

Understanding and Measuring AI Tools Dependency in Undergraduate Students

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Abstract

As we know, the use of AI tools is trending in the young generation for completing their academic tasks. AI is very much useful from the point of view of a student for understanding new topics and searching for solutions to academic problems. Even students are using AI for coding, note preparation and also for making presentations. But we know that every coin has two faces. In this paper, I want to study another aspect of AI tool use. In this paper we are going to study the dependency of students on AI tools for completing academic tasks. From the study we conclude that excessive use of AI tools reduces critical thinking and creativity of students as they are directly accessing the content from AI tools. Students are not using reference books and library material for understanding their study-related material.

Keyword: AI Tools

Introduction

Literature Review

The results show that students' perceptions of learning have undergone a symbolic shift, with AI acting as an agent that reorganizes educational experiences to make them more effective, personalized, and engaging. This implies that AI is more than just a tool; rather, it serves as a catalyst to alter students' perspectives and methods of learning. Higher education should support this transformation by encouraging students to embrace AI and integrating technology more deeply into curricula, resulting in widespread multidisciplinary use.

AI is prized in India for its capacity to improve education. According to the majority of students, "Yes, AI integration improves my capacity to learn well by offering individualized feedback, flexible learning routes, and interesting material.

This shows how students are using AI to enhance their education and increase their level of subject comprehension. (Ranjan S, 2024)

Using ChatGPT to create assignments was a very interesting, engaging, and relevant experience for teachers. Both the platform's ease of use and the caliber of the tasks generated pleased them.

Instructors stated that using ChatGPT drastically cut down on the amount of time needed to create assignment prompts; freeing them up to concentrate more on giving students individualized feedback and creating engaging learning opportunities.

Teachers used a variety of techniques to assist students when they attempted the ChatGPT-generated projects, including encouraging students to reexamine the problem, cultivating patience and perseverance, and promoting communication and teamwork among students.

Students reacted favorably to the quality of the assignments generated by Chat-GPT, indicating satisfaction with the clarity of instructions, the engaging and intellectually stimulating nature of the activities, and the enhanced comprehension of the subject matter. (Dhamija A, 2025)

The ideal AI system will support students in developing their creative and inventive abilities while also encouraging their own initiative by analyzing their learning methods, emotional states, and self-direction. The rising usage of artificial intelligence systems will boost students' natural skills, knowledge, deep comprehension, level of academic accomplishment, and professional growth. It is anticipated that these systems will do more than just help students learn particular concepts. (Hiran, 2022)

From the article, it has come to be known that AI is helpful in responding to student needs and also improves student instructional practice. AI has improved the student learning experience. It also says that there was a data security and privacy issue when implementing AI in education. (Ghalia N, 2024)

According to the author (Singh, 2026) students with better academic performance are handling AI facilities very well and they have positive response about AI Tools while the student which are slow learners facing problem in use of AI facilities. (Singh, 2026)

As per the finding of author (Leelavathi, 2024) many students are using Chat-GPT for their academic tasks, but teachers need to make students aware of fair use of these tools so that effective use of these tools can be made for knowledge increasing and balanced ethical use. (Leelavathi, 2024)

Objective of study

1. To compare use of AI tools among urban and rural localities.
2. To study dependency of participant on AI tools.
3. Utilization of AI tools is gender dependent.
4. Study the effects of AI tools on cognitive and study activities.
5. Study the behavioral dependency of students on AI tools.
6. Awareness about AI Tools is Gender Dependent.

Methodology:

In this study, data were collected among the undergraduate students of rural and urban areas to study the dependency on AI tools. The survey was done through well-structured questionnaires consisting of open- and closed-ended questions created using Google Forms. Questionnaires were circulated among the undergraduate college students. Questionnaires are circulated among 300 students, out of which 226 student responses are selected for analysis.

Secondary data was gathered from the research paper of Scopus, published articles, and newspaper articles.

