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New Delhi

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Padam Chand Marg, Daryaganj,
New Delhi, Delhi 110002

Phone: +91 98 11 66 62 16 (M)

Phone: +91 70 11 60 56 18 (M)

Bengaluru

Jallahalli East

Bengaluru, Karnataka. India.

Phone: +91 98 11 66 62 16 (M)

Email: publisher.integrity@gmail.com

USA

New Jersey

14 Grandview Ave, Upper Saddle River,

NJ-07458, USA

Phone: +14805226504 (M)

London

37 Degree Media

64, Hodder Drive, Perivale, London UB68LL.

United Kingdom.

Phone: +44 7950 78 18 17 (M)

Website: integrityeducation.co.in

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AI and Policy Transformation in Higher Education: A Comparative Analysis of India's NEP 2020 and United States' Digital Learning Ecosystem

Authors

Dr. Sudhanshu Chandra

Rizwan Ahmad

Ikram Ul Haque



AI and Policy Transformation in Higher Education: A Comparative Analysis of India's NEP 2020 and United States' Digital Learning Ecosystem

Dr. Sudhanshu Chandra

*Assistant Professor MANUU Law School at
Maulana Azad National Urdu University, Hyderabad, (A Central University),
Email: dr.sudhanshu@manuu.edu.in
Orcid ID: 0009-0006-6694-1032*

Rizwan Ahmad

*Research Scholar, MANUU Law School,
Maulana Azad National Urdu University, Hyderabad,
Email: mohdrizwan1890@gmail.com |
Orcid ID: 0009-0002-9640-5258*

Ikram Ul Haque

*Research Scholar, MANUU Law School,
Maulana Azad National Urdu University, Hyderabad,
Email ID: ikramulhaque8130@gmail.com
Orcid ID: 0009-0007-6214-8894*

Abstract

Artificial Intelligence (AI) integration is changing the entire nature of higher education in the world by transforming the teaching methods, institutional governance, assessment of students and digital learning systems. This research paper critically looks at the policy transformation of higher education through a comparative analysis of the policy transformation of the digital learning ecosystem in India through the National Education Policy 2020 and the evolving digital learning ecosystem in the United States. The paper examines the ways in which the policy-based framework in India is focused on digital inclusion, multidisciplinary education, online learning platforms such as SWAYAM, DIKSHA, and the National Educational Technology Forum as the United States is based on a decentralized model of innovation, which is led by universities, individual ed-tech companies, and federal policy.

The paper is based on a comparative doctrinal and policy-based research methodology to analyse legislative frameworks, government reports, institutional initiatives and recent developments in AI-driven education. In the contemporary situation (2025-2026) the quick adoption of generative AI tools such as ChatGPT OpenAI, Microsoft Copilot, and adaptive learning systems have become highly popular in U.S. universities with over 57% of students being reportedly using AI tools regularly in academic contexts, with institutions continuing to grapple with regulatory clarity and ethical governance. At the same time, India is rapidly moving towards digital reforms as part of NEP implementation, although continues to face issues associated with infrastructural inequality, training of faculty, data privacy, and rural-urban digital divide.

The paper concludes that the United States is in the forefront in terms of technological innovation but India has a better policy vision of inclusive education reform. It suggests sustainable transformation in higher education through the equitable digital infrastructure, equitable AI governance, ethical regulation, institutional preparedness and equitable AI governance.

Keywords: *Artificial Intelligence, Higher Education Policy, NEP 2020, Digital Learning Ecosystem, Comparative Education Governance.*

1. Introduction

Artificial Intelligence (AI) has become a revolutionary force in tertiary education as it redefines the pedagogical practices, learning experiences, the assessment system, and the institutional governance. Universities in the world are becoming more and more integrated with the use of AI-based tools, whether in the form of adaptive learning systems, automated grading, virtual tutors, and data-driven decision-making platforms. This technological transformation is re-establishing the traditional forms of education and encouraging more personalized, flexible and accessible learning environments.¹

Although the shift towards the use of digital technologies has proceeded quickly, there is still a huge disparity in the readiness to adopt the new policy, the ethical regulation, and the capacity of the infrastructure, particularly in developing countries such as India. Though developed systems like the United States have already established full-scale deployment of digital learning ecosystems, India remains in the mid-way process of full-scale deployment of digital learning ecosystems, as part of policy reforms like NEP 2020.² The current research is important because it will critically compare the two systems to comprehend how AI is influencing the policy change in higher education and what challenges and opportunities the two systems bring to the context of different governance.

