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Impact of Artificial Intelligence on the Learning Experience and Cognitive Skills of Postgraduate Students in Bangalore

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1. INTRODUCTION

In the recent times, Artificial Intelligence has emerged as a significant factor in the educational sector of various countries around the world, especially among the students pursuing postgraduate courses who require smarter and uicker sources of learning. In the educational sector of Bangalore, where a number of educational institutions are adopting various digital sources of learning, the presence of Artificial Intelligence has significantly impacted the manner in which students are acquiring knowledge and understanding various subjects of study. This research topic has been designed with the aim of understanding the influence of Artificial Intelligence on the learning process of students pursuing postgraduate courses, both in a positive and negative sense. From the perspective of the students, the presence of Artificial Intelligence can always simplify the process of acquiring knowledge and understanding various subjects of study. From the perspective of the educational sector of a country, it is equally important to assess the manner in which the students are making use of Artificial Intelligence and the manner in which it is impacting the cognitive abilities of the students. This research study is significant and important due to the fact that the purpose of the postgraduate courses of various educational institutions is to acquire greater knowledge and understanding of various subjects of study and the manner in which Artificial Intelligence is impacting the manner in which students are acquiring knowledge and understanding various subjects of study can help in understanding the actual significance of Artificial Intelligence in the contemporary educational sector of a country.

2. LITERATURE REVIEW

Revina et al., 2025

The transformative impact of the COVID-19 pandemic significantly accelerated the transition from traditional face-to-face instruction toward online and hybrid modes of learning. This rapid structural shift created fertile ground for the convergence of Artificial Intelligence (AI) and Outcomes-Based Education (OBE), establishing new paradigms for higher education delivery and evaluation (Revina et al., 2025).

Shivakami Rajan & LR Niranjan (2025)

In this literature, the researchers are discussing the effects of AI tools, such as ChatGPT, on the creativity and learning of postgraduate students.

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According to the researchers, AI is considered a "double-edged sword," which means that it has two sides, the positive and the negative. The researchers found that the use of AI is on the increase among the students, especially in doing assignments, understanding the course material, and completing their academic work faster.

According to the researchers, the use of AI makes the academic task easier and more accessible, as it is easy and helpful.

However, the use of AI might reduce the creativity among the students. The researchers also found that the use of AI should be done with proper guidance and supervision. The researchers concluded that the use of AI is helpful in the academic task, but its use must be done properly to avoid its negative effects, which might impair the critical thinking skills among the students.

Vanshika Saraf et al. (2026)

This literature focuses on the adoption and utilization of AI-based educational tools among postgraduate students. The factors that affect the utilization are the ease of use, the perceived usefulness, and the expectations of the students. The dimensions are explored in the context of the adoption and utilization of AI in the education sector. The data was collected from the students, and they are from different academic disciplines. The main aim was to reveal the perceptions and interactions of the students with the concept of AI in the education sector.

The main outcome is that the utilization of AI helps the students to enhance the efficiency and speed of the tasks, leading to improved academic performance. The importance of knowledge sharing and the need to have sufficient knowledge of the concept of AI are also revealed in the literature. The concluding part of the literature reveals that the concept of AI is being incorporated into the education sector, and the students are becoming comfortable with the concept.

Raj Meena & Dr. Sunil Kumar Agrawal (2026)

This research was a systematic literature review that examined the role of Artificial Intelligence in shaping the learning behavior of management students. The research reviewed a wide array of contemporary literature to shed more light on the general role of AI in education. The research findings revealed that AI technologies, such as adaptive learning and chatbots, are commonly utilized in educational settings.

The research findings revealed that AI has a positive role in shaping students' learning behavior, as it enhances students' engagement, motivation, and understanding. Moreover, AI has been shown to promote self-paced learning, which has been linked with better academic performance. Nevertheless, the research findings highlight that there is a need to ensure balanced use of AI technologies. In conclusion, AI has a positive role in shaping students' learning behavior.