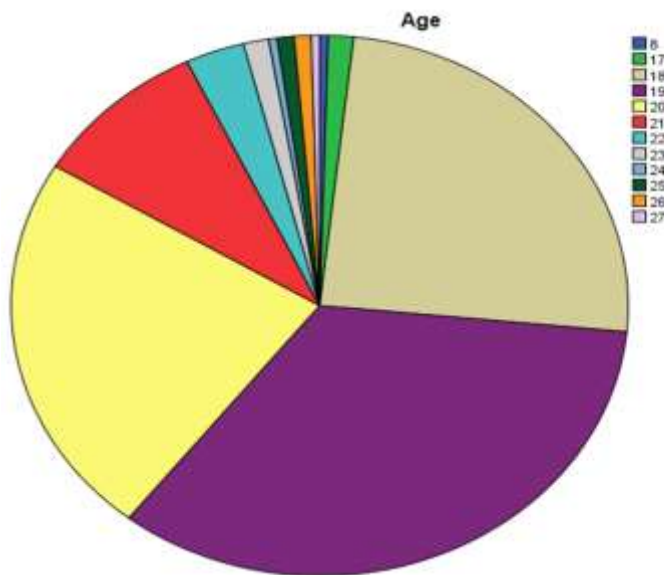
Demographic Information about Respondent

Bifurcation of respondents according to age in the study is shown in the following table and diagram

Table1.Bifurcation of respondent according to age.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8	1	.4	.4	.4
	17	3	1.3	1.3	1.8

	18	56	24.8	24.8	26.5
	19	77	34.1	34.1	60.6
	20	52	23.0	23.0	83.6
	21	21	9.3	9.3	92.9
	22	7	3.1	3.1	96.0
	23	3	1.3	1.3	97.3
	24	1	.4	.4	97.8
	25	2	.9	.9	98.7
	26	2	.9	.9	99.6
	27	1	.4	.4	100.0
	Total	226	100.0	100.0	

Figure1. Graphical representation of respondent’s age



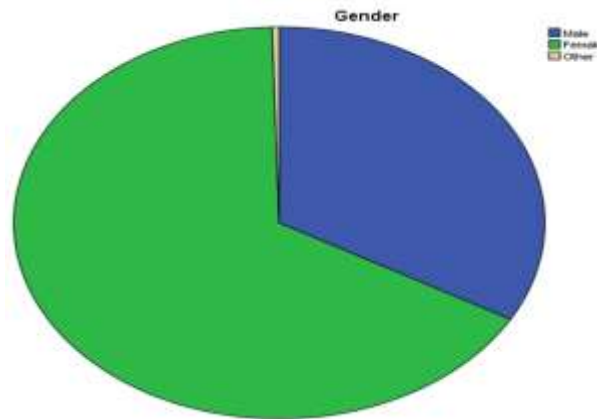
Frequency of genders of respondents in the study is shown in the following table and diagram

Table2. Demographic breakdown of respondent by gender.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	75	33.2	33.2	33.2
	Female	150	66.4	66.4	99.6
	Other	1	.4	.4	100.0

	Total	226	100.0	100.0	
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Figure2. Graphical representation gender of participants.



The locality of participants in the study is shown in the following table and diagram

Table3. Bifurcation of locality of participants

Locality:

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Urban	138	61.1	61.1	61.1
Rural	88	38.9	38.9	100.0
Total	226	100.0	100.0	

Table4. Distribution of AI-Tools used by respondents.