The main aim of the study is to examine how AI can be used in transforming the policies of higher education in India and the United States. It will discuss the compliance of the National Education Policy 2020 of India with the global dynamics of the digital learning ecosystem in higher education and how the ecosystem of higher education in the United States leverages AI-driven innovations. The paper will also aim to outline legal, ethical and structural issues that are linked with the integration of AI in the education systems.³

This study is informed by a doctrinal and comparative analysis approach, which is dependent on the use of secondary sources of information like academic journals, policy documents, government reports and institutional studies. The study is confined to the systems of higher education in India and the United States, in terms of AI integration, policy, and digital learning ecosystems.⁴

2. Conceptual framework of artificial intelligence in Education

2.1 Meaning and Evolution of AI in Education

Artificial Intelligence (AI) in education can be defined as the use of intelligent computer systems that can perform human-like cognitive tasks including learning, reasoning, problem-solving and decision-making in education.⁵ The development of AI in education has been in different stages. In the first case, education in the early years (1960-1990s) was based on computer assisted instruction systems which offered rudimentary programmed learning. The

¹ UNESCO, *Artificial Intelligence in Education: Challenges and Opportunities for Sustainable Development* (UNESCO Publishing, Paris, 2021).

² Ministry of Education, Government of India, *National Education Policy 2020* (Government of India, New Delhi, 2020).

³ OECD, *Digital Education Outlook 2021: Pushing the Frontiers with AI, Blockchain and Robots* (OECD Publishing, Paris, 2021).

⁴ K. D. Gaur, *Methods of Legal Research*, 7th edn. (Indian Law Institute, New Delhi, 2019).

⁵ UNESCO, *supra* note 1.

second phase (2000-2015) saw the development of e-learning platforms, and early intelligent tutoring systems, which provided limited personalization and feedback. The present stage, since 2015, is defined by the advanced AI systems with big data and deep learning, allowing real-time personalization and predictive analytics, and automated academic support.⁶ Consequently, education has evolved to be learner-centered and data-driven system, as opposed to a traditional teacher-centered model.

Table 2.1: Evolution of Artificial Intelligence in Education

Phase	Time Period	Key Developments	Characteristics in Education	Examples/ Tools	Impact on Higher Education
Phase I: Early Foundations	1960s–1990s	Computer-Assisted Instruction (CAI), rule-based expert systems	Fixed content delivery, minimal interaction, rigid curriculum structure	Basic programmed learning software, PLATO system	Introduced technology in classrooms but had very limited personalization or scalability
Phase II: E-Learning Expansion	2000–2015	Internet-based learning, LMS platforms, early AI tutoring systems	Online learning, partial personalization, digital content sharing	Moodle, Blackboard, early adaptive learning systems	Expanded access to education globally and enabled distance learning models
Phase III: AI-Driven Education	2015–Present	Machine learning, big data analytics, deep learning systems	Real-time feedback, predictive analytics, personalized learning pathways	Coursera, edX AI modules, intelligent chatbots	Improved student performance tracking, reduced dropout rates, and enhanced teaching efficiency
Phase IV: Intelligent & Generative AI Era	2020–Present	Generative AI, NLP models, AR/VR integration, autonomous learning systems	Hyper-personalized learning, AI tutoring, automated evaluation, immersive education	ChatGPT-based tutoring systems, AI proctoring tools, virtual classrooms	Transformed education into adaptive ecosystems with scalable, intelligent, and interactive learning environments

Source: Compiled by based on UNESCO (2021), OECD (2021), and EDUCAUSE Reports.⁷

2.2 Theoretical Perspectives on Digital Transformation

The adoption of AI in education can be justified by various theoretical frameworks explaining how digital technologies transform the learning systems.⁸ The constructivist learning theory

⁶ OECD, *supra* note 3.

⁷ EDUCAUSE, *Horizon Report: Teaching and Learning Edition 2023* (EDUCAUSE, Louisville, 2023).

⁸ Jean Piaget, *The Psychology of Intelligence* (Routledge, London, 1950); see also Lev Vygotsky, *Mind in Society* (Harvard University Press, Cambridge, 1978).

stresses that teaching and learning are active processes where learners actively build up knowledge, and AI facilitates it through a personalized and interactive learning experience. The socio-technical systems theory highlights the relationship between technology and institutional structures, and proves that the effective application of AI requires the readiness of faculty, infrastructures and policies.⁹ Innovation diffusion theory is a theory of how innovation is spread in this case, how AI is spread in educational institutions based on the perceived usefulness, ease of use,¹⁰ and institutional acceptance. Moreover, the digital transformation theory suggests that AI is not only a technological change but also a pedagogical, governmental and institutional cultural change in higher education.¹¹

2.3 AI Applications in Teaching, Learning and Administration

AI's uses are wide-spreading in higher education, within the classroom, and in administrative duties. AI in education can assist teachers in the creation of intelligent classroom systems, teaching assistant software, and automated teaching materials, thereby enhancing the delivery of education. In the field of education, AI can be used to develop adaptive learning systems, personalized tutoring systems, and predictive analytics tools, all of which can help improve student success. AI can be used to create adaptive learning systems, intelligent tutoring systems, and predictive analytics tools that can all help to improve student success in education. Immersive learning is also supported by AI, using such technologies as virtual and augmented reality. AI can be leveraged to grade objective tests in assessment, and to assist in scoring written assignments using NLP. On the administrative front, AI simplifies processes including admissions, enrolment management, timetable scheduling, plagiarism detection, and student support services, making it more efficient to the institution and decreasing the number of people handling paperwork.¹²

