Fostering Critical Thinking in Primary Education: A Case Study Using Artificial Intelligence Tools

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Abstract:

The rapid pace of social and technological progress, combined with a constant influx of information and ever-changing conditions in daily life, has elevated the need for critical thinking skills as essential for students' personal, social, and professional growth. The ability to interpret, analyze, and adapt to new information is increasingly surpassing the value of specialized knowledge. To meet these demands, educators are creating dynamic learning environments and adopting innovative teaching strategies aimed at fostering critical and adaptive thinking. Artificial intelligence (AI) is a transformative tool from computer science that has quickly become integral to this shift. It encompasses a wide range of functions, from voice recognition and problem-solving to decision-making and data analysis, replicating human-like intelligence in machines with superior memory, processing speed, and without subjective bias. Within educational settings, AI can enhance critical thinking by: a) offering students instant feedback on their work, b) aiding them in identifying and correcting errors, and c) advancing their cognitive skills. This study examines the potential of AI tools to cultivate critical thinking in primary school students, with an emphasis on sixth-grade learners and their unique developmental needs. As part of a larger doctoral research project, this ongoing study has implemented a specific AI-based example in a primary school setting, showcasing effective practices and promising preliminary results. This research uniquely integrates AI to foster critical thinking, marking the first time this approach has been used to nurture critical thinking in an elementary education context.