AI Tool	Response	Percentage		
ChatGPT	200	88.5		
Google Gemini	87	38.2		
microsoft Copilot	17	7.5		
Grammerly	8	3.5		
QuillBot	9	3.9		
Canva	39	17.1		
Other	17	7.5		

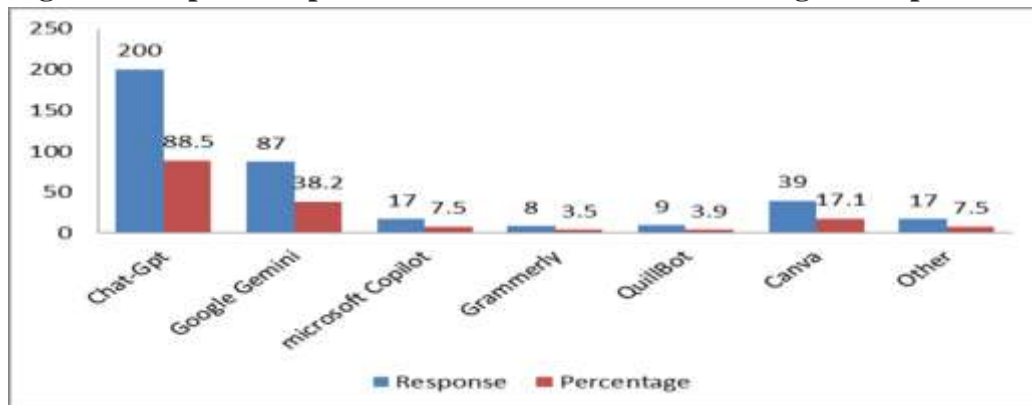
Figure3. Graphical representation of Bifurcation of locality of participants.



Result Analysis

The chart represents the utilization of AI tools by the undergraduate students.

Figure 4. Graphical representation of AI Tools used among the respondents.



From the data it comes to know that Chat-GPT is used by 200 students, which indicates that Chat-GPT is most favourable among the students. Chat-GPT shows strong preference among the students, with 88.5%.

Google Gemini was used by 87 respondents (38.2%). Again, Canva, with 39 respondents (17.1%), indicates notable usage for designing presentations and other creative content. A smaller percentage of students are using Microsoft Copilot (17 respondents, 7.5%), Grammarly (8 respondents, 3.5%), and QuillBot (9 respondents, 3.9%). 17 respondents are using other AI tools that are not mentioned in the list.

For what purpose did you use AI tools?

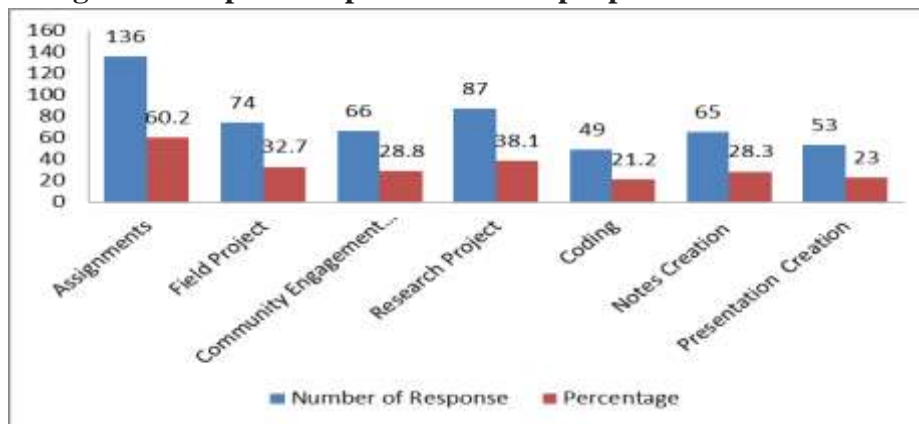
Table.5 Distribution purpose of AI tools used for different purpose.

Purpose	Number of Response	Percentage
Assignments	136	60.2

Field Project	74	32.7
Community Engagement Project	66	28.8
Research Project	87	38.1
Coding	49	21.2
Notes Creation	65	28.3
Presentation Creation	53	23

The bar chart illustrates the different academic and learning activities for which respondents use AI tools.

Figure5: Graphical representation of purpose of AI tools used.



