

Impact of AI Tools like ChatGPT on Critical Thinking Skills of Teachers and Students

Dr. Madhu Sudan Paswan
(Assistant Professor)
Department of Education,
Rayat College of Education,
Railmajra (Pb)
hnysudan@gmail.com

Abstract

The widespread integration of Artificial Intelligence (AI) tools, particularly ChatGPT, has significantly influenced educational practices across the globe. ChatGPT provides immediate access to information, personalized guidance, content creation assistance, and academic support, thereby enhancing the learning experience. Despite these advantages, concerns have been raised about its potential impact on the development of critical thinking skills among students and educators. This paper explores both the benefits and challenges associated with the use of ChatGPT in education, reviews recent research findings, and proposes strategies for its effective and responsible implementation. Evidence suggests that when used as a supplementary learning tool, ChatGPT can promote analytical thinking, self-reflection, and independent learning. However, overreliance

on AI-generated content may hinder learners' ability to engage in critical analysis, problem-solving, and evaluative reasoning. The study concludes that ChatGPT should complement, rather than replace, human judgment and cognitive processes in educational settings.

Keywords: ChatGPT, Artificial Intelligence, Critical Thinking, Teachers, Students, Higher Education, Educational Technology

Introduction

Artificial Intelligence (AI) has become an important component of contemporary education. Among the various AI-driven technologies, ChatGPT has attracted considerable attention because of its capability to generate human-like responses, answer queries, summarize information, and support a wide range of academic activities. Educational institutions are increasingly integrating ChatGPT into teaching and learning processes for purposes such as lesson planning, personalized tutoring, writing support, and assessment assistance. Despite its growing popularity, educators and researchers have expressed concerns regarding the potential impact of excessive dependence on AI tools on the development of critical thinking skills among both students and teachers.

Critical thinking is the ability to examine information objectively, assess evidence, recognize assumptions, and arrive at logical conclusions. It is widely regarded as an

essential skill for academic achievement and lifelong learning. Consequently, it is important for educational stakeholders to explore and understand the influence of ChatGPT on the cultivation and enhancement of critical thinking abilities.

Review of Related Literature

Several studies have explored how these technologies influence teaching, learning, and the development of critical thinking skills among teachers and students.

Crompton and Burke (2024) examined the opportunities and challenges associated with the use of ChatGPT in educational settings. Their study highlighted that ChatGPT can enhance learning by offering immediate feedback, personalized support, and opportunities for active inquiry. At the same time, the researchers warned that excessive reliance on AI-generated responses may discourage students from engaging in independent thinking and problem-solving activities.

Lee and Zhai (2024) investigated the role of ChatGPT in science lesson planning among pre-service teachers. Their findings revealed that the tool helped teachers generate innovative teaching ideas, prepare learning materials, and design classroom activities. However, participants also expressed concerns about the reliability of AI-generated information and the possibility that students might become overly dependent on such technologies.

Guo et al. (2026) conducted a systematic review specifically focusing on ChatGPT's impact on critical thinking skills and dispositions. The study

found evidence that ChatGPT can support analytical reasoning, interpretation, and self-regulated learning when used appropriately.

Objectives of the Study

- To examine the impact of ChatGPT on students' critical thinking skills.
- To analyze the influence of ChatGPT on teachers' instructional practices.
- To suggest strategies for promoting responsible AI-assisted learning.

For teachers, ChatGPT offers support in lesson planning, content creation, and assessment design. Teacher training programs increasingly emphasize AI literacy and critical evaluation skills.

Positive Impact of ChatGPT on Critical Thinking

For Students	For Teachers
• Offers immediate explanations and diverse viewpoints on complex concepts.	• Helps design lesson plans and develop teaching resources efficiently.
• Promotes inquiry-driven learning through engaging and interactive conversations.	• Creates thought-provoking discussion prompts that foster critical thinking.
• Encourages autonomous learning and effective self-study practices.	• Facilitates personalized instruction to address diverse learning needs.
• Assists learners in analyzing and comparing multiple perspectives on a topic.	• Motivates educators to critically assess and improve AI-generated materials.

Negative Impact of ChatGPT on Critical Thinking

For Students	For Teachers
• Excessive reliance on AI tools may limit the development of independent problem-solving skills.	• Overdependence on AI may reduce opportunities for creative and independent lesson planning.
• Learners may accept AI-generated information without critically evaluating its accuracy.	• AI-produced materials can sometimes include errors, inaccuracies, or biased information.
• Frequent use of AI may hinder creativity and the generation of +-original ideas.	• Potential biases in AI-generated content require careful review and validation.
• Dependence on AI assistance can weaken critical analysis and reasoning abilities.	• Evaluating students' genuine understanding and learning outcomes can become more challenging.
• Overuse may encourage academic misconduct and result in surface-level learning.	• Distinguishing between students' original work and AI-generated content may become increasingly difficult.

