**Journal of Informatics Education and Research**
**ISSN: 1526-4726**
**Vol 6 Issue 1 (2026)**

# Artificial Intelligence in Indian- Higher Education in the 21st Century

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## Abstract
Artificial Intelligence (AI) has emerged as a transformative technology reshaping higher education system across the world. In India, the application of AI has gained policy-level recognition through initiatives such as the National Education Policy (NEP) 2020, Digital India, and NITI Aayog's AI for All strategy. In this junction, the role of Artificial Intelligence in Indian higher education in the 21st century, focusing on its scope, applications, challenges, and implications. The study is based on secondary data drawn from government policy documents, academic literature, and institutional reports. The paper highlights how AI supports personalized learning, digital assessment, student analytics, and administrative efficiency while also identifying critical challenges such as digital divide, faculty preparedness, ethical concerns, and uneven infrastructure. Consequently, AI should function as a supportive tool that enhances human intelligence rather than replacing educators. In addition, responsible, inclusive, and policy-guided integration of AI is essential for strengthening quality, equity, and governance in Indian higher education.

**Keywords:** Artificial Intelligence, Higher Education, India, NEP 2020, Digital Learning, Educational Technology

## 1. Introduction:
Artificial intelligence has been around for a longtime, the term artificial intelligence was first used by John Cartly in 1956. The rapid advancement of Artificial Intelligence (AI) has significantly influenced higher education systems worldwide, includes in India. In the Indian context, AI has gained strategic importance due to expanding student enrollment, faculty shortages, regional inequalities, and the increasing demand for skill-oriented and technology-driven education. Artificial Intelligence refers to computer systems capable of performing tasks that require human intelligence, such as learning, reasoning, decision-making, and pattern recognition.

India's higher education sector is undergoing a major digital transformation through initiatives for instance Digital India, SWAYAM, DIKSHA, National Academic Depository (NAD), and the Academic Bank of Credits (ABC). The National Education Policy (NEP) 2020 emphasizes the integration of emerging technologies like AI to enhance access, quality, equity, and governance in education. As well as, AI-enabled tools being adopted for personalized learning, adaptive assessments, learning analytics, online education platforms, and institutional administration.

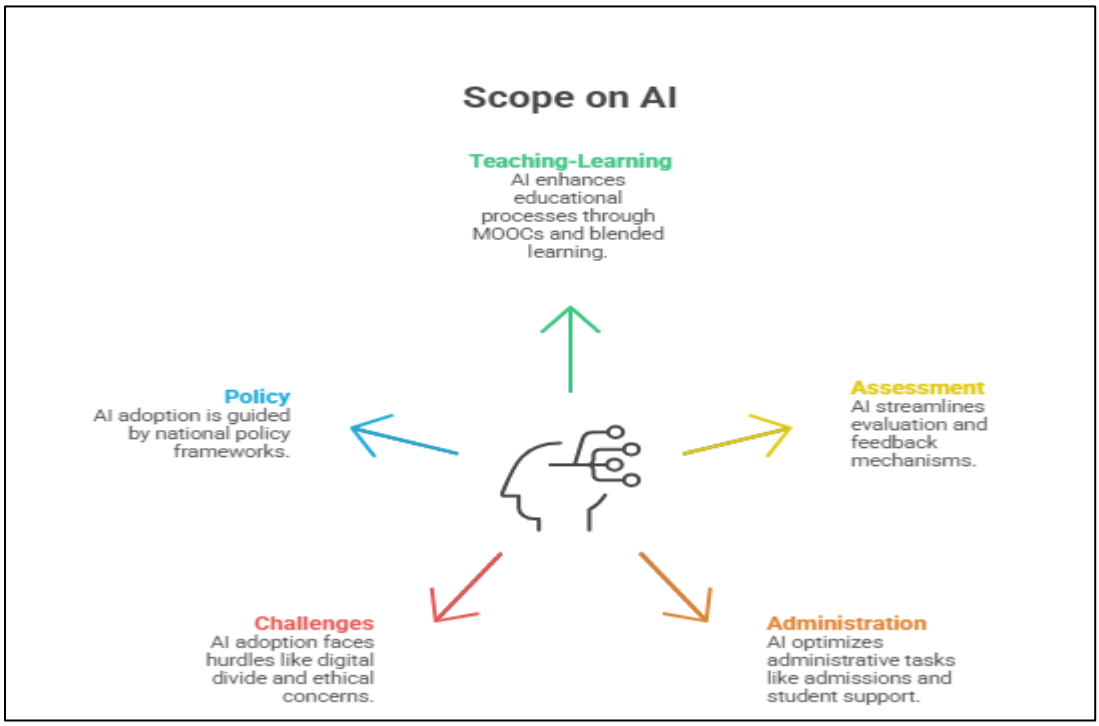
UNESCO (2019) highlighted that AI has the potential to improve access, equity, and quality in education, particularly in developing countries, while also warning about risks associated with data privacy and algorithmic bias. Zawacki-Richter et al. (2019), stated that, AI in higher education focus on developed countries, with limited attention to developing contexts like India.