2.4 Opportunities and Risks of AI Integration

The application of AI to the higher education system presents considerable opportunities, such as personalized learning processes, increased accessibility among various learners, increased efficiency in academic and administrative procedures, and data-driven decision-making to develop the institution. Scalability also means that high-quality education can reach large and geographically dispersed populations via digital means with the help of AI. These advantages, however, come with a lot of risks and challenges. The large volume of data collection and processing of student data leads to the concerns of data privacy and security. The digital divide also contributes to the inequalities between the students who have and have not access to high-tech devices. Excessive use of AI has the potential to discourage the development of human interaction in education and influence the growth of critical thinking.¹³

3. India's Higher Education Reforms Under National Education Policy (NEP) 2020

3.1 Introduction to NEP 2020 and Higher Education Transformation

National Education Policy (NEP) 2020 is a landmark reform in the system of higher education in India introduced by the Ministry of Education, Government of India.¹⁴ It seeks to redefine the conventional education system into a multidisciplinary, flexible and technology-driven

⁹ Eric Trist and Fred Emery, *Socio-Technical Systems Theory* (Tavistock Publications, London, 1960).

¹⁰ Everett M. Rogers, *Diffusion of Innovations*, 5th edn. (Free Press, New York, 2003).

¹¹ W. Brian Arthur, "The Second Economy," *McKinsey Quarterly* (2011).

¹² UNESCO, *AI in Higher Education: Opportunities and Challenges* (UNESCO Policy Brief, 2022).

¹³ OECD, *Artificial Intelligence in Society* (OECD Publishing, Paris, 2019).

¹⁴ Ministry of Education, Government of India, *National Education Policy 2020*, available at:

http://www.education.gov.in/sites/uploadfiles/mhrd/files/NEP_Final_English_0.pdf
(last visited on 9 May 2026).

system. The policy aims at enhancing access, equity, quality, affordability and accountability and aligning Indian higher education with the global higher education standards.¹⁵ It focuses on comprehensive growth of learners based on skill-based, research-oriented and digitally enabled education.

3.2 Structural Reforms Introduced by Ministry of Education

NEP 2020 includes significant structural changes to modernise the higher education institutions in India. The change to a multidisciplinary education system is one of the most important reforms, where students are no longer limited to one stream of education, including arts, science, or commerce.¹⁶ They are instead given the opportunity to select subjects across disciplines which encourages flexibility, creativity and critical thinking.

The other significant reform is the establishment of the multiple entry and exit system with the support of the Academic Bank of Credits (ABC).¹⁷ Through this system, students are allowed to leave after one year with a certificate, two years with a diploma or even after the completion of the full degree course in three or four years. The credits accumulated are stored in a digital format and can be transferred between institutions which will benefit lifelong learning and mitigate the disadvantages of dropouts.¹⁸

A similar positive sentiment is noted with respect to the importance of research and innovation in NEP 2020, which proposes for the creation of the National Research Foundation (NRF).¹⁹ The main goal of this organization is to promote interdisciplinary investigation, innovation, patent invention and industry-academic collaborations. It will contribute to increase the research environment of India and make its global competitiveness.

3.3 Digital Transformation in Higher Education Governance

The integration of digital technologies in governance systems and learning systems of higher education is one of the key areas highlighted by NEP 2020.²⁰ The ministry of education has encouraged online admissions, online tests, virtual classes, and institutional management that is based on data. The reforms aim to improve the transparency, efficiency and accessibility of higher education.

Digital transformation is also the support of blended learning models, integrating classroom and online learning. This mixed design enables the institutions to increase access and enhance learning outcomes with the help of technology integration.

3.4 Role of UGC in Digital and Academic Reforms

University Grants Commission (UGC) is one of the major stakeholders in the implementation of the reforms of NEP 2020. It has had one of its greatest projects in the SWAYAM platform which enables the students to undertake online courses and transfer credits into their formal

¹⁵ UNESCO, *Education Policy Analysis: NEP 2020 and Global Alignment* (UNESCO Report, 2021), available at: <http://www.unesco.org> (last visited on 11 May 2026).

¹⁶ Ministry of Education, Government of India, *supra* note 2.

¹⁷ University Grants Commission, *Academic Bank of Credits Guidelines*, available at: www.ugc.ac.in (last visited on 10 May 2026).

¹⁸ Philip G. Altbach and Hans de Wit, "Higher Education in India after NEP 2020," *International Higher Education* (2021).

¹⁹ Government of India, *National Research Foundation Proposal Report*, available at: <http://www.education.gov.in> (last visited on 10 May 2026).

