

The Impact of Artificial Intelligence Tools on Learning Outcomes of Postgraduate Students: A Study in Mangalore City

Harsharani, Damini, Varshini

Department of Post-Graduate Studies in Commerce, Govinda Dasa College, Surathkal, Mangaluru.

DOI: <https://doi.org/10.51583/IJLTEMAS.2025.1408000075>

Abstract: The journey of higher education, particularly at the postgraduate level, is a critical phase where students sharpen their expertise, enhance research abilities, and prepare to contribute meaningfully to their academic and professional domains. During this stage, they often grapple with multiple challenges such as rigorous coursework, research responsibilities, and institutional expectations. This study focuses on understanding the influence of AI tools on the academic performance of postgraduate students in Mangalore Taluk. Specifically, it examines the level of awareness, frequency of usage, and perceived impact of AI tools among these students. It also seeks to understand the correlation between AI tool usage and academic outcomes, as well as the effectiveness of such tools in facilitating learning and skill development.

Using a random sampling method, data were collected from 72 postgraduate students through both primary and secondary sources. The findings indicate that while AI tools may not directly boost academic grades, they do significantly enhance students' comprehension and learning experiences, as observed by faculty members. Most students find AI tools user-friendly and supportive in building academic and professional skills. However, they emphasize that AI should complement, not replace, conventional teaching practices. Key challenges identified include technical difficulties, insufficient training, limited institutional support, and concerns regarding academic integrity and over-reliance on AI. Overall, the study highlights the growing relevance of AI in postgraduate education and underscores the need for balanced integration, ensuring that students benefit from these technologies while maintaining academic standards and ethical practices.

Keywords: Artificial Intelligence Tools, Academic Performance, Technology Integration.

I. Introduction

Pursuing higher education is a transformative phase that significantly influences the intellectual and professional growth of students. Postgraduate learners, in particular, are at a pivotal point in their academic journey, where they hone their subject expertise, develop research capabilities, and prepare to make meaningful contributions to their fields. However, this stage is accompanied by various challenges, such as balancing coursework, conducting research, and fulfilling institutional expectations.

In recent times, the advent of Artificial Intelligence (AI) tools has brought considerable changes to the higher education landscape. These AI-driven technologies have been integrated into different facets of academic life—from research platforms to learning management systems—altering how students engage with course content, instructors, and peers. The adoption of AI in education has sparked considerable discussion among academics, educators, and policymakers.

AI tools, including natural language processing software and virtual learning platforms, offer the potential to enhance learning outcomes, streamline academic tasks, and create personalised educational experiences. Despite their growing use, the specific impact of AI tools on the academic performance of postgraduate students remains an area requiring further exploration. This study focuses on post-graduate students in Mangalore Taluk, aiming to assess how AI tools influence their academic success and learning experience.

Through this research, the study aims to enhance the current understanding of AI's role in education and provide practical insights into optimising its use. The ultimate goal is to guide educators, policymakers, and developers in effectively integrating AI to support and improve the academic journey of postgraduate students.

Objectives

- ❖ To assess the level of awareness and usage of AI tools among postgraduate students in Mangalore City.
- ❖ To examine the correlation between the use of AI tools and academic performance among post-graduate students in the region.
- ❖ To evaluate the effectiveness of different AI tools in enhancing learning outcomes for post-graduate students.
- ❖ To identify the challenges faced by post-graduate students in integrating AI tools into their academic routines.

Statement of The Problem

The integration of Artificial Intelligence (AI) tools into academia has significantly transformed the learning environment. However, their effectiveness in enhancing the academic performance of postgraduate students in Mangalore Taluk remains insufficiently explored. While AI tools offer several potential benefits, it is essential to investigate the extent of their usage among postgraduate

students and the impact they have on academic outcomes. This study aims to address this gap by examining the relationship between the use of AI tools and the academic performance of postgraduate students in Mangalore city.

II. Research Methodology

Sample size and techniques: This study used a random sampling method to collect data, gathering a total of 72 responses from postgraduate students in Mangalore City. The sample included both male and female participants. Employing random sampling helps minimize bias and ensures that the sample accurately represents the overall population.

Research design: The research used both the primary and the secondary source of data to lend a comprehensive understanding approach towards the research topic. It used a primary questionnaire that was designed to specifically fit this study based on the title and objectives of the study. Instead, the secondary data were collected from literature sources, such as articles, dissertations, and other relevant sources

Tools for data analysis: This research relied on descriptive statistics, percentages, and tables in analysing data and identifying trends. Graphs and tables were used to interpret results and patterns clearly. The analysis was statistical and carried out through software for accurate and reliable results.

Duration of the Study: The research was conducted over two months, from March 1 to April 30, providing sufficient time to collect and analyze data. This duration was adequate for completing the study effectively, allowing for timely data processing and achieving meaningful insights aligned with the research objectives.