The NITI Aayog (2018) document on the National Strategy for Artificial Intelligence identified on education as a priority sector and AI's role in personalized learning and teacher assistance. The NEP 2020 by the adoption of AI for enhancing teaching quality, assessment reforms, digital pedagogy, and institutional governance. According to, the Indian scholars highlight that AI can help address large classroom sizes, teacher shortages, and quality disparities. However, they also point out challenges such as inadequate digital infrastructure, lack of faculty training, and uneven institutional readiness.

**Scope of the Study:**

The scope of the study covers the following aspects:

- Concept and significance of Artificial Intelligence in Indian higher education
- Applications of AI in teaching–learning processes, MOOCs, and blended learning
- Role of AI in assessment, evaluation, and feedback mechanisms
- Use of AI in administration, admissions, and student support services
- Challenges relating to digital divide, infrastructure, ethics, and governance
- Policy frameworks guiding AI adoption in India




**Research Gap:**

Despite increasing policy focus and academic interest, but several gaps remain in the Indian context:

- Limited empirical studies on AI adoption in public higher education institutions.
- Insufficient research on faculty readiness and pedagogical adaptation.
- Inadequate focus on rural–urban and socio-economic digital divide.
- Lack of comprehensive ethical frameworks related to data protection and AI governance.
- Gap between national policy vision and institutional-level implementation.

## 5. Objectives of the Study:

The objectives of the study are:

- To examine the role and significance of Artificial Intelligence in Indian higher education.
- To analyze AI applications in teaching, learning, assessment, and administration.

