The Impact of AI-Supported Multimodal Learning Environments on EFL Students' Critical Thinking and Self-Regulation: A Quasi-Experimental Study in Shanxi Province, China

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ABSTRACT

This quasi-experimental study examines the impact of AI-supported multimodal learning environments on enhancing the critical thinking and self-regulation skills of English as a Foreign Language (EFL) students at a primary school in Shanxi Province, China. A total of 220 participants were involved in this study, divided into experimental and control groups. The experimental group engaged in learning activities incorporating AI tools such as ChatGPT, along with multimodal resources, while the control group followed a traditional instructional approach. Pre- and post-tests were administered to measure changes in critical thinking and self-regulation. Statistical analysis of the results demonstrated that students in the AI-supported multimodal environment significantly outperformed their peers in both critical thinking and self-regulation skills. These findings suggest that integrating AI technologies in EFL primary education can offer meaningful improvements in higher-order thinking and autonomous learning capabilities. The study contributes to the growing body of research on the effectiveness of AI in educational settings and provides practical insights for educators looking to implement AI-enhanced learning strategies in similar contexts.

Keywords: AI-Supported Learning, Multimodal Learning, Critical Thinking, Self-Regulation, EFL Primary Education