INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH & REVIEWS

journal homepage: www.ijmrr.online/index.php/home

ROLE OF ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION

Dr.Jayasree.Venkitachalam

Principal, Sree Narayana Guru College of Commerce, Chembur, Mumbai-400089, India.
Corresponding Author: vjayasree50@gmail.com

1. INTRODUCTION

With the emergence of Artificial Intelligence (AI), the world has entered a new era of change in numerous fields - and higher education is not one of them. Colleges and universities all over the world are also becoming interested in how AI can transform teaching, learning, assessment, administration, research and institutional governance in general. The possibilities are immense: not only the individualization of learning experiences but also the use of data to inform policymaking; not only the automation of routine tasks but the provision of inclusive and equitable education. Simultaneously, the process of AI implementation into the academic environment poses serious ethical, privacy, integrity, and equity issues. The paper examines the complex role of AI in higher education, its advantages, limitations, challenges, and future opportunities and focuses on the balanced, sustainable, and inclusive approach.

What is "AI in Higher Education" — scope & definitions

What is AI in Higher Education" - scope and definitions. We mean AI in higher education by the use of AI techniques such as machine learning (ML), natural language processing (NLP), generative AI (GenAI), intelligent tutoring systems (ITS), predictive analytics, and other algorithms or automated tools on different college/university functions: teaching, learning, assessment, research support, administrative work, student support, accessibility, and institutional decision-making.

In short: AI in education is not a single technology, but a wide technology ecosystem that can facilitate and change most facets of the academic world.

➢ Benefits & Potential of AI in Higher Education

• Personalised and Adaptive Learning

Individual and Dynamic Learning. Personalization is one of the greatest AI promises. The conventional lecture-based and one-size-fits-all education does not usually satisfy the needs of diverse learners: different pace, background knowledge, learning style, language, ability, or disabilities. Adaptive learning systems based on AI and intelligent tutors have the ability to customize learning paths to each specific student: changing the difficulty and speed of the content, giving them individual feedback and other academic support whenever necessary. (arXiv)

This customization can increase student engagement, satisfaction and academic performance. A current review has linked AI-based adaptive systems to the enhancement of the educational quality, real-time evaluation and enhanced learner-content fit. (Preprints])

The AI can be very useful in enhancing accessibility and inclusion among students with disabilities or different linguistic or cultural backgrounds. Through text-to-speech or AI translation tools, speech-to-text, or other visual impairments, students with language barriers can be included in the educational experience, which will allow a more inclusive learning process. (SpringerLink)

• Efficiency & Administrative Support

Many of the routine tasks, academic and administrative, which are time-consuming, can be streamlined and automated by AI. As an example, AI-based automation can be used in intelligent tutoring, quiz generation, FAQ-style support, schedule support, resource distribution, grading support, attendance support, and general administrative support. (Research Corridor) This would enable less workload to be placed on faculty and administrative personnel who are then able to spend more time mentoring, doing research, curriculum designing or working with students. It may also accelerate the feedback loops, allowing assessment and individual support in a timely manner. (Research Corridor)

This can reduce workload on faculty and administrative staff, allowing them to devote more time to mentoring, research, curriculum development, or student engagement. It can also speed up feedback cycles, enabling timely assessment and personalized support. (Research Corridor)

AI can speed up both literature reviews and data analysis, predictive modelling which is time-consuming in the context of research. AI enables researchers to put their energies on interpretation, critical thinking and creativity by working on repetitive or computationally intensive tasks. (Research Corridor)

• Promoting Equity, Inclusion, and Accessibility

As long as it is used wisely, AI can minimize disparities in education. A systematic review of empirical research on AI technology published between 2015-2025 indicates that AI has been associated with the achievement of Sustainable Development Goals (SDGs) including quality

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education (SDG 4) and inequalities reduction (SDG 10) through customized assistance, resource accessibility, real-time intervention, and marginalized or underserved group assistance. (Preprints) Examples: Students with diverse socio-economic and language backgrounds, students with disabilities, first-generation college students or poorer-represented groups - AI tools can support these students by enabling adaptive learning, language support, assistive technology, and pacing. (SpringerLink)

