

A Study on the Impact of Analytical Thinking After Using AI Tool Among College Going Students (18 - 20)

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ABSTRACT

Artificial Intelligence (AI) has emerged as a significant tool in higher education, influencing the learning patterns and cognitive abilities of students. The increasing use of AI tools such as ChatGPT, Google Gemini, and Grammarly has transformed the way undergraduate students approach academic tasks, including problem-solving, writing, and research. Analytical thinking, which is essential for academic success and decision-making, may be positively or negatively affected by the use of such technologies. This study aims to examine the impact of AI tools on the analytical thinking abilities of college-going students aged 18–20. A total of respondents were selected using a simple random sampling method, and the nature of the study is descriptive. The findings reveal that while AI tools enhance learning efficiency, provide multiple perspectives, and support problem-solving, excessive reliance on these tools may reduce independent reasoning, critical evaluation, and deep learning. The study concludes that AI has a dual impact on analytical thinking. Balanced and mindful usage of AI can improve cognitive skills, whereas overdependence may weaken analytical abilities. Therefore, it is essential to promote responsible AI usage and encourage students to engage actively in critical thinking and independent learning processes.

Keywords: Artificial Intelligence, Analytical Thinking, College Students, Cognitive Skills, AI Tools

Introduction

Artificial Intelligence (AI) has transformed the educational landscape by providing tools that assist students in learning, problem-solving, and academic performance. Tools such as ChatGPT, Google Gemini, and Grammarly are widely used among students for assignments, research, and exam preparation.

Analytical thinking is a critical skill that enables students to evaluate information, solve problems, and make logical decisions. However, the increasing use of AI raises concerns about whether students are developing these skills independently or relying heavily on technology.

This study focuses on understanding both the positive and negative impacts of AI on analytical thinking among college-going students.

Objective of the Study

- To Identify the demographic of the respondents.
- To analyse the impact of AI tools usage on the analytical thinking abilities of college going students.
- To Assess the level of analytical thinking skills among college going students after using a tools.
- To understand the positive and negative effects of AI tools on students cognitive and reasoning abilities.
- To assess the potential positive and negative impacts of AI tool usage on future decision- making and social relationships.
- To exam in the extent of AI tool usage among college going students in their academic activities.

Methodology

The study adopts a descriptive research design, which is appropriate for describing the current status of AI tool usage and analytical thinking skills among students, as well as explaining the relationship between them. The universe of the study comprises all undergraduate (UG) students studying in colleges in Nagercoil, including students from various streams such as Science, Arts, and Commerce, covering both male and female students from all years of study (first year to final year). From this population, a sample of 50 students was selected using purposeful random sampling. A pilot study was conducted with 5 undergraduate students in Nagercoil to test the clarity, relevance, and suitability of the research instrument. Based on the feedback obtained, necessary modifications were made before proceeding with the final data collection.

The primary tool used for data collection was a self-prepared questionnaire designed to assess students' AI usage patterns, frequency, and purpose. The study utilized both primary and secondary sources of data. Primary data were collected directly from college-going students through Google Forms, while secondary data were gathered from books, journals, and research articles relevant to the study. For data analysis, appropriate statistical methods were applied using the Statistical Package for Social Sciences (SPSS), which helped in systematically analyzing and interpreting the collected data.

Analysis and Interpretation

Table 1: Demographic Details

Sl. No	Variable	Value Level	No of respondents	%
1	Gender	Female	42	84%
		Male	8	16%
2	Age	18–20	30	60%
		21–23	15	30%
		Above 23	5	10%
3	Course	UG	35	70%
		PG	15	30%
4	Family Type	Nuclear	38	76%
		Joint	12	24%
5	Area	Urban	32	64%
		Rural	18	36.00%

The above table shows the demographic details of the respondents. 42 respondents (84%) are female and 8 respondents (16%) are male. 30 respondents (60%) belong to the age group of 18–20 years, while 15 respondents (30%) belong to 21–23 years and 5 respondents (10%) are above 23 years. 35 respondents (70%) are pursuing UG and 15 respondents (30%) are PG students. 38 respondents (76%) belong to nuclear families and 12 respondents (24%) belong to joint families. 32 respondents (64%) are from urban areas and 18 respondents (36%) are from rural areas.

