International Journal of Scientific Research and Engineering Development-– Volume 8 Issue 4, July-Aug 2025
Available at www.ijsred.com

RESEARCH ARTICLE OPEN ACCESS

A Study on Student Perceptions and Outcomes of Usage of AI Tools in Academic Support

Preethi S,
Student, Department of MBA, Dr. Ambedkar Institute of Technology, Visvesvaraya Technological University.
E- mail ID: preethu9702@gmail.com

Abstract:
This study investigates students' perceptions, usage habits, and academic outcomes associated with artificial intelligence (AI) tools in higher education. Retrieving data from 120 students at Dr. AIT, Nagarabhavi, the research examines how demographic and contextual factors relate to AI tool usability, academic achievement, and self-efficacy. Findings from Spearman's correlation analysis show a weak but statistically significant positive relationship between demographic variables and students' perceptions of AI tools, a weak negative yet significant association between usage frequency and perceived changes, and no meaningful link between frequency of use and academic self-efficacy. The results suggest that while students appreciate the convenience and time-saving features of AI tools, frequent use alone does not necessarily enhance confidence or academic performance. These insights offer practical recommendations for educators and policymakers seeking to strengthen the effective integration of AI in academic settings.

Keywords: Artificial Intelligence Tools, Higher Education, Student Perceptions, Academic Self-Efficacy, Academic Performance.

INTRODUCTION
Artificial intelligence (AI) has become an increasingly important element in higher education. Its applications ranging from content creation and natural language processing to adaptive learning and digital tutoring are reshaping how students learn, research, and engage with faculty. These technologies provide support in areas such as academic writing, personalized learning, research assistance, communication development, and even emotional well-being. With the rise of platforms like ChatGPT, Google Bard, and institution-specific AI systems, access to academic resources has been transformed.

While earlier studies highlight AI's potential to enhance student engagement, learning efficiency, and satisfaction, there remain unanswered questions. Concerns include the level of student trust in AI-generated information, its measurable influence on academic outcomes, and differences in adoption across disciplines. This study therefore focuses on student perceptions, usage behaviour, and learning outcomes associated with AI, with the objective of providing practical recommendations for academic institutions and policymakers.

LITERATURE REVIEW

Ward et al. (2024), in their study "Analyzing the Impact of AI Tools on Student Study Habits and Academic Performance", The study found that AI tools improved study routines, time management, and academic performance. However, concerns of over-reliance and challenges in blending AI with traditional teaching were highlighted. A balanced implementation was recommended. **Kumar and Singh (2023),** in "Student Trust and Perceptions of Artificial Intelligence in Higher Education", This research showed that students value AI for supporting learning but worry about reliability and over-dependence. It also revealed that prior technological exposure shaped students' readiness to adopt AI in academics. **Brown and Martinez (2022),** in "Disciplinary Differences in AI Adoption Among University Students", The study explored discipline-based AI usage, showing STEM students rely on it for problem-solving, while humanities students use it for writing support. Course-level familiarity determined how

effectively students integrated AI. **Smith and Lee (2022),** through their research "Enhancing Student Engagement Through AI-Powered Learning Platforms" showed that adaptive platforms and intelligent tutoring boosted motivation and engagement. Personalized feedback and learning pathways increased participation in both classroom and online discussions. **Johnson et al. (2021),** in "The Impact of AI Writing Assistants on Academic Performance", The research revealed that AI writing tools improved assignment quality, reduced academic stress, and enhanced time management. Students also benefited from iterative feedback, which refined their work. **Nguyen (2021),** in "Adaptive AI Systems for Personalized Learning in Higher Education", This study emphasized the role of adaptive AI in improving comprehension and retention. Personalized learning support was found to reduce achievement gaps and benefit learners with varied skill levels. **Kim et al. (2020),** in "AI-Driven Interface Design for Intelligent Tutoring System Improves Student Engagement", Findings showed that AI-based interface design offering adaptive learning and feedback enhanced student engagement and performance. The research highlighted that thoughtful AI design strengthens its educational impact.

RESEARCH GAP

Research is limited on how AI tools can be effectively integrated with conventional teaching methods. There is a lack of strong evidence on how AI influences long-term learning, critical thinking, and independent problem-solving abilities. A more detailed examination is needed to understand the role of AI within particular academic disciplines, rather than focusing only on general usage patterns.