In some schools with a high ratio of teachers to students (i.e. colleges in the rural areas), AI can be used to address the shortage of resources - providing quality education services in a situation where there was no trained personnel or facilities. In fact, such a possibility is mentioned in country-specific figures (e.g. in Indian higher education).(capdr.org)

- **Enhancing Teaching & Learning — Innovation in Pedagogy**

Artificial Intelligence can bring a new approach to teaching. Rather than focusing only on conventional lectures and exams, teachers may create more flexible interactive and student-focused learning opportunities - through artificial intelligence tutors, adaptive course material, interactive question and answer, personalized testing. (RSIS International)

The continuous assessment, formative feedback, and real-time analytics can also be performed by means of the AI-enabled tools: assisting educators in learning about the progress of students, their misconceptions, and learning gaps: the latter results in a timely intervention and support. (Preprints)

Besides, AI may be beneficial in research-based institutions; it can assist in curriculum creation, content optimization, course design - assessment of what content is more effective, the ability to adjust the syllabus to better suit learning outcomes, and dynamic updating of course materials. (RSIS International)

- **Research Support & Academic Productivity**

In addition to teaching and learning, AI can also be of great help in the research field: data mining, automatization of literature review, predictive analytics, detecting of patterns, modeling, plagiarism detection, peer-review support, writing assistance (non-native speakers of English in particular). (Research Corridor)

This leads to more productive research work, less time to insight, democratization of research, which allows researchers with few resources or time to carry out advanced analysis work. AI can thus assist both experienced and novice researchers, promoting the development and growth of academic research, as well as increasing research output.

- **Challenges, Risks and Limitations of AI in Higher Education**

Although the potential of AI in higher education is promising, there is a high level of difficulty in its implementation, including ethical, technical, infrastructural, pedagogical, and social challenges.

- **Ethical Issues, Privacy & Bias**

Data privacy and security are one of the concerns. The data gathered, processed, and stored by AI-based systems is usually large volumes of personal and academic information - performance

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metrics, behaviour, engagement, attendance, background, language of learning type, even language - which increase the likelihood of misuse, facilitated access, spying, or data breaches. (MDPI)

Another problem is algorithmic bias: when AI models are trained with biased or unrepresentative data (e.g. overrepresented population groups, culturally biased text), the results of their work (i.e. recommendations, evaluation, predictions) can serve to reproduce inequality to the detriment of specific groups of students. (SpringerLink)

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In addition, there are ethical questions as pertaining to academic integrity. AI (and GenAI, in particular) usage as a tool on assignments, writing, or exams could promote plagiarism, decrease originality, and undermine learning. Individual learners can develop excessive dependence on AI-generated products instead of critical thinking, intensive learning, or diligence. (arXiv)

Also, replacing or reducing human involvement — for instance, automated grading, automated feedback, tutor- bots — may erode the humanistic essence of education: mentoring, empathy, human judgment, discussion, debate, creativity, and interpersonal learning. Several scholars warn that education is fundamentally a human endeavor, not merely a technological problem. (Preprints)

- **Institutional, Infrastructural & Technical Challenges**

Integrating AI into higher education requires institutional readiness: good digital infrastructure (computing resources, reliable internet, LMS integration), staff training, updated curricula, and support mechanisms. Especially in institutions in developing countries or underserved areas, such requirements may be lacking — limiting effective AI adoption. (Preprints)

There is also a lack of empirical, long-term research about outcomes: many studies are small-scale, qualitative, pilot-based, or theoretical. For example, there is limited data on ROI (return on investment), actual impact on learning outcomes, workload changes for staff, or long-term effects on academic rights, human interaction, or institutional culture. (MDPI)

Pedagogical difficulties emerge as well: teachers might be uninformed about technical research or have no assurance that AI can be introduced in an educational context. This can be opposition to change, ignorance or unwillingness to change traditional teaching. (SpringerLink)

Furthermore, excessive use of AI will result in lack of student autonomy, critical thinking, creativity, and problem-solving - when it becomes more of a crutch than a tool to assist learning. The ability of AI to produce responses will compromise deep learning with some models of assessment (e.g. assignments). (arXiv)