²⁰ OECD, *supra* note 3.

degree programs.²¹ This fills the gap between the online and offline education and increases access to quality learning resources. Blended learning and online degree programs have also been enhanced by UGC, which has provided institutions with the opportunity to provide flexible education models.²² Such programs are especially helpful to working professionals and learners in distant locations as it decreases the obstacle of higher educational access.

3.5 Role of AICTE in Technical and Skill-Based Education

The All India Council for Technical Education (AICTE) has come up with a number of initiatives to promote technical education under NEP 2020. Among the key projects, one can mention AICTE Virtual Labs, which allow students to conduct experiments with the help of simulation-based platforms, and does not require relying on physical laboratories.²³

Other courses in new technologies presented by AICTE include artificial intelligence, machine learning, data science, cybersecurity and robotics.²⁴ The programs are expected to improve the employability and keep the technical education at the same level as the industry needs. Also, AICTE encourages internships, industry relations, and innovation cells to promote entrepreneurship and the development of practical skills in students.²⁵

3.6 Digital Learning Ecosystem in India

NEP 2020 assists in the development of a robust digital learning environment using such platforms as SWAYAM, the National Digital Library of India (NDLI), and DIKSHA.²⁶

SWAYAM offers free online courses at some of the best institutions such as IITs and IIMs and allows credits to be transferred into degree programs.²⁷ The National Digital Library of India provides a large repository of scholarly materials, such as books, journals, and research papers in numerous languages, which facilitates universal access to knowledge. DIKSHA offers digital learning courses and teacher training courses, and enhances digital pedagogy in education.²⁸ These platforms can be used together to create an AI-enabled, inclusive, and accessible higher education system in India.

3.7 Adoption of AI and Virtual Learning Models

NEP 2020 stimulates artificial intelligence and digital technologies in the education field. Smart classrooms, adaptive systems learning, virtual laboratories and simulation-based education systems are increasingly being embraced by institutions.²⁹ These technologies help to create individual learning opportunities and enhance student engagement and performance. This transformation is representative of the transformation to Education 4.0 where AI and digital tools are central to the teaching, learning and assessment processes and make education more flexible and future-ready.³⁰

²¹ SWAYAM Portal, Government of India, available at: <http://www.swayam.gov.in> (last visited on 11 May 2026).

²² University Grants Commission, *Online Degree Program Guidelines*, available at: <http://www.ugc.ac.in> (last visited on 11 May 2026).

²³ All India Council for Technical Education, *Virtual Labs Initiative*, available at: <http://www.aicte-india.org> (last visited on 11 May 2026).

²⁴ Emerging Technologies in Technical Education,” *AICTE Review* (2022).

²⁵ *Ibid.*

²⁶ National Digital Library of India, www.ndli.iiitkgp.ac.in (last visited on 10 May 2026).

²⁷ Ministry of Education, Government of India, *SWAYAM MOOCs Report* (2021).

²⁸ Indian Institute of Technology Kharagpur, *NDLI Technical Report* (2022).

²⁹ Wayne Holmes, Maya Bialik and Charles Fadel, *Artificial Intelligence in Education* (Center for Curriculum Redesign, 2019).

³⁰ OECD, *The Future of Education and Skills: Education 2030* (OECD Publishing, Paris, 2018).

3.8 Challenges in Implementation

However, even with the major reforms, NEP 2020 has a number of challenges in its implementation.³¹ The inequality in infrastructure is one of the greatest concerns since many rural and semi-urban institutions are deprived of high-speed internet, digital devices, and smart classrooms. This brings about educational difference in the quality of education in different regions.

The other significant concern is the digital divide whereby students with economically disadvantaged backgrounds experience a problem in accessing online education due to absence of devices and connectivity.³² Digital content language barriers also reduce the accessibility of a large portion of students.³³

The faculty preparedness also plays a significant role since not all educators are properly trained to use digital tools and AI-based pedagogy.³⁴ The unwillingness to change technology and professional training programs do not favor successful implementation.

The institutional problem of the uneven implementation of the policy in different states, the financial issues, and the delays in the administrative body further slog the process of reform.³⁵ Also, the quality of online education is an important issue to consider.

Table 2: Major Digital Tools and Platforms in India's Higher Education System

S.No.	Digital Tool and Platform	Category	Purpose / Function	Implementing Body
1	SWAYAM	MOOC Platform	Online courses with credit transfer facility from top institutions	Ministry of Education
2	SWAYAM PRABHA	Educational DTH Channels	24/7 educational TV channels for remote learning	Ministry of Education
3	National Digital Library of India (NDLI)	Digital Library	Access to books, journals, research papers in multiple languages	IIT Kharagpur
4	DIKSHA	Digital Learning Platform	Digital content and teacher training modules	Ministry of Education
5	E-PG Pathshala	Higher Education Content Portal	Postgraduate e-content for university students	UGC
6	National Academic Depository (NAD)	Academic Records System	Digital storage of certificates and academic records	Ministry of Education
7	Academic Bank of Credits (ABC)	Credit System	Stores and transfers academic credits digitally	UGC

³¹ Government of India, *Digital Infrastructure Report in Education* (2022).