PROBLEM STATEMENT

Although AI tools are increasingly used in higher education, limited research has examined their real impact on students' learning and perceptions. Institutions often adopt these technologies without clear evidence of how learners interact with them, whether they genuinely improve outcomes, or if they lead to issues such as over-reliance, misinformation, or unequal access. This study therefore seeks to understand students' perceptions, attitudes, and trust toward AI tools, while also evaluating their influence on learning outcomes, self-efficacy, and satisfaction. By gathering direct feedback from learners, the research aims to ensure that AI is integrated responsibly, ethically, and in ways that effectively support diverse educational needs.

OBJECTIVES OF THE STUDY

- To identify demographic or contextual factors that influence AI tool usage and perception.
- To assess students' perceptions of AI tool usability, reliability, and helpfulness in academic support.ss
- To evaluate the impact of AI tool use on students' academic performance and confidence.
- To explore students challenges and concerns when using AI tools for academic purposes.

HYPOTHSES FOR THE STUDY

Hypothesis 1

H01: There is no significant relationship between student's demographic factors and their perceptions of AI tool usability, reliability, and helpfulness.
H11: There is a significant relationship between student's demographic factors and their perceptions of AI tool usability, reliability, and helpfulness.

Hypothesis 2

H02: There is no significant relationship between the use of AI tools and students' academic performance.
H12: There is a significant relationship between the regular use of AI tools and higher academic performance among students.

Hypothesis 3

H03: There is no significant relationship between AI tool usability and students perceived academic self-efficacy.
H13: There is a significant positive relationship between AI tool usability and students perceived academic self-efficacy.

RESEARCH METHODOLOGY

This quantitative research explores students' perceptions, usage trends, and academic outcomes associated with AI tools in higher education, with particular emphasis on their connection to academic performance, self-efficacy, and overall satisfaction. The study is conducted among students of Dr. Ambedkar Institute of Technology, Nagarabhavi, with a sample size of 120 respondents chosen through systematic random sampling to ensure accessibility while representing diverse disciplines and academic levels. Data will be gathered through a structured questionnaire designed to collect demographic details, experiences with AI tools, self-assessed academic performance, and challenges faced. The scope covers students utilizing platforms such as ChatGPT, Google Bard, adaptive learning systems, and institution-specific AI solutions, with the aim of offering insights that can inform educational strategies and practices.

Correlations

			demographics	Perception
Spearman's rho	Demographics	Correlation Coefficient	1.000	.206*
		Sig. (2-tailed)	.	.024
		N	120	120
	Perception	Correlation Coefficient	.206*	1.000
		Sig. (2-tailed)	.024	.
		N	120	120

*. Correlation is significant at the 0.05 level (2-tailed).

LIMITATIONS

- The research may be confined to a particular institution, which could limit the generalizability of the results.
- Data collected from students on perceptions and academic outcomes may be influenced by personal bias or inaccuracies.
- Differences in the types of AI tools used, such as ChatGPT, Google Bard, adaptive learning systems, or institution-specific applications, could affect the study's findings.

DATA ANALYSIS AND INTERPRETATION

Hypothesis 1

H01: There is no significant relationship between student's demographic factors and their perceptions of AI tool usability, reliability, and helpfulness.

H11: There is a significant relationship between student's demographic factors and their perceptions of AI tool usability, reliability, and helpfulness.

Analysis

The Spearman's rho value of 0.206 shows a weak positive relationship between demographics and perception. This relationship is statistically significant at the 0.05 level ($p = 0.024$, two-tailed) for a sample of 120 students.

Interpretation

The weak positive correlation indicates that as demographic factors such as age or academic level change, students' perceptions of AI tools in terms of usability, reliability, and helpfulness show a slight increase. With a p-value of 0.024, the relationship is statistically significant, meaning it is unlikely to have occurred by chance. This leads to the rejection of the null hypothesis (H01) and acceptance of the alternative hypothesis (H11). Nevertheless, the correlation strength of 0.206 is relatively low, suggesting that demographic characteristics account for only a small portion of the variation in perception, while other factors likely play a more influential role.

Hypothesis 2

H02: There is no significant relationship between the use of AI tools and students' academic performance.

H12: There is a significant relationship between the regular use of AI tools and higher academic performance among students.

Correlations

			How often do you use AI tools for academic purposes?	What changes have you experienced since using AI tools?
Spearman's rho	How often do you use AI tools for academic purposes?	Correlation Coefficient	1.000	-.221*
		Sig. (2-tailed)	.	.015
		N	120	120
	What changes have you experienced since using AI tools?	Correlation Coefficient	-.221*	1.000
		Sig. (2-tailed)	.015	.
		N	120	120

*. Correlation is significant at the 0.05 level (2-tailed).