Lastly, since AI is now used to make high-stakes decisions by institutions admission, grading, scholarships, performance evaluation, etc. issues of fairness, transparency, student rights (e.g. right to explanation, human judgement, appeal) gain increased importance. (MDPI)

- ➢ **Empirical Findings & Recent Studies**

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- **Students' Perceptions & Use Patterns**

A more recent mixed-methods survey study on generative AI adoption (e.g. applications such as chatbots, GenAI) in higher education surveyed 130 respondents and conducted scenario analysis to determine the possible benefits, challenges, and futures of AI. The research discovered that a good number of students are already using GenAI to do assignments, study exams and found it useful in attaining academic objectives. (arXiv)

A study involving 399 undergrad and postgrad students (of all subjects) in Hong Kong, found that overall attitude towards GenAI was positive: students appreciated personalized learning support, writing assistance, brainstorming, research analysis; however, at the same time, they were concerned about the accuracy, privacy, ethical issues, and possible over-reliance. (arXiv)

Such results outline two facts about this: the students perceive the benefits of AI, but they are healthily aware of its drawbacks. Notably, integration decisions are supposed to take into account the views of students, ethics, and support systems.

- **Impacts on Assessment & Learning Outcomes**

The paper has examined the application of GenAI tools in assessments (data science, analytics, construction management disciplines). Results were inconsistent: GenAI applications proved to be competent in their subject knowledge, problem-solving, analytical thinking, and presentation, which means that AI was capable of competently doing assignments. But the authors caution that when applied unethically (e.g. plagiarism or over-reliance) it can end up restricting learning - defeating student growth, originality, and innovation and the more in-depth command. (arXiv)

This brings forth a very important issue, even though AI is not only effective in assessments, educational institutions need to pay close attention to redesigning the assessment practices that will not interfere with the academic integrity, promote critical thinking, and guarantee real learning..

- **Institutional & Macro-level Impacts**

A comprehensive literature review of 51 empirical studies (2015–2025) found that AI's integration in HEIs contributes positively to educational quality, equity, inclusion, and accessibility — aligning with SDG 4 (quality education) and SDG 10 (reduced inequalities). (Preprints)

Nevertheless, the review also pointed to very serious issues: infrastructural constraints, cultural obstacles, the lack of a governance system, ethical issues (privacy, bias), and the insufficient training of educators and administrators. (Preprints)

A second empirical study that examined faculty attitudes showed that a large proportion of teachers consider AI as a means to facilitate equity - particularly among students with disabilities or in deprived environments, however, they also stated that their institutions need to support AI, train and provide guidelines on responsible use by faculty (SpringerLink)

With regards to India, one recent study has investigated the way in which AI can resolve issues related to Indian higher education and enhance the performance of the institution in terms of efficiency, quality, inclusivity, and compatibility with the national education policy. (capdr.org)

- ➢ **Challenges to Implementation: A Closer Look**

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- **Ethical, Privacy & Governance Concerns**

As it has been mentioned, AI systems can work in an opaque manner: algorithm-made decisions might not be explainable; predictions or judgments based on data might be biased or unjust. When AI enters into important academic procedures, such as grading, admission, scholarship distribution, student assessment, transparency is weakened. (SpringerLink)

Another significant issue is data security of students. Colleges might have no strong data security infrastructure and personal, academic, or behavioral data of students might be shared. It is necessary to establish effective data governance, privacy policies, consent systems, and open policies. (Preprints)

Furthermore, systemic inequalities may be reinforced by algorithmic bias, i.e. training data is not skewed or unrepresentative hence giving an advantage to a specific group (e.g. minorities, marginalized communities, non-native speakers). This negates the equity promise. (SpringerLink)

- **Pedagogical & Institutional Barriers**

The concept of AI has not only become a technical project in higher education, but it also requires pedagogical changes, institutional readiness, cultural change, and capacity building. Numerous teachers might be not well acquainted or comfortable with AI, change-averse or lack trust in automated tools. (SpringerLink)

