THE IMPACT OF ARTIFICIAL INTELLIGENCE TOOLS ON STUDENTS' CRITICAL THINKING SKILLS

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Introduction

In recent years, the rapid development of artificial intelligence (AI) tools has significantly

transformed the educational landscape. Applications such as AI-based writing assistants,

automated problem solvers, and personalized learning platforms are increasingly being used by

students worldwide. While these technologies provide convenience and efficiency, concerns have

emerged regarding their impact on students' critical thinking skills. Critical thinking is a fundamental

component of higher education, enabling students to analyze information, evaluate arguments, and

develop independent conclusions. This study aims to explore how the use of AI tools influences the

critical thinking abilities of university students.

Methods

This study employed a mixed-method approach combining both quantitative and qualitative data

collection. A total of 120 third-year university students from different academic disciplines

participated in the research. Participants were divided into two groups: frequent AI tool users and

limited AI tool users. Data were collected through structured questionnaires, critical thinking tests,

and semi-structured interviews. The questionnaire assessed the frequency and purpose of AI tool

usage, while the critical thinking test evaluated analytical and reasoning skills. Interview responses

provided deeper insight into students' learning experiences. The collected data were analyzed

using comparative statistical analysis and thematic content analysis.

Results

The findings revealed notable differences between the two groups. Students who relied heavily on

AI tools demonstrated higher efficiency in completing assignments but showed lower performance

in tasks requiring deep analysis and independent reasoning. In contrast, students who used AI tools

selectively performed better in critical thinking assessments. Additionally, qualitative data indicated

that excessive dependence on AI tools reduced students' engagement in problem-solving

processes. However, moderate use of AI tools was found to support learning by providing guidance

and clarifying complex concepts.

Discussion

The results suggest that while AI tools can enhance productivity, their overuse may negatively

affect the development of critical thinking skills. These findings align with previous studies

emphasizing the importance of active cognitive engagement in learning. AI tools, when used

responsibly, can act as supportive educational resources rather than replacements for independent thinking. Educators should encourage balanced use of AI technologies and design assignments

that require analytical reasoning rather than simple output generation. Furthermore, integrating AI

literacy into the curriculum could help students use these tools more effectively and ethically.

Conclusion

In conclusion, artificial intelligence tools have a dual impact on students' academic development.

While they offer significant benefits in terms of efficiency and accessibility, excessive reliance on

them may hinder critical thinking skills. Therefore, it is essential for both students and educators to

adopt a balanced approach that maximizes the advantages of AI while preserving the core

objectives of higher education. Future research could investigate long-term effects of AI usage on

cognitive development and academic performance.

References

1. Russell, S., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach.

2. Luckin, R. (2018). Machine Learning and Human Intelligence.

3. Holmes, W., Bialik, M., & Fadel, C. (2019). Artificial Intelligence in Education.

4. OECD. (2021). AI in Education: Challenges and Opportunities.

5. Selwyn, N. (2019). Should Robots Replace Teachers?