

# AI, chatGPT affecting critical thinking- Students and Teachers

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## Abstract

An essential aspect of an individual's cognitive growth is critical thinking, characterised by problem-solving through reasoning, analysis, and curiosity. The rise of AI tools like ChatGPT has prompted inquiries about their impact on education and critical thinking. A few literatures were reviewed to understand why critical thinking is important, the influence of Artificial intelligence tools like chatGPT in education and universities and understand the factors which affect critical thinking. This study seeks to shed light on the potential implications of utilising AI tools like ChatGPT in education for both instructors and students, both in the short and long term. Primary research was conducted, collecting both quantitative and qualitative data from individuals of varying ages and professions. The study's conclusion offers insights into people's perceptions of AI tools like ChatGPT, whether they see them as aids or potential replacements for human intelligence. It indicates whether these perspectives are significantly influenced by the individual's age and profession. While concerns exist about ChatGPT's impact on creativity, most people remain optimistic about its potential, even while acknowledging its limitations and ethical dilemmas.

## Key words

*AI tools, chatGPT, Critical thinking, Educational institutes*

## Introduction

Critical thinking is a vital skill that shapes how we process information, make decisions, and solve problems. It encourages individuals to question, analyse, and assess information, ideas, and arguments in a systematic and rational manner, particularly during the formative years. To build their critical thinking skills, it is crucial that they pay attention to the world around them, get curious about new topics, think critically about those ideas, and reason through them. In the age of technological advancements, the advent of Artificial Intelligence, such as OpenAI's ChatGPT, has added a new dimension to our cognitive development. ChatGPT is an AI chatbot technology that can understand and generate human language responses. Due to the introduction of AI tools like ChatGPT, the process of critical thinking has been impacted and it is unknown how this development will affect present and future generations. This research paper aims to explore the intricate interplay between ChatGPT and the development of critical thinking among individuals. It seeks to reveal the complex web of factors that mediate the impact of chatGPT on critical thinking and provides insights into the

consequences of AI tools like chatGPT, both positive and negative. By shedding light on these factors, we aim to facilitate a deeper understanding on the impact of chatGPT in educational institutes and universities on students, teachers and working professionals.

### **Literature Review**

Critical thinking often starts with simple observations that pique curiosity and lead to an inquiry. This process involves re-examination, reasoning, and reflection, eventually fostering more complex thinking and problem-solving skills. These observations can arise from various situations, like noticing differences, encountering challenging questions, or questioning assumptions. Critical thinking can happen in different domains and especially for students, everyone has different ways of how they do critical thinking which is unique to them. In order to address those variances, personalised learning has proven to be the most effective strategy. Although the means of implementing personalised learning change over time, as new technologies are developed. Generally speaking, personalised learning seeks to tailor instruction to diverse students' requirements, interests, preferences, and talents<sup>1</sup>.

The introduction of AI has hugely affected the individuality of students in terms of how they develop their own process of critical thinking. AI should rather help in boosting critical thinking by helping in education by posing hurdles for human intelligence to overcome, but there has not been much luck due to the lack of funding. Funding for AI research has grown dramatically over the past few years, yet it still primarily focuses on businesses. Critical thinking varies across domains and among students, each having a unique approach. Ethical concerns also arise with the use of AI tools like ChatGPT in content generation, particularly in terms of authority and ownership. Additionally, heavy reliance on ChatGPT in education may lead to students neglecting ethical considerations. The adoption of ChatGPT in educational systems offers several promising benefits. It has the potential to unleash students' creativity, provide personalised tutoring, and equip them for future interactions with AI systems. However, it poses the risk of students becoming overly reliant on the tool, potentially weakening their critical thinking and cognitive skills. These concerns have led to opposition from academic institutions and scholars.

In conclusion, AI integration in education has transformative potential, but its impact on critical thinking depends on the level of reliance. This review underscores the importance of balanced regulation to nurture independent thinking and innovation in students.

### **Methodology**

The research paper employed a survey as the primary research method, involving 167 participants, including students, teachers, and working professionals aged between 16 to 60. This diverse group was chosen to gain insights into how individuals of varying ages and professions who use chatGPT are impacted. The snowball sampling technique was employed to collect survey data.

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<sup>1</sup> Inquiry and critical thinking skills for the next generation: from artificial intelligence back to human intelligence

The aim of this survey was to examine how AI tools, specifically chatGPT, affect an individual's critical thinking. The survey included several key questions.

- **Questions 1 and 2** were devised to gather participants' demographic details.
- **Questions 3 and 4** were designed to determine how much a person relies on artificial intelligence (AI) products such as chatGPT.
- The focus of **Question 5** was on evaluating a person's aptitude and intelligence for using AI tools.
- **Question 6** delved into an individual's ability to carry out tasks without relying on AI tools, such as ChatGPT.
- **Question 7** was focused on exploring participants' awareness of ethical biases associated with the use of chatGPT.
- **Questions 8, 9, and 10** delved into the effects of AI on critical thinking and the creative process.
- **Question 11** aimed to discern whether AI, particularly chatGPT, is viewed as a tool to support critical thinking or potentially replace it.
- **Question 12** was intended to gather individuals' perspectives on the potential influence of chatGPT on educational systems in schools and universities.

## **Conclusion**

The advent of AI tools like chatGPT underscores the importance of responsible and informed usage. The survey was designed to raise participants' awareness about ChatGPT and encourage them to critically evaluate their use of such tools. Analysis involving ANOVA, cluster analysis, and text mining provided valuable insights. The findings indicated that most users view ChatGPT as a valuable assistance tool rather than a replacement for human intelligence. Notably, age and occupation significantly influence users' dependency on ChatGPT, with some individuals, particularly those in the teaching profession between the ages of 31 and 40, being unaware of its ethical biases.

The survey revealed diverse perspectives on the impact of ChatGPT on critical thinking, with the majority of respondents perceiving it as having no positive influence. Interestingly, different age groups, including students (16–20), teachers (31–40), and working professionals (21–30), hold varying opinions regarding the effect of ChatGPT on their critical thinking abilities. While participants' self-assessment of their ability to function without ChatGPT varies by age group, it remains consistent across professions. Surprisingly, most respondents express confidence in their capacity to perform without ChatGPT. Concerns regarding ChatGPT's impact on creativity and uniqueness also fluctuate, with students aged 16–20 expressing reservations, while working professionals aged 21–30 perceive no such impact. Teachers in the 31–40 age range tend to believe that ChatGPT has minimal effect on their creativity. Text mining highlighted essential keywords in responses, and opinion mining showed surprising optimism among participants, despite their awareness of ethical concerns and doubts about ChatGPT's impact on critical thinking.

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