Sample

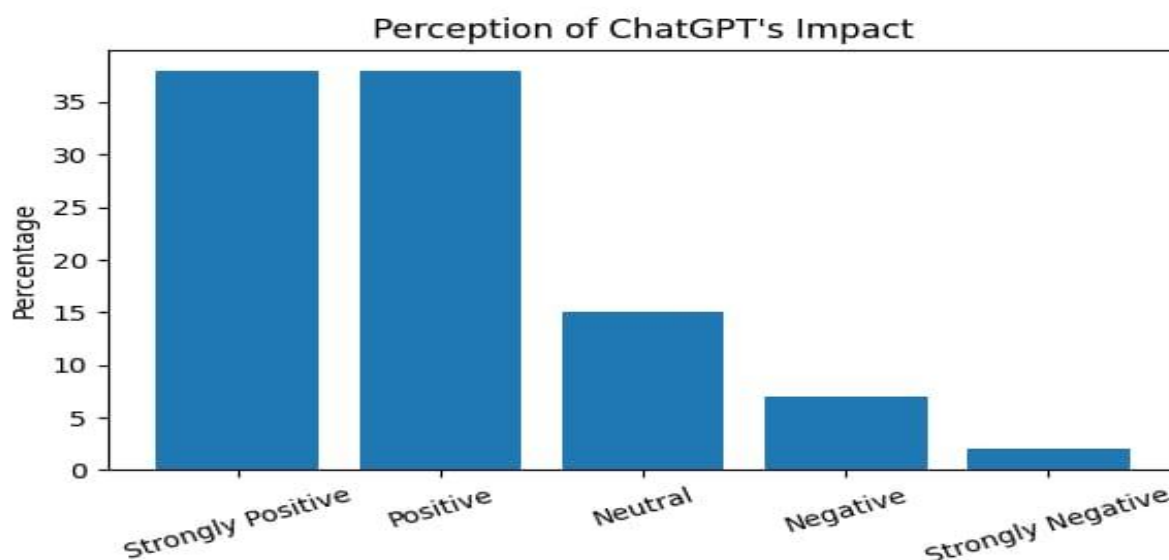
A sample of 100 respondents in which 50 teachers and 50 students were selected from higher educational institutions of Rupnagar District. A structured questionnaire consisting of 20 statements on a five- point likert scale was used to collect data.

Data Analysis, Interpretation and Results

Table 1

Perception of ChatGPT's Impact on Critical Thinking

Response Category	Teachers (n=50)	Students (n=50)	Total (%)
Strongly Positive	18	20	38%
Positive	20	18	38%
Neutral	7	8	15%
Negative	4	3	7%
Strongly Negative	1	1	2%
Total	50	50	100%



Interpretation

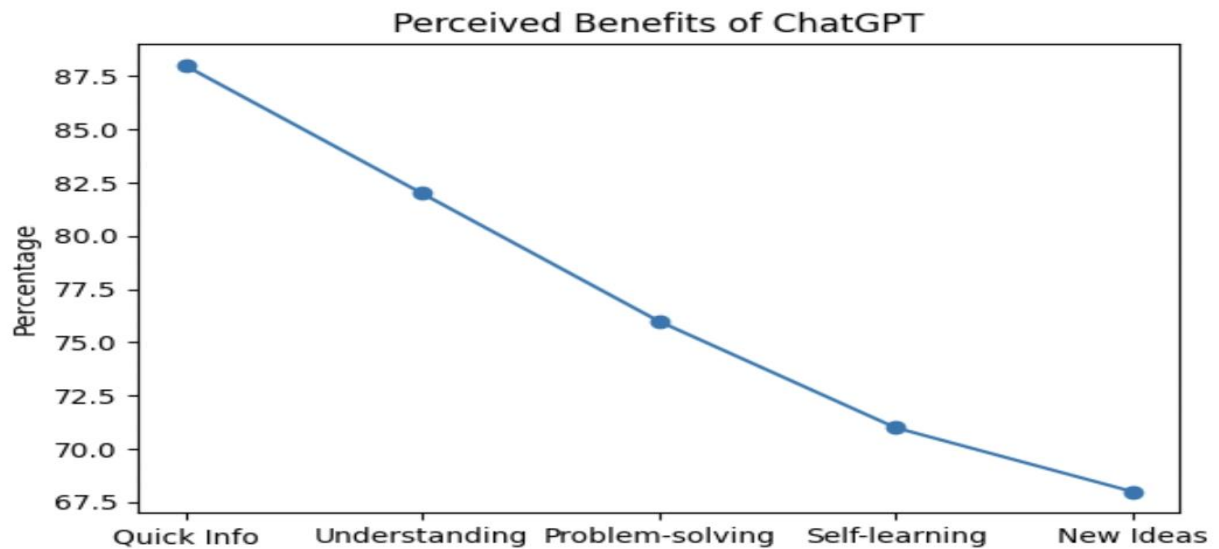
The table indicates that 76% of respondents hold a positive or strongly positive view regarding the impact of ChatGPT on critical thinking skills. Only 9% expressed negative opinions, while 15% remained neutral. This suggests that the majority of teachers and students perceive ChatGPT as a useful educational tool that can support thinking and learning processes.