Among all activities, **assignments** recorded the highest usage, with 136 respondents (60.2%), indicating that AI tools are predominantly utilized for completing academic assignments. This was followed by **research projects**, where 87 respondents (38.1%) reported using AI assistance.

Moderate use of AI tools was observed in **field projects** (74 respondents, 32.7%) and **community engagement activities** (66 respondents, 28.8%). Similarly, **Notes Creation** accounted for 65 respondents (28.3%), showing that students also rely on AI for preparing study materials and summaries. Comparatively lower usage was found in more technical and creative tasks such as **coding** (49 respondents, 21.2%) and **presentation creation** (53 respondents, 23%). From the analysis of collected data suggest that respondents are using AI tools for educational work like projects as well as for content creation rather than for advanced technical applications.

Objective 1 To compare the use of AI tools among urban and rural localities.

Table 6 Locality: * How often do you use AI cross-tabulation?

Count	How often do you use AI		Total

	Never	Sometimes	Rarely	Frequently	Always	
Locality: Urban	10	75	9	9	35	138
Rural	6	33	12	5	32	88
Total	16	108	21	14	67	226

Table 7. Comparative study of utilization of AI Tools and locality of respondents.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.388 ^a	4	.078
Likelihood Ratio	8.352	4	.079
Linear-by-Linear Association	4.025	1	.045
N of Valid Cases	226		

a. Chi-square assumption was met as no cell count fall below 5.

Table 8. Table of symmetric Measures

Symmetric Measures

	Value	Asymp. Std. Errors	Approx. T ^b	Approx. Sig.
Interval by Pearson's R	.134	.067	2.020	.045 ^c
Ordinal by Spearman Correlation	.142	.067	2.146	.033 ^c
N of Valid Cases	226			

Interpretation of Cross-Tabulation and Chi-Square Test

Linkage of respondents' frequency of AI usage and their location (rural versus urban) was investigated using a cross-tabulation study.

From analysis, it comes to be known that a total of 138 respondents are from urban areas, out of which 75 respondents said that they are using AI tools sometimes and 35 respondents are using AI tools always.

There are 88 respondents who are from rural localities, out of which 33 respondents say that they are using AI tools sometimes and 32 are using AI tools always. The

The Pearson chi-square test show that there was no exact relation within locality and frequency of AI tools used.

The chi-square X^2 value with df (4) is 8.388, and the p-value is 0.78, is greater than the significance level of 0.05, indicating that there was no exact dependency among the locality and frequency of AI tool use.

However, the linear-by-linear association was looking relevant with $x^2(1) = 4.025$ and p value = 0.45 less than the significance level of 0.05, showing possible trends.

Objective 2 To study dependency of participant on AI tools.

Table 9. Table of descriptive Analysis of AI tools Dependency

Descriptive Statistics										
	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
I rely on AI tools to complete my academic tasks.	226	1	5	3.42	1.065	1.134	-.848	.162	.126	.322
I cant imagine my Academic Work without AI	226	1	5	3.12	1.119	1.252	-.276	.162	-.694	.322
It was difficult for me to complete my Academic task without AI	226	1	5	3.22	1.093	1.195	-.532	.162	-.582	.322

I always search my notes and other material using AI tools.	226	1	5	3.46	.975	.951	-.817	.162	.191	.322
I use AI Tools even for doing simple Task rather than traditional methods.	226	1	5	3.23	1.041	1.085	-.330	.162	-.563	.322
I use AI-generate d answers as it is without verifying them.	226	1	3	1.86	.802	.643	.253	.162	-1.402	.322
Valid N (listwise)	226									

Interpretation of Descriptive Statistics:

To analyze the respondent's dependency on the AI tools for performing academic tasks, a descriptive statistic was calculated. From the statistics, it was clear that students are dependent on AI tools from a moderate to high level.

The statement “I rely on AI tools to complete my academic tasks” has a mean value is 3.42 and standard deviation is 1.065, shows that students are highly dependent on AI tools for completing their academic tasks.