³² UNESCO, *Digital Divide and Education Access Report* (UNESCO Publishing, Paris, 2021).

³³ *Ibid.*

³⁴ Ministry of Education, Government of India, *NEP Implementation Status Report* (2023).

³⁵ University Grants Commission, *Quality Assurance in Online Education Guidelines* (UGC, New Delhi, 2022).

8	AICTE Virtual Labs	Simulation Platform	Remote practical experiments for technical education	AICTE
9	Virtual Classrooms / LMS	Learning Management System	Online teaching, assignments, and evaluation	Universities / Institutions
10	NPTEL	Online Learning Platform	Engineering and science courses by IITs and IISc	IITs & IISc
11	e-Shodh Sindhu	Research Database	Access to journals and research resources	INFLIBNET Centre
12	Shodhganga	Thesis Repository	Digital repository of PhD theses	INFLIBNET Centre
13	UMANG App	E-Governance Platform	Single access to multiple government education services	MeitY
14	AICTE Internshala / Skill Portals	Skill Development Platform	Internship and employability support	AICTE
15	Virtual Labs (IIT Network)	STEM Simulation Tool	Remote lab experiments for science & engineering	MHRD / IITs

Sources: Official data from Ministry of Education, University Grants Commission, All India Council for Technical Education, INFLIBNET Centre, and national digital education platforms of the Government of India.³⁶

4. The United States Digital Learning Ecosystem

4.1 Evolution of Digital Education in U.S. Higher Education

The digital learning ecosystem of higher education in the United States has developed over a progressive yet structurally transformative process that has been mediated by technological progress and institutional freedom. Digital education in its early days, specifically in the 1980s and 1990s, was largely confined to computer-assisted instruction, and to digitization of academic resources. The emphasis at this point was still infrastructural as it is geared towards better access to information than revolutionizing pedagogy.³⁷ As academic delivery, communication, and assessment processes became centralized with the rapid expansion of the internet in the late 1990s and early 2000s, universities began adapting Learning Management Systems (LMS) like Blackboard and WebCT, which facilitated the processes of academic delivery, communication, and assessment.³⁸ It was the first step towards organizing the digital governance of higher education where the learning processes were organized and managed in the online platform. Since the late 2000s, a significant change has been with the advent of Massive Open Online Courses (MOOCs) by the means of platforms such as Coursera, edX,

³⁶ Ministry of Education, Government of India, *Digital Education Initiatives Report*, 2023; UGC Annual Report 2022; AICTE Annual Report 2023.

³⁷ Larry Cuban, *Teachers and Machines: The Classroom Use of Technology Since 1920* (Teachers College Press, New York, 2001).

³⁸ William H. Dutton, *Society on the Line: Information Politics in the Digital Age* (Oxford University Press, Oxford, 1999).

and Udacity.³⁹ This stage democratized the access to elite education and changed the system to platform-based model of learning. Digital education has further developed in the contemporary period to be an AI-driven ecosystem with learning analytics, predictive modelling, and adaptive learning technologies taking centre stage. Highly boosted by the COVID-19 pandemic, digital learning is now a standard mode of instruction in universities.⁴⁰

4.2 Institutional Role and Governance Structure

The decision-making process of digital education in the United States has a multi-layered and decentralized structure. The U.S. Department of Education (USED) has a small but important role to play in the policy development process, funding innovative programs and projects, and encouraging digital equity programs.⁴¹ However, it does not directly impact on institutional digital infrastructure. Instead, there is a lot of variability across state governments, accreditation bodies and autonomous universities, resulting in digital adoption and implementation across a broad spectrum.⁴²

The system of governance is discontinuous, offering a few opportunities and challenges. It encourages innovation and experimentation at the institutional level on the one hand, and inconsistencies in standards, access and quality assurance from state to state, and from university to university, on the other hand. This reflects the more decentralized nature of the education system in the United States, without a central authority managing digital education.

4.3 Role of Private Technology Companies and Platform Ecosystem

One of the U.S. digital learning ecosystem is the leading role of technology companies belonging to the private sector. The companies of Google, Microsoft, Amazon Web Services, Coursera, edX, Canvas (Instructure), and Blackboard are critical infrastructure providers of online education.⁴³ These companies provide cloud services, learning management systems, collaboration tools, and AI-powered analytics platforms that are highly integrated in the operations of universities.

This has given rise to the concept of platform-based education model where universities are becoming more and more reliant in core academic processes on privately provided digital infrastructures. Although this leads to a greater level of scalability, efficiency, and innovation, it also creates an issue of institutional reliance on corporate ecosystems and commercialization of education data. Higher education has thus been transformed into a hybrid model of academic and corporate governance due to the increasing influence of EdTech companies.

