AI-based feedback systems in the process of English language acquisition are the following ones:

- instant and continuous feedback;

- individualization of learning;
- development of students' autonomy;
- development of students' self-reflection skills.

One of main advantages of AI-driven feedback systems is immediate and personalized response. They instantly recognize mistakes and provide tailored recommendations, allowing students to correct mistakes immediately. This quick feedback cycle enhances learning efficiency and supports deeper cognitive processing. In such case, learners can immediately reflect on and revise the material. It helps to identify weaknesses and promotes targeted skill development (Chang & Sun, 2024).

Consequently, AI becomes not only a tool, but also a so-called tutor in the educational process. Working with artificial intelligence activates students' critical thinking: they learn to assess the reliability of the information received, distinguish useful advice from a false one, compare different language options, and formulate precise queries. In the context of learning English, this contributes not only to speech competence, but also to the formation of digital literacy, which is a key skill of a modern specialist. Thus, the use of AI contributes to the transition from passive acquisition of knowledge to active, purposeful, and conscious learning, which meets modern requirements for a competent language user (Boichuk, 2025).

Chang and Sun (2024) point out one more significant benefit of AI-driven feedback for fostering student's critical thinking, which is the promotion of self-regulated learning. AI tools guide students through planning, monitoring, and evaluating their own learning process. This, consequently, fosters independence and encourages students to take responsibility for their progress, which, in turn, is closely connected to the development of critical thinking. Through interaction with AI, students become more reflective and strategic in foreign language application, enhancing both linguistic competence and analytic skills.

A study by Shahini (2025) demonstrates that AI generated feedback promotes significant improvements in organization, argumentation, and content development in writing tasks. Thus, such systems also contribute to improved writing quality and critical reasoning. AI tools facilitate deeper engagement with the writing process by providing detailed feedback, enabling learners to refine their ideas and construct more coherent arguments. Moreover, AI systems can engage in a dialogue with a student, ask clarifying questions, and offer alternative arguments, simulating a critical discussion environment.

Recent study by Zhang (2025) further supports the role of AI feedback in enhancing student's critical thinking. The researcher examines the impact of AI-assisted writing feedback on university student's writing skills, pointing out that students who are engaged with AI-generated feedback demonstrate significantly higher levels of critical engagement with texts. They showed their improved abilities to evaluate arguments, propose assumptions, and revise their writing on the basis of reflective analysis.

AI-driven feedback systems are especially valuable, as they can support metacognitive development and self-regulated learning. Such tools are designed to

provide instant responses, explanations, corrections, which is highly important in learning a foreign language, in particular English. However, it should be noted that the effectiveness of such technologies depends on their pedagogical design, as purely automated feedback may lack emotional and contextual sensitivity compared to human interaction. The introduction of AI in education poses privacy concerns that are of great importance, as the management of students' sensitive data requires strict rules to keep personal data safe. Another significant problem may be the gradual loss of connection with real people. Students may lose the ability to understand and communicate with their peers or teachers (Shumilova, 2025).

Thus, AI-based feedback systems are a promising technology in the field of education. They can help to develop critical thinking in the process of learning a foreign language, including English. These systems allow for multidimensional analysis of students' language learning activity and contribute to the formation of analytical, argumentative, and reflective skills. However, it should be noted that their implementation in the learning process should be gradual and should be carried out only with the involvement of a teacher.

Therefore, the integration of AI-driven feedback systems in English language learning represents both opportunity and challenge. While such technologies enhance personalization and accessibility, they also require careful implementation to ensure that learners remain cognitively engaged and develop independent critical thinking skills rather than over-relying on technology.

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