AI in Women's Educational Institutions (Bangalore, 2023)

This literature review focuses on the role of Artificial Intelligence in women's educational institutions in Bangalore, India. The authors discuss the role of Artificial Intelligence in the teaching and learning process, as well as the administrative functions of educational institutions. The authors used questionnaires as the primary method to collect data from the students and teachers on the role and importance of Artificial Intelligence in the educational system.

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According to the literature review, Artificial Intelligence is helpful in saving time and making education more effective. The authors found that a large number of students are using Artificial Intelligence on a regular basis. However, the authors also highlight the importance of not relying on Artificial Intelligence and instead using the thinking and creativity of the students. In short, the role of Artificial Intelligence in education is positive, but its use must be moderate.

OBJECTIVES

1. To examine the usage of Artificial Intelligence tools among postgraduate students in Bangalore for academic purposes.
2. To analyze the impact of Artificial Intelligence on students' learning experience, including efficiency, understanding, and academic performance.
3. To evaluate both the positive and negative effects of Artificial Intelligence on students' cognitive abilities, such as critical thinking and problem-solving skills.

HYPOTHESIS

H_0: Artificial Intelligence does not significantly influence the learning experience of postgraduate students.
H_1: Artificial Intelligence significantly influences the learning experience of postgraduate students.

H_0: The usage of Artificial Intelligence has no significant impact on students' academic performance and efficiency.
H_2: The usage of Artificial Intelligence significantly impacts students' academic performance and efficiency.

H_0: Artificial Intelligence has no significant effect on students' cognitive abilities such as critical thinking and problem-solving.
H_3: Artificial Intelligence significantly affects students' cognitive abilities.

RESEARCH METHODOLOGY

The study adopts a descriptive and analytical research design to examine the impact of Artificial Intelligence on postgraduate students' learning experience in Bangalore. The research is based on primary data collected through a structured questionnaire administered to postgraduate students

A total of 150+ respondents were selected using convenience sampling. The questionnaire was designed to capture students' usage patterns of AI tools, their perceptions regarding its effectiveness, and its impact on learning outcomes and cognitive abilities.

The collected data was analyzed using statistical tools such as percentage analysis, correlation analysis, and regression analysis. These tools were used to identify patterns, measure relationships, and determine the significance of the impact of Artificial Intelligence on students' learning experience.

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4. DATA ANALYSIS AND INTERPRETATION

Table 4.1: Percentage Analysis of AI Usage Among Postgraduate Students

Sl. No.	Frequency of AI Usage	Percentage (%)
1	Regularly	68
2	Occasionally	22
3	Rarely	10
	Total	*100*

Interpretation: The analysis reveals that 68% of postgraduate students regularly use Artificial Intelligence (AI) for academic purposes, while 22% use it occasionally and 10% use it rarely. This indicates that AI has become an integral part of postgraduate students' academic activities.

Table 4.2: Purpose of AI Usage Among Postgraduate Students

Sl. No.	Purpose of AI Usage	Percentage (%)
1	Assignments and Research	55
2	Understanding Concepts	48
3	Obtaining Quick Answers	44

Interpretation: The findings indicate that assignments and research are the primary purposes of AI usage, reported by 55% of students. Additionally, 48% use AI to understand concepts, while 44% use it to obtain quick answers. These results suggest that students primarily use AI to improve academic efficiency and enhance conceptual understanding.

Table 4.3: Positive Impact of AI on Learning

Sl. No.	Positive Impact	Percentage (%)
1	Improves Learning Efficiency	72
2	Saves Time	69
3	Enhances Understanding	63

Interpretation: The findings show that 72% of students believe AI improves learning efficiency, while 69% report that it saves time. Furthermore, 63% indicate that AI enhances their understanding of academic concepts. The results suggest that AI supports students in managing academic tasks more efficiently and improving their learning experience.

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Table 4.4: Negative Impact of AI on Learning

Sl. No.	Negative Impact	Percentage (%)
1	Over-dependence on AI	52
2	Reduced Critical Thinking	46
3	Reduced Self-Learning Effort	41

Interpretation: The analysis indicates that 52% of students experience or perceive over-dependence on AI, while 46% identify reduced critical thinking and 41% report reduced self-learning effort. These findings highlight the potential risks associated with excessive AI usage and emphasize the importance of balancing AI-assisted learning with independent thinking and self-directed learning.