4.4 AI Adoption in Teaching and Learning

The U.S. higher education system has become highly integrated into the Artificial Intelligence through various applications. AI algorithms are applied in MOOCs and online platforms to recommend course, profile learners and provide them with learning pathways.⁴⁴ The AI-based tools are now integrated in Learning Management Systems to provide automated assessment, plagiarism, student engagement and early-warning systems of academic risk prediction.

³⁹ Coursera Research Report, *The Rise of MOOCs*, 2021; edX Annual Report 2022.

⁴⁰ EDUCAUSE, *supra* note 7.

⁴¹ U.S. Department of Education, Office of Educational Technology, available at: <http://www.ed.gov/oii> (last visited on 8 May 2026).

⁴² Philip G. Altbach and Hans de Wit, "Higher Education Governance in the U.S.," *International Higher Education* (2021).

⁴³ Neil Selwyn, *Education and Technology: Key Issues and Debates* (Bloomsbury Publishing, London, 2016).

⁴⁴ Wayne Holmes, Maya Bialik and Charles Fadel, *Artificial Intelligence in Education* (Center for Curriculum Redesign, 2019).

Moreover, adaptive learning technologies can modify the level of difficulty of the content in accordance with the performance of the students, allowing them to have an individualized experience of learning.⁴⁵ The AI chatbots and virtual assistants can offer real-time academic help, and thus promote student engagement even outside of the classroom. Together, these trends can be seen as a transition towards the data-driven and personalized learning ecosystems, where the delivery of educational services is continuously optimized through the feedback of the algorithms.

4.5 Data Privacy, Algorithmic Bias and Regulatory Concerns.

Although the U.S. digital learning ecosystem is highly developed technologically, it is important to highlight the regulatory and ethical issues that are present in the ecosystem. The privacy of data continues to be a major issue owing to the large amount of student data collected and analyzed by education platforms and institutions. Though laws like the Family Educational Rights and Privacy Act (FERPA) offer some minimal protection, they are becoming less and less adequate in regard to AI-driven data environments that are more complex.⁴⁶

One of the other major issues is algorithmic bias, which can be inadvertently perpetuated by AI systems in areas such as admissions, grading, and performance prediction. Such biases are usually brought about through training data and obfuscated algorithm design and bring up concerns regarding fairness and accountability in educational decision-making.⁴⁷

Moreover, the lack of a coherent national regulatory framework of AI in education leads to a disjointed control over AI and ineffective enforcement procedures. This creates a policy/policy innovation lag gap between technology change and the adjustment of policy. As a result, a system of innovation, equity and regulation have developed within the digital learning environment in the U.S. that has resulted in this structural tension.⁴⁸ This structural tension has led to a system of innovation, equity and regulation in the digital learning environment within the U.S.

5. Comparative Analysis of India and the United States

5.1 Policy and Governance Frameworks

The two countries, India and the United States are two different but changing models of governance in higher education digital transformation.⁴⁹ The policy regime in India is driven by the vision of the National Education Policy (NEP) 2020 which emphasises the integration of digital with education by introducing a range of measures such as digital university, expansion of online education, and the strengthening of platform-based learning such as SWAYAM and DIKSHA.⁵⁰ There is a relatively centralized governance with high coordination between the Ministry of Education and the regulatory authorities such as the University Grants Commission (UGC).⁵¹

In contrast, however, the governance system in the United States is more decentralised with high education institutions with a high degree of autonomy.⁵² The U.S. Department of Education has an impact on policy direction; it is institutionally based, however. Other factors

⁴⁵ UNESCO, *AI in Education Policy Brief* (2021).

⁴⁶ U.S. Department of Education, *Family Educational Rights and Privacy Act (FERPA)*, available at: <http://www.ed.gov> (last visited on 10 May 2026).

⁴⁷ Virginia Eubanks, *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor* (St. Martin's Press, 2018).

⁴⁸ Brookings Institution, *AI Regulation in Education Report* (2022).

⁴⁹ Philip G. Altbach and Hans de Wit, *supra* note 42

⁵⁰ Ministry of Education, Government of India, *supra* note 2

⁵¹ University Grants Commission, *Annual Report 2023* (UGC, New Delhi, 2023).

⁵² William G. Bowen, *Higher Education in the Digital Age* (Princeton University Press, 2013).

that help drive market-led innovation in EdTech, and partnerships with the private sector and federal programs that support the infrastructure of digital learning, further influence digital transformation.⁵³

5.2 Infrastructure and Funding Mechanisms

The digital education infrastructure has been expanding quickly, but is unevenly spread across the country.⁵⁴ Connectivity and access have improved through the Digital India, PM E-vidya and Bharat Net government initiatives and despite this, there are still rural-urban disparities.⁵⁵ Investment is predominantly led by the use of the government in funding EdTech start-ups with some additional private involvement in financing the projects.