Analysis

The relationship between how frequently students use AI tools and the academic changes they experience was tested using Spearman's rho correlation. The analysis produced a correlation coefficient of -0.221 with a p-value of 0.015, which is below the 0.05 significance threshold. This indicates that the relationship is statistically significant.

Interpretation

The weak negative correlation indicates that students who engage with AI tools more frequently tend to report slightly fewer or less favourable changes, whereas those who use them less often note marginally greater or more positive changes. Although the relationship is statistically significant, the small effect size shows that usage frequency explains only a limited portion of the variation in perceived changes. Given the significance, the null hypothesis (H02) is rejected and the alternative hypothesis (H12) is accepted. However, the inverse relationship contrasts with the anticipated positive association, suggesting that other factors beyond usage frequency may play a stronger role in shaping students perceived outcomes.

Hypothesis 3

H03: There is no significant relationship between AI tool usability and students perceived academic self-efficacy.

H13: There is a significant positive relationship between AI tool usability and students perceived academic self-efficacy.

Correlations

			How often do you use AI tools for academic purposes?	AI tools improve academic confidence and performance.
Spearman's rho	How often do you use AI tools for academic purposes?	Correlation Coefficient	1.000	.062
		Sig. (2-tailed)	.	.499
		N	120	120
	AI tools improve academic confidence and performance.	Correlation Coefficient	.062	1.000
		Sig. (2-tailed)	.499	.
		N	120	120

Analysis

The Spearman's rho coefficient of 0.062 shows a very weak positive relationship between how often students use AI tools and their belief that these tools increase academic confidence and performance. With a p-value of 0.499 well above the 0.05 significance level the result is statistically non-significant, indicating no evidence of a meaningful association in the sample of 120 students.

Interpretation

The findings indicate that the frequency of AI tool usage does not have a meaningful connection with students' perceptions of enhanced academic confidence or performance. The very low correlation value and absence of statistical significance suggest that frequency of use alone is not a decisive factor. Instead, elements such as the perceived quality of AI-generated outputs, students' individual learning strategies, or their prior academic abilities are likely to play a more influential role in shaping these perceptions. As no significant relationship was identified, the null hypothesis (H03) is accepted, while the alternative hypothesis (H13) is rejected.

FINDINGS

- Certain demographic factors appear to have a small influence on how students view the usability of AI tools.
- Higher frequency of AI tool usage is linked to a slightly lower number of positive changes reported by students.
- The frequency of use does not show a significant relationship with students self-reported academic confidence.
- In general, students perceive AI tools as useful, reliable, and effective in saving time.
- Nevertheless, concerns remain regarding trust, over-reliance on AI, and the overall quality of the outputs produced.

SUGGESTIONS

- Dr. Ambedkar Institute of Technology should offer AI literacy programs to equip students with the skills to use tools efficiently and enhance academic achievement.
- Incorporate AI into teaching in a planned manner that works alongside traditional instructional methods.

CONCLUSION

Students tend to view AI tools positively, yet their impact on academic self-efficacy appears limited when measured only by frequency of use. Demographic factors exert a minor yet noticeable influence on perceptions, while usage levels show only a modest connection to perceived improvements. The overall educational value of AI depends more on the quality of the tools, the guidance offered in their application, and the learning context in which they are introduced. To enhance effectiveness, institutions should adopt AI through well-planned strategies, provide adequate training and support for learners, and uphold ethical practices that foster trust, encourage responsible use, and contribute to long-term academic development.

REFERENCES

- Brown, P., & Martinez, L. (2022). Patterns of artificial intelligence use across academic disciplines: A comparative study. Higher Education Studies, 12(4), 56–68.
- Johnson, M., Chen, Y., & Roberts, P. (2021). Evaluating the effectiveness of AI-based writing support tools in higher education. Journal of Academic Writing, 11(2), 98–115.
- Kim, S., Park, J., & Choi, H. (2020). Intelligent tutoring systems with AI interfaces: Effects on student motivation and outcomes. Journal of Computer Assisted Learning, 36(4), 452–466.
- Kumar, S., & Singh, R. (2023). Determinants of student trust in artificial intelligence applications for learning. International Journal of Learning and Development, 13(1), 25–39.
- Nguyen, L. (2021). Adaptive learning with AI: Strategies for improving student comprehension and equity. Computers & Education, 172, 104237.
- Smith, T., & Lee, H. (2022). Leveraging AI-powered platforms to enhance student participation in higher education. Education and Information Technologies, 27(5), 6123–6139.
- Ward, J., Smith, R., & Patel, A. (2024). AI adoption in higher education: Implications for student learning habits and achievement. Journal of Educational Technology Research, 38(2), 145–162.