Limitations of The Study

The fact that this study is limited to postgraduate students at Mangalore city excludes generalisation of the findings to students from different geographical areas with corresponding different academic environments. It is concerned with the education sector, particularly the use of AI tools in academic performance, while not regarding their impact on any other sector, such as business, health care, or industry. The focus on a mere 72 respondents means that the entire landscape of experiences and viewpoints of postgraduate students in the area may not have been captured. In addition to that, self-reported responses have a degree of opinion bias, which could affect the precision and objectivity of the findings. The study does not explore all AI tools, as their usage and tool preferences can differ considerably between students. Since it collects data in a particular moment, it is less likely to deal with the implications of fast-evolving AI technologies in education.

III. Literature Review

Anand Y. Kenchakkanavar and Girish R. Kokatanur (2025), examine how AI tools impact postgraduate students at KLE's GI Bagewadi College, Nipani, Karnataka. Using surveys, the study reveals that AI tools improve students' efficiency, creativity, and understanding. About 68.11% reported active use of AI tools, and 84.06% felt more academically confident. While the results are largely positive, the authors emphasize the need for structured training and awareness to fully harness AI's potential.

Ademola Ahmed Oyeyemi, A.T. Okoye, Ijeoma Okenwa-Fadele, and F.O. Abiakwu (2024), explore student perceptions of AI's academic impact. Based on a survey of 300 undergraduates, the study found significant positive links between AI use and students' learning, problem-solving, and critical thinking. The authors recommend integrating AI into teaching and faculty training, emphasizing AI's value in enhancing cognitive and academic skills.

Genimon Vadakkemulanjanal Joseph, P. Athira, M. Anit Thomas, Dawn Jose, Therese V. Roy, and Malavika Prasad (2024), examine how digital literacy, AI usage, and peer collaboration shape students' views on AI-assisted learning. Surveying 409 students, the study found strong correlations among these factors, with peer collaboration partially mediating the link between digital literacy and AI outcomes. The authors advocate for digital education strategies that combine tech skills with collaborative learning.

Thangavel Murugan, Karthikeyan Periasamy, and A.M. Abirami (2025), analyse the impact of AI on academic boards and higher education management. Covering areas like personalized learning, AI tutoring, VR, and mental health detection, the book emphasizes learner-centered pedagogy and adaptive frameworks. It outlines both opportunities and challenges, offering strategies for educators and policymakers. The authors highlight how AI and gamification are reshaping higher education into a more dynamic and responsive system.

Danappa Pattar and N. Yogesh (2024), explore student views on ChatGPT as a learning aid using both qualitative and quantitative methods. The study reports overall positive perceptions, noting its usefulness for tasks like homework and concept clarity, while also highlighting concerns about overuse, accuracy, and reduced human interaction. The authors stress the need for balanced, responsible integration of AI tools in education.

Conceptual Framework - Artificial Intelligence and AI Tools in Education

Artificial Intelligence (AI) is a dynamic field of computer science that aims to develop machines and systems capable of performing tasks that typically require human intelligence. These tasks include reasoning, problem-solving, language understanding, pattern recognition, and learning from experience. While the idea of intelligent machines has existed for centuries in mythology and

philosophy, AI became a scientific endeavor in the 20th century. Today, AI is embedded across multiple sectors—healthcare, finance, manufacturing, and especially education - revolutionizing how we live and learn.

In educational contexts, AI has transformed teaching and learning by enabling personalized learning experiences, enhancing academic writing, supporting research, and ensuring academic integrity. AI tools, which are software applications driven by AI technologies, simulate human cognitive functions to assist students and educators alike. Popular tools include Grammarly and QuillBot for grammar and paraphrasing support, and ChatGPT for interactive explanations, doubt-solving, and content generation. These tools help students improve academic quality and comprehension.

Learning Management Systems (LMS) integrated with AI personalize learning paths, track academic progress, and suggest resources based on individual needs. Plagiarism detection tools like Turnitin and Unicheck ensure originality, while AI-powered tutoring platforms such as Carnegie Learning offer adaptive support tailored to students' strengths and weaknesses. Virtual teaching assistants further enhance accessibility by responding to queries instantly, reducing teachers' workload.

Despite the benefits, concerns remain regarding data privacy, academic dishonesty, and overdependence on AI. If used merely as shortcuts, these tools can undermine genuine learning. Therefore, responsible use is crucial, balancing AI's support capabilities with the development of independent learning skills.

Overall, AI tools present a powerful evolution in education, particularly at the postgraduate level. They offer significant opportunities for academic growth but must be integrated thoughtfully and ethically to ensure they serve as tools for enhancement rather than replacement.