“I always search my notes and other material using AI tools.” This statement has the highest mean score M=3.46, and standard deviation SD=0.975, suggest that students are regularly using AI tools to search notes and other material for their study.

The statement “I use AI tools even for doing simple tasks rather than traditional methods” obtained a mean value M = 3.23 and standard deviation SD = 1.04, while “It was difficult for me to complete my academic task without AI” had a mean value M = 3.22 and standard deviation SD = 1.09. the result of

analysis show that participants increasingly prefer AI-assisted approaches over traditional methods and experience some difficulty completing academic tasks without AI support.

The statement “I can’t imagine my academic work without AI” has a moderate mean value of M=3.12 and standard deviation SD=1.12, shows that students are psychologically and functionally reliant on Artificial Intelligence aids for study related activities.

In contrast, the argument “I use AI-generated answers as they are without verifying them” showed the lowest mean value M = 1.86 and standard deviation SD = 0.80 represent higher number of participants do not fully trust AI-generated content without verification.

Objective 3 Utilization of AI tools is gender dependent.

Table10 Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * How often do you use AI	226	100.0%	0	0.0%	226	100.0%

Table11 Gender * How often do you use AI cross-tabulation?

Count		How often do you use AI					Total
		Never	Sometimes	Rarely	Frequently	Always	
Gender	Male	5	32	10	5	23	75
	Female	11	75	11	9	44	150
	Other	0	1	0	0	0	1
Total		16	108	21	14	67	226

Table 12 of Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.695 ^a	8	.884
Likelihood Ratio	3.982	8	.859
Linear-by-Linear Association	.522	1	.470
N of Valid Cases	226		

a. 6 cells (40.0%) have an expected count less than 5. The minimum expected count is .06.

Table13 Asymmetric Measures

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Interval by Pearson's R	-.048	.066	-.722	.471 ^c
Ordinal by Spearman Correlation	-.056	.066	-.844	.400 ^c
N of Valid Cases	226			

The cross-tabulation of 226 respondents was conducted to analyze the relationship between gender and AI usage frequency. Majority of respondents (47.8%) show the high preference to us use of AI sometimes; 29.6% of respondents say that they are always using AI tools. Out of 226 respondents, the majority of respondents are female, and only one respondent belongs to the other category.

To understand the relationship between gender and frequency of AI tool used chi-square test used. The relationship between variables was not significant χ^2 with degree of freedom is 8 and $n=226$ value of $p=0.88$ which is greater than the significance level 0.05

Furthermore, Pearson's correlation ($r = -.048, p = .471$) and Spearman's correlation ($r_s = -.056, p = .400$) indicated negligible and non-significant relationships between gender and AI usage frequency.

Objective 4 Study the effects of AI tools on cognitive and study activities.

Table14 for AI tools on cognitive and learning activity					
Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
My critical thinking skills are reduced due to AI tools.	226	1	5	3.20	1.109
My creativity is reduced due to AI tools.	226	1	5	3.19	1.047
I rely on AI tools for learning new topics.	226	1	5	3.65	.942
AI Tools Reduced my Library time	226	1	5	3.47	.985
I rely less on textbook due to AI tools	226	1	5	3.40	1.007
Valid N (listwise)	226				

In the above descriptive analysis, the effect of AI tools on students' habits, creativity, critical thinking, and learning behavior was studied. The statement "I rely on AI tools for learning new topics" has huge

mean value $M=3.65$, and standard deviation $SD=0.94$ suggest that students are using AI tools moderately for learning new topics.

Additionally, respondents agreed that using AI tools decreased the amount of time they spent in libraries ($M = 3.47$, $SD = 0.99$), indicating a move away from traditional library-based learning and toward digital and AI-assisted learning approaches. In a similar vein, the statement "I rely less on textbooks due to AI tools" received a mean value of $M = 3.40$ and standard deviation $SD = 1.01$ indicate that a reduction in reliance on traditional academic resources.

