

# THE IMPACT OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES ON STUDENTS' CRITICAL THINKING

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## Abstract

This article analyzes the introduction of artificial intelligence technologies into the education system and their role in developing students' critical thinking skills. The study examined the impact of artificial intelligence tools on the competencies of information analysis, evaluation, problem solving, and independent decision-making. The advantages and possible negative aspects of using artificial intelligence were also assessed from a pedagogical point of view. The results of the study showed that the targeted use of artificial intelligence technologies serves to develop students' critical thinking skills.

**Keywords:** Artificial intelligence, critical thinking, educational technologies, digital pedagogy, student, competency, innovative education, information analysis.

## Introduction

Since this topic is relevant today, I tried to provide scientific coverage. 21st century education requires students not only to acquire knowledge, but also to analyze, evaluate and apply it in practice. As a result of the development of digital technologies, artificial intelligence (AI) is becoming one of the important tools in the educational process. Today, artificial intelligence platforms such as ChatGPT, Gemini, Copilot help students search for information, create texts, solve problems and organize educational activities. At the same time, the issue of the impact of artificial intelligence on students' thinking is one of the current areas of pedagogical research. In particular, identifying mechanisms for the effective use of artificial intelligence in developing critical thinking skills in students is of significant scientific and practical importance. If we approach the topic in this way, its relevance is that the sharp increase in the volume of information in the conditions of globalization and digitalization requires the development of young people's competencies in sorting, analyzing and evaluating information. Although artificial intelligence technologies allow students to access vast information resources, their rational use depends on critical thinking skills. Therefore, studying the relationship between artificial intelligence and critical thinking is one of the urgent tasks of modern pedagogical science. The purpose of this topic is to determine the impact of artificial intelligence technologies on students' critical thinking and to develop scientific and methodological recommendations for their effective use in the educational process. The methods used in the article were implemented and used on the basis of: pedagogical observation;



- analysis of scientific literature;
- comparative analysis;
- generalization;
- systematic approach;
- inductive and deductive methods.

The pedagogical essence of critical thinking and Critical thinking is a person's ability to analyze information, examine evidence, compare alternative opinions and draw informed conclusions. In the modern education system, this competency is recognized as one of the basic competencies.

A critical thinking student:

- checks information;
- assesses the reliability of evidence;
- draws independent conclusions;
- approaches problems from different perspectives;
- can justify his opinion.

Artificial intelligence technologies create the following opportunities in the educational process:

- organization of individual education;
- quick information retrieval;
- explanation of complex topics;
- use as a virtual consultant;
- adaptation of educational materials;
- support for research activities.

These opportunities can serve to strengthen the analytical activity of students.

Research shows that the targeted use of artificial intelligence:

- develops information analysis skills;
- increases the ability to solve problem situations;
- forms evidence-based thinking;
- stimulates research activity;
- develops reflective thinking.

For example, a student can compare answers received from artificial intelligence on a topic with other sources and identify their advantages and disadvantages. This process serves to develop critical thinking. Incorrect use of artificial intelligence tools can cause the following problems:

- dependence on ready-made answers;
- reduction of independent research;
- weakening of creative thinking;
- violation of academic integrity;
- formation of the habit of accepting information without checking.

In particular, the perception of AI results as absolute truth by students has a negative impact on the development of critical thinking. To develop critical thinking with the help of AI:

1. Develop tasks for analyzing the answers given by AI.
2. Organize exercises based on comparing several sources.



3. Use problem-based learning technologies.
4. Widely use debate and project methods.
5. Develop information literacy.
6. Form a culture of academic honesty.

The analysis showed that the pedagogically correct use of AI technologies develops students':

- competence in working with information;
- analytical thinking;
- the ability to make independent decisions;
- problem-solving skills;
- critical assessment skills.

In conclusion, Artificial Intelligence technologies are an important component of modern education. They create broad opportunities for the development of students' critical thinking skills. However, the effective use of these technologies requires pedagogical control and methodological approaches. As a result of the rational use of artificial intelligence tools, students develop the competencies of critical assessment of information, independent thinking and informed decision-making.

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