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Impact of Generative AI on Critical Thinking Skills

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Abstract: *Generative AI tools are increasingly used in education for learning, research, and problem-solving. While these tools provide quick access to information and personalized assistance, there are concerns that excessive reliance on AI may reduce critical thinking skills. This research investigates both the positive and negative impacts of Generative AI on students' reasoning, analytical abilities, and decision-making skills.*

Keywords: Generative Artificial Intelligence (GAI), Critical Thinking, Artificial Intelligence (AI), Student Learning, Educational Technology, Problem-Solving Skills, Analytical Thinking

I. INTRODUCTION

Generative Artificial Intelligence (AI) has transformed the educational landscape by providing students with instant access to information, personalized learning support, and automated content **generation. While** these technologies improve learning efficiency, concerns have emerged regarding their influence on students' critical thinking abilities. Critical thinking is essential for **analysing** information, evaluating evidence, and making informed decisions. This study explores how the use of Generative AI affects the development of critical thinking skills among students and examines both its advantages and challenges in education.

II. LITERATURE REVIEW

The literature review examines previous studies related to AI in education, critical thinking development, intelligent tutoring systems, and student learning behaviour. It helps identify existing research findings, gaps, and areas requiring further investigation. Previous studies have highlighted the growing role of Artificial Intelligence in education and its potential to improve learning outcomes. Research suggests that AI can enhance personalized learning experiences and provide immediate feedback to students. However, some scholars argue that excessive reliance on AI-generated content may reduce analytical thinking and creativity. This review provides a foundation for understanding current research and identifying gaps that the present study aims to address.

III. PROBLEM STATEMENT

With the growing popularity of Generative AI, students may become dependent on AI-generated answers instead of developing their own reasoning skills. This raises concerns about reduced analytical thinking, creativity, and problem-solving abilities. The rapid adoption of Generative AI tools in education has changed the way students learn and complete academic tasks. Many students rely on AI-generated answers without fully understanding the underlying concepts or engaging in independent analysis. This dependency may reduce opportunities to practice critical thinking, problem-solving, and decision-making skills. At the same time, AI can provide valuable support and learning assistance when used appropriately. Therefore, it is important to investigate whether Generative AI enhances or hinders critical thinking skills and to identify strategies for its responsible use in education.

IV. OBJECTIVES OF THE STUDY

The primary objective of this study is to examine the impact of Generative AI on students' critical thinking skills. The research aims to identify both the positive and negative effects of AI-assisted learning on analytical reasoning and

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problem-solving abilities. It also seeks to understand students' perceptions and usage patterns of AI tools in academic activities. Furthermore, the study intends to provide recommendations for educators and institutions on integrating AI technologies while preserving and enhancing critical thinking skills.

V. RESEARCH METHODOLOGY

This study will adopt a descriptive research methodology to investigate the impact of Generative AI on critical thinking skills. Data will be collected through surveys, questionnaires, and interviews involving diploma and undergraduate students. The collected information will be analysed using statistical methods to identify patterns and relationships between AI usage and critical thinking abilities. Both quantitative and qualitative approaches will be employed to ensure a comprehensive understanding of the research problem.

VI. UNDERSTANDING GENERATIVE-AI

Generative AI is a type of artificial intelligence that creates new content based on user input.

Examples

- Chatgpt
- Google Gemini
- Microsoft Co-pilot

Applications

- Content writing
- Coding assistance
- Research support
- Translation
- Summarization

VII. POSITIVE IMPACT OF GENERATIVE AI

Generative AI offers several benefits for students and educators. It provides instant access to information, helping students understand complex topics more efficiently. They also encourage creativity by generating new ideas and perspectives for assignments and projects. Additionally, AI-powered educational tools can improve student engagement and motivation through interactive learning experiences.

VIII. NEGATIVE IMPACT OF GENERATIVE AI

Excessive use of AI can discourage deep learning and analytical reasoning. Furthermore, AI-generated information may sometimes be inaccurate or biased, leading to misinformation. The misuse of AI tools can also contribute to plagiarism and ethical concerns in academic environments.

IX. ETHICAL CONSIDERATION

Academic Integrity: Students should use AI responsibly and avoid plagiarism.
Data Privacy: User data must be protected when using AI platforms.
Transparency: AI-generated content should be clearly identified.
Responsible Use: Educational institutions should establish guidelines for AI usage.

X. RESULT AND DISCUSSION

The study will analyse survey results to determine how AI usage affects critical thinking. Findings will compare students who frequently use AI with those who use it moderately. The discussion will evaluate whether AI supports or hinders critical thinking development.

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XI. RECOMMENDATION

For Students: Use AI as a learning aid rather than a replacement for independent thinking.
For Teachers: Design assignments that require analysis, evaluation, and creativity.
For Institutions: Develop policies and training programs for responsible AI usage.
For Researchers: Conduct further studies on the long-term impact of AI on learning outcomes

XII. FUTURE SCOPE

AI-Assisted Critical Thinking Tools
Development of AI systems specifically designed to strengthen reasoning skills.
Personalized Education: Advanced AI tutors providing adaptive learning experiences.
AI Ethics Education: Including AI literacy and ethics in academic curricula.
Long-Term Studies: Research on the lasting effects of AI on student learning and cognitive development.

XIII. CONCLUSION

Generative AI has the potential to transform education by providing personalized support and improving learning efficiency. However, excessive dependence on AI may negatively affect critical thinking and problem-solving skills. A balanced approach that combines AI assistance with independent learning can help students maximize the benefits of AI while preserving essential cognitive abilities. Generative AI has become an influential tool in modern education, offering numerous opportunities for personalized learning and academic support. However, its growing use raises concerns about the development of critical thinking and independent problem-solving skills among students. The study concludes that AI should be viewed as a supportive educational tool rather than a replacement for human reasoning. By promoting responsible and balanced AI usage, educational institutions can ensure that students benefit from technological advancements while continuing to develop essential critical thinking skills.

REFERENCES

1. Luckin R., W. Holmes, M. Griffiths, and L. B. Forcier, *Intelligence Unleashed: An Argument for AI in Education*. London, UK: Pearson Education, 2016.
2. Holmes Wayne, M. Bialik, and C. Fadel, *Artificial Intelligence in Education: Promises and Implications for Teaching and Learning*. Boston, MA: Center for Curriculum Redesign, 2019.
3. Kasneci Enkelejda et al., "ChatGPT for good? On opportunities and challenges of large language models for education," *Learning and Individual Differences*, vol. 103, 2023.