In contrast, the USA has an advanced digital infrastructure with high penetration of broadband, advanced institutional IT infrastructure and significant private sector investment.⁵⁶ The sources of funding are varied and they may include: federal grants, state funding, institutional budgets, tuition-based revenues, and large-scale investment in EdTech by large enterprises (e.g., Coursera, Canvas, Google for Education partnerships).⁵⁷

5.3 Accessibility and Digital Inclusion

In India, socioeconomic inequality, language diversities, and lack of internet connectivity in rural areas are persistent challenges to digital inclusion in India. Despite the efforts to close digital gaps, such as SWAYAM and DIKSHA, digital literacy is still not even.⁵⁸

Relatively higher levels of digital inclusion are demonstrated by the United States; the differences between the low-income groups, rural population, and minority communities remain. The compliance and institutional support services are accessibility frameworks like ADA (Americans with Disabilities Act) compliance, and institutional support services that enhance inclusivity, especially in the case of differently-abled learners.⁵⁹

Table 3: Comparative Strengths and Weaknesses

Dimension	India	United States
Policy Structure	Centralized (NEP 2020-led reforms)	Decentralized, institution-driven
Governance	Strong government role	High institutional autonomy
Infrastructure	Rapidly developing but uneven	Advanced and widely accessible
Funding Model	Mostly public with growing private EdTech	Mixed (public + private + tuition-based)
Digital Inclusion	Moderate, rural-urban gap persists	Relatively high but socio-economic gaps exist

⁵³ OECD, *Education Policy Outlook 2021* (OECD Publishing, Paris, 2021).

⁵⁴ World Bank, *Digital Development in Education Report* (World Bank, Washington D.C., 2023).

⁵⁵ Government of India, *Digital India Programme Report* (Government of India, New Delhi, 2022).

⁵⁶ National Center for Education Statistics, available at: <http://www.nces.ed.gov> (last visited on 10 May 2026).

⁵⁷ EDUCAUSE, *supra* note 7.

⁵⁸ SWAYAM Portal, Government of India, available at: <http://www.swayam.gov.in> (last visited on 11 May 2026).

⁵⁹ Americans with Disabilities Act, Pub. L. No. 101–336, 104 Stat. 327 (1990).

Innovation Capacity	Emerging EdTech ecosystem	Global leader in EdTech innovation
Accessibility Support	Developing accessibility frameworks	Strong legal accessibility protections (ADA)

Sources: Above Data based on UNESCO, OECD, World Bank, and national education policy reports of India and the United States.⁶⁰

6. Legal and Ethical Challenges of AI in Higher Education

6.1 Data privacy and protection

The vast amount of data about students being collected, stored and processed by AI is one of the most crucial issues in AI-driven higher education.⁶¹ The type of sensitive personal data that AI systems may gather includes academic performance, behavioral patterns, attendance, and even emotional reactions in Learning Management Systems (LMS), adaptive learning platforms, and predictive analytics tools.

This brings about serious issues of concern about:

1. Data collection and surveillance that have not been collected and monitored by the appropriate authority.
2. Absence of informed consent amongst the students.
3. Breach of data and cybersecurity weaknesses.
4. Cross-border data transfers of cloud-based EdTech platforms.⁶²

In such jurisdictions as India, data protection laws are divided between FERPA and state privacy laws.⁶³ Nevertheless, there are still no AI-specific protection measures in education in both systems.

6.2 Algorithms Bias and Discrimination

The admissions, grading and prediction of student performance within AI systems may unwittingly perpetuate the already existing social and institutional biases. These prejudices normally have their roots in:

1. Skewed training datasets
2. Absence of representativeness in designing the algorithms.
3. Inequalities in the history of education, which are reflected in educational data.⁶⁴

The results are consequences such as discrimination in:

1. Admission of students, and awarding of scholarships.
2. Grading and assessment tools that are automated.
3. Predictive analytics to determine at-risk students.⁶⁵

This prejudice is problematic according to the constitutional guidelines of equality and non-discrimination especially in a diverse society such as India and the USA.⁶⁶ The lack of clear and understandable AI models adds to the lack of accountability.

⁶⁰ UNESCO, OECD and World Bank, *Education Data Reports (2022–23)*.

⁶¹ Luciano Floridi, *The Ethics of Information* (Oxford University Press, 2013).

⁶² European Commission, *GDPR Comparative Analysis Report* (European Commission, Brussels, 2022).

⁶³ Family Educational Rights and Privacy Act, 20 U.S.C. § 1232g (1974).

⁶⁴ Cathy O’Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (Crown Publishing Group, 2016).

⁶⁵ Brookings Institution, *Report on AI Bias* (2022).

⁶⁶ Constitution of India, art. 14; United States Constitution, Equal Protection Clause (Amendment XIV).

6.3 Academic Integrity Issues

The emergence of AI-based tools like ChatGPT, automated essay writers, and AI-based tools to summarize academic texts, have created a new problem in academic integrity. Key issues include:

1. The problem of plagiarism in assignments based on AI.
2. Difficulty in differentiating between information written by humans and by the AI.
3. The over-reliance on AI devices that diminish critical thinking abilities.
4. Lack of coherent institutional policies towards the use of AI.