The statement "My critical thinking skills are reduced due to AI tools" has a mean value $M = 3.19$, and standard deviation $SD = 1.05$ and "My creativity is reduced due to AI tools" has a mean score $M = 3.20$ and standard deviation $SD = 1.11$ shows moderate agreement. According to the results, the respondents agree on the fact that excessive use of AI tools for academic purposes reduces creativity and critical thinking and learning capacity of the students.

These results imply that, despite respondents' perceptions of certain detrimental effects on cognitive and creative capacities, AI tools are extensively incorporated into academic learning processes.

Objective.5. Study the behavioural dependency of students on AI tools.

Table14 for behavioural dependency of students on AI tools.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
I feel anxious when I cannot access AI tools.	226	1	5	2.98	1.099
AI tools is my first option when I face any academic problem	226	1	5	3.24	1.028
Valid N (listwise)	226				

To identify the behavioural and emotional reliance of students on AI tools, descriptive statistics are calculated. From the analysis, it comes to be known that the statement "I feel anxious when I cannot access AI tools" has a mean value $M=2.98$ and standard deviation $SD=1.099$ proves that students feel uneasy when they do not get AI tools' assistance for academic problem-solving? Also, the statement "AI tools are my first option when I face any academic problem" with a mean value $M=3.24$ and standard deviation $SD=1.028$ indicates a moderate number of respondents think that AI tools are their first choice whenever they suffer from any academic problem.

To investigate respondents' emotional and behavioral reliance on AI tools in academic settings, descriptive statistics were calculated. The mean score for the statement "AI tools are my first option when I confront any academic problem" was $M = 3.24$, $SD = 1.03$, suggesting that respondents somewhat favor AI tools as a quick source of help for resolving academic challenges. This result implies that AI technologies have developed into a significant and widely used academic assistance system.

The mean score for the statement "I feel concerned when I cannot access AI tools" was $M = 2.98$ ($SD = 1.10$), indicating a considerable degree of emotional reliance on AI technologies. The mean score shows that some respondents feel uneasy or anxious when AI tools are not available, even when it is around the neutral position. Overall, the results point to developing indications of emotional dependency as well as

a modest behavioral reliance on AI technologies for academic problem-solving. These results show that students' academic problem-solving behaviors are increasingly using AI tools, which may in some circumstances lead to emotional dependence.

Rating

Table 16 showing the rating of usefulness of AI Tools

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Rate how useful AI is.	226	1	5	3.44	1.306
Valid N (listwise)	226				

During this survey we also asked students to rate how useful AI is, and then we got a value of mean $M=3.44$ and standard deviation $SD=1.31$, proves that most of the respondents feel AI is helpful for academic and other related activities. Students have positive opinions toward the usefulness of AI tools. Overall, the results shows that respondents view AI tools as helpful and encouraging in educational settings

Objective 6 Awareness about AI Tools is Gender Dependent.

Table 17 Gender * Do you have an idea about AI tools?

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * Do you have an idea about AI tools?	226	100.0 %	0	0.0%	226	100.0 %

Table 18: Gender * Do you have an idea about AI tools? Cross tabulation

Count		Do you have an idea about AI tools?			Total
		Yes	No	Maybe	
Gender	Male	49	10	16	75
	Female	117	10	23	150
	Other	0	0	1	1
Total		166	20	40	226

Table 19 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.291 ^a	4	.054
Likelihood Ratio	7.954	4	.093
Linear-by-Linear Association	1.686	1	.194
N of Valid Cases	226		

Table 20: Symmetric Measures

	Value	Asymp. Error ^a	Std. Approx. T ^b	Approx. Sig.
Interval by Pearson's R	-.087	.072	-1.300	.195 ^c
Ordinal by Spearman Ordinal Correlation	-.108	.070	-1.628	.105 ^c
N of Valid Cases	226			

The cross-tabulation analysis looked at the association between 226 respondents' awareness of AI tools and their gender. 73.5% of respondents said they knew something about AI tools, compared to 17.7% who said "Maybe" and 8.8% who said "No." "With 117 out of 150 female respondents answered "Yes," compared to 49 out of 75 male respondents; female respondents had the highest level of awareness.