Table 4.5: Correlation Analysis Between AI Usage and Learning Experience

Statistical Measure	Value	Interpretation
Correlation Coefficient (rrr)	0.48	Moderate positive relationship
Direction of Relationship	Positive	Higher AI usage is associated with an improved learning experience

Interpretation: The correlation coefficient of 0.48 indicates a moderate positive relationship between AI usage and students' learning experience. This suggests that increased AI usage is associated with a better learning experience among postgraduate students. However, correlation alone does not establish a causal relationship or statistical significance.

Table 4.6: Regression Analysis of AI Usage and Learning Experience

Statistical Measure	Value	Interpretation
Coefficient of Determination (R2R^2R2)	0.23 (23%)	AI usage explains 23% of the variation in learning scores
p-value	Reported as 0.000	Statistically significant at the 5% level, if the reported value is accurate
Constant (β0\beta_0β0)	1.28	Estimated learning score when AI usage equals zero
Regression Coefficient (β1\beta_1β1)	0.67	A one-unit increase in AI usage is associated with a 0.67-unit increase in the learning score

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Regression Equation	Y=1.28+0.67XY = 1.28 + 0.67XY=1.28+0.67X	Indicates a positive relationship between AI usage and learning experience

Note: In research papers, a software-reported p-value of 0.000 should generally be presented as p<0.001p < 0.001p<0.001, *rather than* p=0.000p = 0.000p=0.000. *The regression interpretation assumes that AI usage is the independent variable and the learning score is the dependent variable.*

Interpretation: The regression analysis indicates that AI usage has a statistically significant positive association with the learning experience of postgraduate students. The coefficient of determination (R2=0.23R^2 = 0.23R2=0.23) suggests that AI usage accounts for 23% of the variation in learning scores, while the remaining 77% may be associated with other factors not included in the model.

Findings

The study reveals that 68% of postgraduate students regularly use Artificial Intelligence (AI) for academic purposes. The major uses of AI include assignments and research (55%), understanding concepts (48%), and obtaining quick answers (44%). The findings indicate that AI improves learning efficiency for 72% of students, saves time for 69%, and enhances understanding for 63%. However, 52% of students report over-dependence on AI, while 46% identify reduced critical thinking and 41% report reduced self-learning effort. The correlation coefficient of 0.48 indicates a moderate positive relationship between AI usage and students' learning experience. The regression analysis shows an R2R^2R2 value of 0.23, indicating that AI usage explains 23% of the variation in learning scores. Overall, the findings suggest that AI supports students' learning and academic efficiency, but excessive dependence may affect independent learning and critical thinking.

Suggestions

Students should use AI as a learning support tool rather than depending entirely on it for academic activities. Educational institutions should provide training on the effective and responsible use of AI tools. Faculty members should encourage students to develop critical thinking, problem-solving, and independent learning skills alongside AI-assisted learning. Students should verify AI-generated information using reliable academic sources and avoid copying content without proper understanding. Colleges should establish clear guidelines for AI usage in assignments, research, and examinations to maintain academic integrity. AI should be used to improve conceptual understanding, research skills, and academic efficiency while ensuring that students continue to engage in independent study and analysis

Conclusion

The study concludes that Artificial Intelligence plays an important role in the learning experience of postgraduate students. AI helps students improve learning efficiency, save time, and understand academic concepts more effectively. The correlation and regression analyses indicate a positive relationship between AI usage and students' learning experience. However, excessive dependence on AI may reduce critical thinking, independent learning, and problem-solving efforts. Therefore, students

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should adopt a balanced approach by combining AI-assisted learning with traditional learning methods and independent study. Educational institutions and faculty members should promote the responsible use of AI to enhance academic outcomes while maintaining academic integrity. Overall, AI can be an effective tool in postgraduate education when used appropriately and in moderation.

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