With AI, universities are finding it challenging to redefine policies on academic honesty.⁶⁷ The tools used to detect plagiarism are not usually effective concerning the more sophisticated AI-generated text, which results in a gap in regulation and pedagogy.

6.4 Need for Regulatory Frameworks

Although AI is rapidly being implemented in education, there is no extensive regulatory frameworks in particular to AI in higher education. An urgent need is in:

1. Policies on educational governance that are specific to AI.
2. Compulsory transparency and explainability criteria of algorithms.
3. Mechanisms of institutional responsibility of AI-driven decisions.
4. AI in teaching, learning and assessment: Ethical guidelines regarding AI use in education, learning and assessment.⁶⁸

In comparison, the United States has already started considering AI governance by initiating projects of the Department of Education, AI ethics guidelines, and by India, the NEP 2020 is promoting digital education, but does not have specific AI regulation provisions.⁶⁹

7. Conclusion and Policy Recommendations

7.1 Major Findings

The comparative analysis of India and the United States shows that both countries are experiencing great but structurally dissimilar changes in the incorporation of Artificial Intelligence and digital technologies into higher education.⁷⁰ India is in a period of rapid change where intervention by the government is strong, the digital infrastructure is expanding and strong emphasis on inclusivity and access. While this has been done, the system still has to face the same problems as faced earlier such as lack of even digital penetration, infrastructural constraint and regional differences in digital literacy level.⁷¹

On the other hand, the United States is a more advanced and digital education innovation system. High institutional autonomy, high technological infrastructure and extensive involvement of the innovation potential of the private sector are an advantage for the higher education system. In addition, it is also grappling with the challenges of rising education costs, unequal access to the advanced digital resources and algorithmic bias and data ownership.⁷²

Overall note, the findings show that India is in the phase of a developmental expansion of the digital education market while the United States is a country in which the digital education market is in an advanced but market-driven stage.

7.2 Policy Lessons to India

⁶⁷ Harvard University, *Policy on Artificial Intelligence in Education* (Harvard University, 2023).

⁶⁸ Turnitin, *Research Papers* (2023).

⁶⁹ U.S. Department of Education, *AI Guidance* (2023); Ministry of Education, Government of India, *supra* note 2.

⁷⁰ UNESCO, *supra* note 12; OECD, *supra* note 3.

⁷¹ World Bank, *Digital Development Report: Education Sector* (2023).

⁷² Virginia Eubanks, *supra* note 47; Brookings Institution, *supra* note 48

Several valuable policy lessons can be learned in the US experience that can enhance the digital education ecosystem in India:

1. **Increasing Institutional Flexibility:** Indian universities need to be given more power to be more flexible in adopting AI-based pedagogical innovations to meet the domestic academic requirements.
2. **Elaborating Industry-Academia partnership:** Greater involvement with global and local EdTech companies can enhance innovation, scalability, and transfer of technology.
3. **Building Strong Data Ecosystems:** India needs more robust structures of educational data analytics to enhance student performance monitoring as well as personalizing learning.
4. **Ensuring Quality Assurance in Digital Education:** Standardized mechanism of accreditation and evaluation is crucial in online and AI-enabled learning platforms.
5. **Bridging the Digital Divide:** Special investments in rural connectivity, low-priced devices, and multilingual AI tools will make a significant contribution to ensuring fair access.⁷³

7.3 Responsible AI Governance recommendations

With the emergence of Artificial Intelligence in higher education, a strong and ethical and transparent governance framework is needed. It is suggested to the following measures:

1. Introduction of an Independent AI in Education Regulatory Authority to regulate the implementation and supervision of the AI systems in learning institutions.
2. Algorithmic Accountability and Transparency Standards to guarantee fairness in admissions, grading and learning Analytics Systems.
3. Powerful Data Protection and Privacy Measures in accordance with the international best practices to safeguard sensitive student information.
4. Enhanced responsible and ethical AI tools and initiatives for educators and students, with a special focus on ethical AI training modules.
5. Stronger responsible and ethical AI tools and initiatives for educators and students, including a focus on ethical AI training modules.
6. Frequent Auditing and Impact Assessment of AI Systems to find biases, errors and unintended consequences in school performance.
7. Human-Centered AI Integration Approach that will ensure that AI is a supportive tool and not a substitute to human educators.⁷⁴

In Conclusion the use of AI in higher education is a structural change of the learning systems and not only a technological change. There should be a balanced approach that entails innovation, equity, as well as ethical governance to ensure that the digital transformation has a meaningful contribution towards inclusive and sustainable growth in education.

⁷³ UNESCO, *AI Ethics in Education Policy Brief* (2022).

⁷⁴ OECD, *AI Governance in Education Systems* (2021).

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