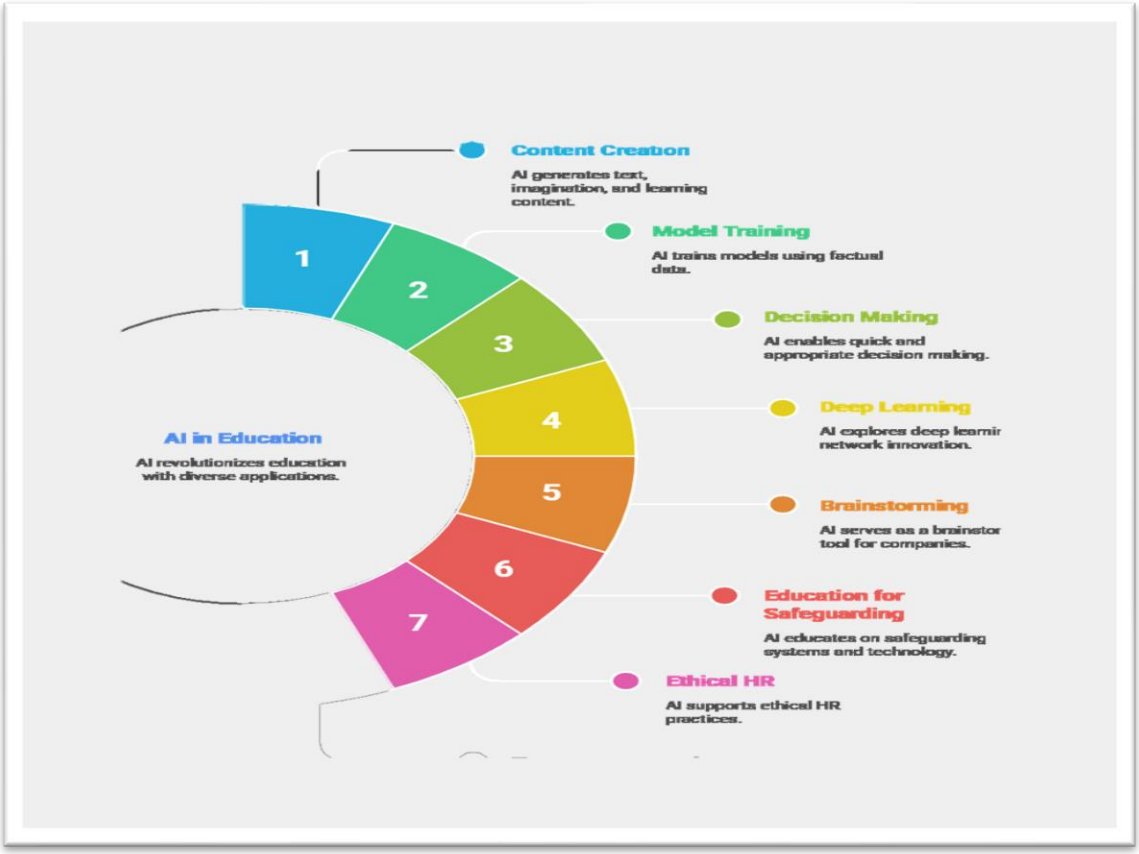
## 6. Results and Discussion

The last year or so with the advent of generative Artificial intelligency has become a buzzword which has been enabled by the rapid expansion of data and compiling capabilities. Today AI is a Tool to solve societal challenges in health care, education and agriculture to build innovative products and services. To increase efficiency competitiveness to boost economic growth and also contributing to an empowered quality of life. Recent advances in AI have also significantly entranced it potential to transform governance public services, to gain large scale socio-economic transformations on the other and AI Integration in public serves not only enhances date analysis, automation and reputation task but streamlines decision making process to improve new levels of efficiency, innovation and citizens involvement across various sectors. This transition towards date driven governce in enhancing transparency and participation beyond efficiencies. As a result, development growth breaks traditional barriers and drive for large-scale social transformation and mediations aimed at providing services to irrespective of geographical or socio-economic constraints, to foster equitable access.

The government of India is pioneering the approach to improve the power of AI for social goods applying AI in education, healthcare, agriculture, and industries sectors.
In 2023, marked the being of rapid technological innovations with generative AI being healed as a Smart Phone Moments. The year 2024 will freely transit from labs to Prof. to accept the widespread applications with the promise of benefitting millions across sectors like education, healthcare & financial serves, with its truest, services, data with a strong tool of talents with active participation. Hence, 2023 year is consider to be a centre of new concept in improving the practical application and value realization for age Indian companies are investing the offer AI Solutions that are not only innovative but also reliable of stable the impact of this solution is seen in the ability to drive growth satisfaction and to creative new business opportunities. In the failed of education understanding the need of industry and companies, new course of trainings facilities are adopted to fulfill the requirement of new talents to handle and meet the challenges of market at global level.

Therefore, the year 2024 is a testing of innovation, stability efficiency in building a crucial pillar of Indian economy by contributing significantly to GDP growth employment and livelihood on the other hand education will fulfill the fundamental shift towards human centered approach with transparency and human oversight. This perception is vital to ensure AI ethical use for humanity benefits.

**Perspective of Education the following points:**




This system it is review provide a unique you findings with an up-to-date examination of AI in higher education from 2016 to 2022 where the new trends have emerged and the finding shows that recess language learning examination system, a valuation tutoring system which includes new tools to be used in the field of higher education of the important highlights can we summaries that has fellows.

- ✓ Adaptive learning system
- ✓ Customized education contest
- ✓ Tutorial and answer can support students by answering and real-time feedback.
- ✓ Content creation
- ✓ Hey analysis methods
- ✓ Data drive inside s
- ✓ Simulation and modeling
- ✓ Academic fraud delegation
- ✓ Translation services
- ✓ Data privacy
- ✓ Teachers student dynamics
- ✓ What aliens on AI may release the women's interactions in education.

Recently had a confidence hall at Abu Dhabi the teachers and leaders participated and emphasized it on leadership, partnerships innovations and introduction and best practice with help in getting the best global competitions in the field of education.

The confidence primarily emphasized it permission permissal development, collaborative learning's, hind strategic improving student outcomes in an involving educational landscape

the conference was an opportunity to revealed that we are talented learn of education along with specialist who are constantly can creating our creating ways and technologies to make education meanings for hand productive designed for the learning today. We are adapted to changing the nations and it was an opportunity to understand cultural aspect to best practice across educational institutions and share complexity of teaching fine learning and then still platforms, 3 in 14 values of collaborations.

Despite, finally interpretation of AI in educational focus on innovations and professional development and approach him at Forster independent and self-direction learning the student, police, staff he also helped the student in developing skills to become independent and self-directed learners whole staff in addition to teaching methodology the focus on collaborations within the global network will improve best practices, carry column development leadership in education and posturing learning environment for disturb which will impact on knowledge mindset needed to thrive in the network of world.

The study indicates that AI has begun to positively influence Indian higher education through digital platforms such as SWAYAM and NPTEL, which expand access to quality education. AI-driven learning analytics help identify student learning gaps and improve retention rates. Automated assessment and administrative tools have reduced workload and improved institutional efficiency. However, AI adoption remains uneven across institutions. Private and elite universities demonstrate higher AI readiness than public colleges, particularly in rural and tribal areas. Faculty members often lack training in AI-enabled pedagogy, and concerns related to data privacy, language diversity, algorithmic bias, and surveillance persist. The discussion reinforces that AI should augment, not replace, teachers by supporting pedagogical innovation and data-driven decision-making.

**Conclusion:**

Artificial Intelligence has the potential to transform Indian higher education by improving quality, access, and governance in the 21st century. In alignment with the National Education Policy 2020, AI can support personalized learning, teacher empowerment, and evidence-based institutional management. However, its success depends on bridging the digital divide, strengthening infrastructure, enhancing faculty capacity, and ensuring ethical and inclusive governance. A human-centered policy-driven, and context-sensitive approach to AI integration is essential for building a future-ready and equitable higher education system in India.

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