Table 2

Perceived Benefits of ChatGPT

Benefit	Frequency	Percentage
Quick access to information	88	88%
Improved understanding of concepts	82	82%
Assistance in problem-solving	76	76%

Encourages self-learning	71	71%
Helps generate new ideas	68	68%



Interpretation

The findings reveal that quick access to information is considered the most significant benefit of ChatGPT (88%). A large proportion of respondents also believe that the tool improves conceptual understanding and supports problem-solving abilities. These findings suggest that ChatGPT can contribute positively to learning and knowledge acquisition.

Table 3

Effect of ChatGPT on Critical Thinking Skills

Response	Frequency	Percentage
----------	-----------	------------

Improves Critical Thinking	69	69%
No Significant Effect	18	18%
Reduces Critical Thinking	13	13%
Total	100	100%

Interpretation

The majority of respondents (69%) believe that ChatGPT improves critical thinking skills by encouraging exploration, questioning, and problem-solving. However, 13% feel that it may reduce critical thinking when users rely on AI-generated answers without evaluation.

Major Findings

- ❖ Most teachers and students have a positive perception of ChatGPT in education.
- ❖ ChatGPT helps users access information quickly and understand concepts more effectively.
- ❖ The tool supports self-learning and problem-solving activities.
- ❖ Overdependence on AI is the most frequently reported concern.
- ❖ A majority of respondents believe that ChatGPT can enhance critical thinking when used appropriately.
- ❖ Critical evaluation of AI-generated content is necessary to prevent passive learning.

Results and Discussion

The study concludes that ChatGPT has a generally positive influence on teaching and learning. Both teachers and students recognize its value in supporting learning, generating ideas, and improving understanding.

However, concerns regarding overreliance, reduced independent thinking, and academic integrity suggest that ChatGPT should be used as a supplementary learning tool rather than a substitute for human reasoning. Proper guidance and AI literacy training can help maximize its educational benefits while minimizing potential drawbacks.

The impact of ChatGPT on critical thinking is neither entirely positive nor entirely negative. Evidence suggests that outcomes depend largely on how the technology is used. When integrated into inquiry-based and reflective learning environments, ChatGPT can enhance analytical reasoning and metacognitive skills. Conversely, passive reliance on AI-generated answers may lead to cognitive offloading and reduced engagement in higher-order thinking processes. Therefore, educational institutions should promote AI literacy and encourage students and teachers to critically evaluate AI outputs rather than accept them unquestioningly.

Conclusion

ChatGPT represents a significant technological advancement with the potential to reshape teaching and learning practices. While it can support analytical thinking, self-regulated learning, and instructional innovation, excessive dependence may undermine critical thinking and independent reasoning. The educational value of ChatGPT depends on its thoughtful and responsible integration into learning environments. Teachers and students should be encouraged to use AI as a tool for enhancing, rather than replacing, critical thinking skills.

References

- Ali, D., Fatemi, Y., Boskabadi, E., Nikfar, M., Ugwuoke, J., & Ali, H. (2024). ChatGPT in teaching and learning: A systematic review. *Education Sciences*, 14(6), Article 643. <https://doi.org/10.3390/educsci14060643>
- Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2024). Chatting and cheating Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, 61(2), 228–239. <https://doi.org/10.1080/14703297.2023.2190148>
- Crompton, H., & Burke, D. (2024). The educational affordances and challenges of ChatGPT: State of the field. *TechTrends*, 68(2), 380–392. <https://doi.org/10.1007/s11528-024-00939-0>
- Kasneci, E., Sessler, K., Küchemann, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeiffer, F., Poquet, O., Sailer, M., Schmidt, A., Seidel (2023). ChatGPT for good On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103, 102274. <https://doi.org/10.1016/j.lindif.2023.102274>
- Lee, G. G., & Zhai, X. (2024). Using ChatGPT for science learning: A study of pre-service teachers' lesson planning. *Journal of Science Education and Technology*, 33(3), 387–401.
- Liu, J., Sihes, A. J., & Lu, Y. (2025). Generative artificial intelligence and critical thinking: A systematic review of educational applications. *Language Testing in Asia*, 15(1), 1–22.
- Lo, C. K. (2023). What is the impact of ChatGPT on education? A rapid review of the literature. *Education Sciences*, 13(4), 410. <https://doi.org/10.3390/educsci13040410>

Qian, Y. (2025). Pedagogical applications of generative artificial intelligence in higher education: Opportunities and challenges. *TechTrends*, 69(1), 45–58.

Sallam, M. (2023). ChatGPT utility in healthcare education, research, and practice: Systematic review on the promising perspectives and valid concerns. *Healthcare*, 11(6), 887.

<https://doi.org/10.3390/healthcare11060887>

Tlili, A., Shehata, B., Adarkwah, M. A., Bozkurt, A., Hickey, D. T., Huang, R., & Agyemang, B. (2023). What if the devil is my guardian angel? ChatGPT as a case study of using chatbots in education. *Smart Learning Environments*, 10(1), 15. <https://doi.org/10.1186/s40561-023-00237-x>

CGCTA