

ROLE OF ARTIFICIAL INTELLIGENCE TOOLS IN ENHANCING TEACHING AND LEARNING PROCESS IN INDIAN HIGHER EDUCATION

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ABSTRACT

Technology has become an essential part of modern life and has significantly changed the way people live, work and learn. In the field of education, technological advancements have transformed traditional teaching and learning methods in classrooms. Teachers and students now use various digital tools that make the learning process more interactive, practical and effective. One of the most important recent technological developments is Artificial Intelligence (AI). AI has begun to play a vital role in higher education by supporting teaching activities, improving learning experiences, and assisting in academic tasks. In India, the growing demands of higher education require innovative approaches and creative learning methods. This study aims to examine the use of Artificial Intelligence (AI) in Indian higher education, particularly in the teaching and learning process. The paper is based on secondary data and focuses on the role of AI in higher education and the challenges faced in today's competitive academic environment.

KEYWORDS: Digital Learning, Innovative In Education, AI Tools In Education, Education Technology

Introduction

Artificial intelligence is transforming the higher education system in India by improving traditional teaching and learning methods. With the implementation of the National Education Policy 2020, technology integration has become an important focus in education. AI helps in enhancing accessibility, supporting personalized learning, and addressing challenges faced by students and educators. By 2025, AI is expected to bridge learning gaps and improve teaching efficiency for India's large student population. Reports from TeamLease EdTech (2024) indicate that more than 61% of educators in India are already using AI tools in their teaching practices. Government initiatives such as NITI Aayog's AI for All programs are also encouraging the adoption of AI in education. The use of adaptive learning platforms is expected to improve learning outcomes significantly. Overall, AI is playing a key role in modernizing higher education and promoting innovative digital learning systems in India.

Objectives of the Study

The primary objective of this study is to examine the use of Artificial Intelligence (AI) tools

in the teaching and learning process in Indian higher education. Based on this objective, the study focuses on the following specific objectives:

- To provide an overview of Artificial Intelligence (AI) in higher education.
- To examine the role of Artificial Intelligence (AI) in enhancing higher education.
- To analyze government initiatives promoting AI in higher education in India.
- To identify the challenges faced by educators in AI-enabled teaching and learning environments.

An Overview of Artificial Intelligence (AI) in Higher Education

1. Artificial intelligence has great potential to improve higher education in India by enhancing learning quality, supporting personalized learning and reducing student dropout rates.
2. Educational institutions use AI technologies such as chatbots, adaptive learning platforms, and virtual teaching assistants to improve teaching efficiency and effectiveness.
3. AI in education makes learning accessible to all students, especially those in remote areas

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or those unable to attend physical classes due to health issues.

4. AI-powered systems help reduce human bias in admission processes and improve transparency in selecting students. AI tools also support global and multilingual classrooms.
5. Several Indian institutions have adopted AI research, including the Indian Institute of Technology Kharagpur, Indian Institute of Technology Madras, Indian Institute of Science, and Indian Institute of Technology Hyderabad.
6. The Ministry of Education India launched the AI for All program in collaboration with Intel and the Central Board of Secondary Education to create awareness about AI.
7. The All India Council for Technical Education encourages institutions to offer AI and Data Science courses in technical education.
8. AI also helps in education management, teaching support, and improving student assessment and learning outcomes.

The Role of Artificial Intelligence in Higher Education

- **Personalized Learning Platforms:** AI-based platforms provide customized learning according to each student's pace and learning style. Platforms like BYJU'S offer personalized learning experiences.
- **AI-Driven Assessment Tools:** AI tools evaluate student performance in real-time and identify strengths and weaknesses for improvement.
- **Smart Classroom Technologies:** AI-enabled smart classrooms use interactive boards, virtual labs, and digital devices for better learning experiences.
- **Skill Development and Career Guidance:** Programs such as the All India Council for Technical Education's National Educational Alliance for Technology use AI to recommend skill-based courses based on student interests and job market needs.
- **AI-Powered Learning Management Systems:** AI-based systems track student progress, manage resources, and simplify classroom administration for teachers.

Government Initiatives for Artificial Intelligence (AI) in Higher Education

The government of India is promoting the use of AI and digital technology in higher education through several initiatives.

- **National Education Policy 2020:** This policy highlights the importance of technology and

encourages the use of AI to improve teaching, learning and research in higher education.

- **Digital India Initiative:** This program supports the development of digital infrastructure and promotes AI adoption in education. Platforms like SWAYAM and DIKSHA provide online courses and digital resources to enhance teachers' and students' skills.
- **PM eVIDYA:** This initiative integrates digital, online, and broadcast education to improve access to learning across India.
- **SWAYAM PRABHA Channels:** These DTH channels provide educational content through television and apps.
- **Online Coaching Programs:** Initiatives like IIT-PAL and e-Abhyas offer online learning support for competitive exams such as engineering and medical entrance tests.

Challenges of Educators in AI-Enabled Teaching and Learning

While the use of Artificial Intelligence (AI) in education has many potential benefits, it also presents several challenges for teachers. Some of these challenges are listed below:

- Understanding of the AI tools and technologies by teachers.
- Integrating into the curriculum effectively.
- AI in education raises ethical considerations.
- Students having access to AI-enabled tools.
- Teachers needing to adapt to new technologies and teaching methods.

Conclusion

Artificial Intelligence (AI) plays an important role in enhancing the teaching and learning process in Indian higher education. AI tools help provide personalized learning, improve student assessment, and support teachers in delivering quality education. Government initiatives and digital platforms have also encouraged the integration of AI in educational institutions. AI improves accessibility, efficiency and innovation in teaching methods. However, proper infrastructure, training for educators, and ethical use of technology are necessary for effective implementation. Overall, the adoption of AI in higher education can significantly improve learning outcomes and prepare students for the future digital economy.

References:

1. Pandey, A. K., & Maurya, S. K. (2025). Transforming Higher Education: The Role of Artificial Intelligence in Enhancing Teaching and Learning Process. DOI: 10.35629/3002-130599103.
2. Venkataiah, P. (2025). A Study on the Role of Artificial Intelligence in Indian Higher Education System. *Journal of Artificial Intelligence Research and Applications*.
3. Waje, P., Gaidhani, V., Naik, M., Selvi, R., Sudha, K. S., & Reena, M. (2025). Artificial Intelligence in Higher Education: Enhancing Teaching Effectiveness and Student Learning Experiences. *Revista Latinoamericana de la Papa*.
4. Chan, C. K. Y., & Tsi, L. H. Y. (2023). The AI Revolution in Education: Will AI Replace or Assist Teachers in Higher Education? *arXiv Research Paper*.
5. Sajja, R., Sermet, Y., Cikmaz, M., Cwiertyny, D., & Demir, I. (2023). Artificial Intelligence-Enabled Intelligent Assistant for Personalized and Adaptive Learning in Higher Education. *arXiv*.
6. Latif, E., Mai, G., Nyaaba, M., Wu, X., & Zhai, X. (2023). Artificial General Intelligence for Education. *arXiv Research Paper*.
7. Lakshmi Bala Kunthavai, M., & Abinaya, S. (2025). The AI Revolution in Higher Education: How Artificial Intelligence is Transforming Faculty Roles. *GSB Insight Journal of Business and Research*.
8. EY-Parthenon & FICCI. (2025). Artificial Intelligence in Education: Opportunities and Challenges for Higher Education.
9. ASSOCHAM. (2025). Artificial Intelligence Adoption in Higher Education Institutions in India.
10. Cengage. (2025). AI and the Future of Learning: Impact on Students and Educators.