IV. Major Findings

- ❖ The majority, 50% of respondents, belong to the age group of 20.
- ❖ The majority, 69.4% of respondents, are female.
- ❖ Most of the respondents (43.1%) are pursuing an MBA.
- ❖ Most of the respondents (48.6%) were somewhat familiar with AI tools.
- ❖ A majority of 69.44% of respondents use chatbots for academic purposes, with 51.4% considering them the most helpful AI tools for learning.
- ❖ A significant portion of the respondents (43.1%) reported using AI tools on a weekly basis for academic purposes.
- ❖ The majority, 52.78% of respondents motivated by self-exploration to use AI tools.
- ❖ The majority of respondents (56.9%) somewhat agreed that AI tools have contributed to improving their academic performance.
- ❖ A majority of 51.4% of respondents indicated that using AI tools has led to a slight improvement in their grades.
- ❖ Most respondents (90.28%) agreed that AI tools assist in understanding complex concepts.
- ❖ A significant 56.94% of respondents stated that AI tools are somewhat important in achieving academic success.
- ❖ A majority of 79.2% of respondents reported improved understanding through the use of AI tools.
- ❖ About 52.78% indicated that AI tools are somewhat effective in enhancing learning outcomes.
- ❖ Nearly 48.6% of respondents strongly agreed that AI tools are user-friendly.
- ❖ Technical challenges were noted, with 69.4% of respondents experiencing issues while using AI tools.
- ❖ Additionally, 65.3% rated the availability of AI tool training as 'good'.
- ❖ A significant portion (43.06%) believed that AI tools cannot replace human instructors.
- ❖ Half of the respondents (50%) considered the use of AI tools by educators to be somewhat important.
- ❖ A large majority (75%) agreed that AI tools contribute to skill development.
- ❖ Furthermore, 69.44% supported the integration of AI tools into the academic curriculum.

Suggestions

There should be promotion for AI literacy workshops for postgraduate students and faculty, enabling them to develop digital skills and awareness about responsible usage of AI. Embedding the use of AI tools in the curriculum ensures that students would engage with technology through official class modules and assignments meant for developing skills and critical awareness. This way, practical exposure to writing, research, and analysis encourages thoughtful use rather than mindless reliance on automation. Universities should have ethical policies regarding the use of AI tools to maintain academic integrity and restrict its misuse, for example, by avoiding plagiarism. There is a need for partnerships among educational institutions and local authorities to ensure

there is free or subsidized access to premium AI tools. By encouraging peer-led initiatives and developing localized AI resources, these partnerships will help bridge gaps in accessibility and foster innovation in various languages and cultural contexts.

V. Conclusion

This study, conducted in Mangalore City, explores the impact of artificial intelligence (AI) tools on the academic performance of postgraduate students by examining their awareness, usage, and perceived benefits. Findings reveal that students have a moderate level of awareness, mostly acquired through self-learning. ChatGPT emerged as the most frequently used AI tool, typically utilized weekly by students to understand complex topics, complete assignments, and enhance the quality of their academic work.

Although direct grade improvement due to AI usage is limited, teachers acknowledge the tools' role in enriching students' learning and comprehension. Most students find AI tools user-friendly and valuable for developing various skills, though they emphasize that AI should supplement—not replace—traditional teaching methods. Challenges such as technical issues, lack of training, insufficient institutional support, academic integrity concerns, and over-reliance on AI were noted.

Both students and faculty agree that integrating AI into the curriculum would boost digital literacy and essential 21st-century skills. The study recommends formal training, better infrastructure, and ethical guidelines to ensure effective and responsible AI use in postgraduate education.

References

1. Kenchakkanavar, A. Y., & Kokatanur, G. R. (2025). Exploring the role of artificial intelligence tools in enhancing academic performance of postgraduate students. *Journal of Advances in Library and Information Science*, 14(1), 76–83.
2. Oyeyemi, A. A., Okoye, A. T., Okenwa-Fadele, I., & Abiakwu, F. O. (2024). Perceived effect of artificial intelligence tools on the academic performance of students in public universities in Anambra State. *International Journal of Innovative Research and Advanced Studies*, 11(2).
3. Joseph, G. V., Athira, P., Thomas, M. A., Jose, D., Roy, T. V., & Prasad, M. (2024). *Impact of digital literacy, use of AI tools and peer collaboration on AI assisted learning: Perceptions of the university students*. *Digital Education Review*, 45, 43–49.
4. Murugan, T., Periasamy, K., & Abirami, A. M. (2025). *Adopting artificial intelligence tools in higher education: Teaching and learning*. CRC Press.
5. Singh, E., Vasishta, P., & Singla, A. (2025). AI-enhanced education: Exploring the impact of AI literacy on Generation Z's academic performance in Northern India. *Quality Assurance in Education*, 33(2), 185–202.
6. Pattar, D., & Yogesh, N. (2024). Students' perceptions of using ChatGPT for academic purposes in Davanagere District, Karnataka: A study. *KIM Journal of Business Research*, 31–36.
7. Manjunath, S. (2024). Artificial intelligence in education: Educators' perspective. *VLEARNY Journal of Business*, 1(2), 4–14.
8. Rajan, S., & Niranjana, L. R. (2025). The double-edged sword of ChatGPT: Fostering and hindering creativity in postgraduate academics in Bengaluru. *International Journal of Educational Management*, 39(2), 317–337.
9. Jaladi, S. R., Doreswamy, H., & Uttam, R. (2024). Integrating AI tools in academic curriculum: A study on the effectiveness of AI tools in higher education. In D. Hack-Polay, D. Lock, A. Caputo, M. Lokhande, & U. Salunkhe (Eds.), *Global higher education practices in times of crisis: Questions for sustainability and digitalization* (pp. 229–240).
10. Dwivedi, Y. K., Hughes, D. L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., & Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57, 101994.