The correlation analysis between gender and awareness about AI tools was not significant.

According to the Pearson chi-square test with degree of freedom 4 for n=226 is $\chi^2 = 9.29$ and the value of $p = .054$. The null hypothesis was rejected, as the p-value was marginally above the significant level of 0.05 even though it was near the significance level. This implies that there were no appreciable differences in awareness of AI tools between the genders.

From likelihood ratio with X^2 with degree of freedom 4 is 7.95 and p value is .093 shows no significant relationship. The result of the linear-by-linear association test ($\chi^2(1) = 1.69$, $p = .194$) was not significant. These results were further corroborated by the symmetric measurements. While Spearman's correlation similarly demonstrated a poor and non-significant association, $r_s = -.108$, $p = .105$, Pearson's correlation showed weak relation with non-positive value relationship, $r = -.087$, $p = .195$. These findings suggest that respondents' awareness of AI tools was mostly unrelated to their gender.

Research finding:

1. Study Highlight that their hike in use of AI technologies into academic and learning activities.
2. From the research Analysis it comes to know that student in Higher education is using AI tools for completing assignments, project searching Notes and for making presentation.
3. From the study it is also prove that Use of AI tools is not dependent on locality both urban and rural are using AI tools equally.

4. From the study we found that AI assistant approach is increasing used among the student than conventional method and even students are agreeing that without use of AI tools they face difficulty in solving academic task.
5. From the study we also come know that student have psychological and functional reliance on AI tools in academic activities.
6. Students are using AI generated content only after verifying them.
7. Use of AI tools is not gender dependent both male and female are using it equally.
8. Findings say that even AI tools greatly enhance learning and increase knowledge, but students are in agreement that excessive use of AI tools reduces cognitive and creative capabilities.
9. From the study it is also proven that students have emotional dependency as well as behavioral reliance on AI tools for academic problem solving.
10. From the rating of AI tools, it comes to know that overall AI tools are very much beneficial and encouraging for academic problem solving.

Conclusion:

Based on the study regarding AI tools and academic dependency, it can be concluded that AI tools significantly enhance academic comprehension. expand students' knowledge and improve their learning methods. However, the study also finds that, despite these advantages, extensive use of on AI tools may reduce the students' critical thinking and creativity. Additionally, the use of AI facilities can create cognitive, behavioural, and emotional reliance among students.

Reference:

1. Dhamija A, D. D. (2025). Understanding Teachers' Perspectives on ChatGPT-Generated Assignments in Higher Education. *Journal of Interdisciplinary Studies in Education*, 14(1), 38-62.
2. Ghalia N, I. E. (2024). Impact of Artificial Intelligence in Education: Insights from Students and Faculty Members at Yarmouk University. *Journal of Ecohumanism*, 3(8), 1278-1289.
3. Hiran, S. V. (2022). The Impact of AI on Teaching and Learning in Higher Education Technology. *Journal of Higher Education Theory and Practice*, 22(13), 135-148.
4. Leelavathi, R. &. (2024). ChatGPT in the classroom: navigating the generative AI wave in management education. *Journal of Research in Innovative Teaching and Learning*.
5. Ranjan S, J. V. (2024). The AI-knowledge management nexus for sustainable learning: A PLS-SEM study. *Knowledge Management and E-Learning*, 16(4), 811-837.
6. Singh, S. S. (2026). Impact of artificial intelligence on academic engagement and performance of social sciences college students in Delhi NCR. *Discover Education*, 5(319), 1-21.