Table 2.: Purpose of Using AI

Sl. No	Variable	Value Level	N	%
1	Academic use	Yes	40	80%
		No	10	20%
2	Assignment completion	Yes	38	76%
		No	12	24%
3	Doubt clarification	Yes	42	84%
		No	8	16%
4	Exam preparation	Yes	36	72%
		No	14	28%

The above table shows the purpose of using AI among respondents. 40 respondents (80%) use AI for academic purposes, while 10 respondents (20%) do not. 38 respondents (76%) use AI for assignment completion, whereas 12 respondents (24%) do not. 42 respondents (84%) use AI for doubt clarification, while only 8 respondents (16%) do not. 36 respondents (72%) use AI for exam preparation, whereas 14 respondents (28%) do not use it for this purpose.

Table 3: AI Impact on Learning

Sl. No	Variable	Value Level	N	%
1	Helps understand subjects	Strongly Agree	20	40%
		Agree	18	36%
		Neutral	6	12%
		Disagree	4	8%
		Strongly Disagree	2	4%
2	Learning speed	Strongly Agree	22	44%
		Agree	17	34%
		Neutral	6	12%
		Disagree	3	6%
		Strongly Disagree	2	4%
3	Academic performance	Strongly Agree	18	36%
		Agree	20	40%
		Neutral	7	14%
		Disagree	3	6%
		Strongly Disagree	2	4%
4	Helps in revision	Yes	37	74%
		No	13	26%
5	Easy understanding	Yes	39	78%
		No	11	22%

The above table shows the impact of AI on learning. 20 respondents (40%) strongly agree and 18 respondents (36%) agree that AI helps to understand subjects. Only a small number of respondents disagree. 22 respondents (44%) strongly agree and 17 respondents (34%) agree that AI increases learning speed. 20 respondents (40%) agree and 18 respondents (36%) strongly agree that AI improves academic performance. 37 respondents (74%) stated that AI helps in revision, while 13 respondents (26%) disagree. 39 respondents (78%) reported that AI makes understanding easy, whereas 11 respondents (22%) disagree.

Table 4: Thinking Skills

Sl. No	Variable	Value Level	N	%
1	Improves thinking	Strongly Agree	15	30%
		Agree	18	36%
		Neutral	10	20%
		Disagree	5	10%
		Strongly Disagree	2	4%
2	Problem solving	Strongly Agree	16	32%
		Agree	20	40%
		Neutral	8	16%
		Disagree	4	8%
		Strongly Disagree	2	4%
3	Unique thinking	Yes	33	66%
		No	17	34%
4	Organizing thoughts	Yes	34	68%
		No	16	32%
5	Confidence	Yes	35	70%
		No	15	30%

The above table shows the impact of AI on thinking skills. 18 respondents (36%) agree and 15 respondents (30%) strongly agree that AI improves thinking ability. 20 respondents (40%) agree and 16 respondents (32%) strongly agree that AI improves problem-solving skills. 33 respondents (66%) believe that AI enhances unique thinking, while 17 respondents (34%) do not. 34 respondents (68%) reported that AI helps in organizing thoughts, whereas 16 respondents (32%) disagree. 35 respondents (70%) stated that AI increases confidence, while 15 respondents (30%) do not agree.

Suggestion

- Students should use AI tools only for academic support and avoid over-dependence on them.
- Educational institutions should guide students on the proper use of AI in learning.
- Students should balance AI usage with independent thinking to improve creativity.
- It is important to encourage reading habits and reduce excessive reliance on AI.
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- Awareness programs should be conducted to educate students about the advantages and disadvantages of AI.
- Teachers should monitor and support students in using AI responsibly.
- Students should maintain social interactions and avoid isolation caused by excessive AI usage.

Conclusion

The study concludes that Artificial Intelligence has a significant impact on students' academic performance, thinking ability, and lifestyle. While AI improves learning speed, understanding, and efficiency, excessive dependence reduces independent thinking, creativity, and problem-solving skills. It also affects daily habits and social interaction. Therefore, students should use AI in a balanced manner, treating it as a supportive tool rather than a replacement for human thinking.

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