Furthermore, AI tools may not be supported in terms of infrastructure (computing resources, reliable internet, integration with LMS) in not all institutions (particularly in developing or resource-constrained environments). This digital divide is a danger of perpetuating inequalities instead of eliminating them. (Preprints)

There is also a need to rebrand the assessment practices. The ways of doing things traditionally might become outdated or exposed as AI is capable of producing content. Schools should create exams that are used to measure in-depth knowledge, thinking, - not just memorization and descriptive writing.. (arXiv)

Lastly, as there are no long-term, large-scale empirical studies on the effect of AI on the learning outcomes, teacher workload, institutional cost-benefit, student equity, and overall educational quality. Numerous researches are pilot-based or topic-level. This restrains evidence-based policy-making and sustainable uptake. (SpringerLink)

- **Guidelines and Best Practices for Responsible AI Integration**

The integration of AI in higher education should be approached cautiously, balanced, and with ethical considerations in this regard since the potential is lucrative, and the challenges are severe. The following are suggested guidelines and best practices, basing on literature.

1. **Develop Institutional Governance & Clear Policies**
   - Create clear data collection and storage and use policies; informed consent; clarify what the data may be used to do what (learning analytics, assessments, research). Data privacy Data privacy and governance Preprints Data privacy and governance (Preprints)

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- Where feasible, use explainable, transparent models of AI (not black-box); use black-box decision-making, particularly in high-stakes tasks (grading, admissions, evaluation). (SpringerLink)
- Provide channels for human oversight, appeal, and human judgment — do not fully automate critical academic decisions.

2. **Train Educators and Administrators**
- Furthermore, students with different language backgrounds, first-generation students, or those living with disabilities may be assisted using AI-based assistive technologies (text-to-speech, translation, adaptive learning) to foster inclusion and equity. (SpringerLink)
- Encourage educators to incorporate AI thoughtfully — as a supplement, not a replacement for human-centric teaching. Combine AI with human mentorship, discussion, critical thinking.

3. **Design Pedagogy and Assessments for Authentic Learning**
- Revise curricula and assessment methods to emphasize higher-order thinking, creativity, critical analysis, problem-solving — less dependent on rote tasks or assignments easily done by AI. (arXiv)
- Use AI to provide formative feedback, adaptive learning, and personalized support — while preserving space for human feedback, peer discussion, project-based learning, reflection.

4. **Promote Equity, Inclusion & Accessibility**
- Leverage AI's strengths to support marginalized, differently-abled, first-generation or underrepresented students (accessibility tools, adaptive learning, language support, personalized paths). (SpringerLink)
- Ensure infrastructure access — internet, devices — especially in underserved or resource-limited regions, to prevent widening digital divide. (Preprints)

5. **Conduct Research, Monitoring & Evaluation**
- Encourage long-term empirical studies to assess impact on learning outcomes, student equity, institutional cost-benefit, teacher workload, academic integrity, and social implications. (SpringerLink)
- Involve stakeholders — students, educators, administrators, policymakers — in research, feedback, policy design, and continuous evaluation.

6. **Adopt a Balanced View: AI as Assistant, Not Replacement**
- Use AI to augment human teaching, learning and research — not to replace human judgment, mentorship, creativity, critical thinking, community and human values that are central to education. (Preprints)

➢ **Relevance to Indian Higher Education — Opportunities & Constraints**

Given the context of Indian higher education — massive student population, wide socio-economic and linguistic diversity, resource constraints in many institutions, varying infrastructure — AI holds particular promise. A recent Indian study argues that AI can help address long-standing

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challenges: by enabling personalized learning, improving institutional efficiency, and aligning with policy goals for quality, access, and inclusivity. (capdr.org)

For example, in institutions with high student-to-teacher ratios, AI-driven tutoring, adaptive platforms, and automated support could supplement overburdened faculty, offer additional academic help, and reach students in remote or under-resourced areas.

Moreover, AI-based assistive technologies (text-to-speech, translation, adaptive learning) can support students from diverse linguistic backgrounds, first-generation students, or those with disabilities — promoting inclusion and equity. (SpringerLink)

However, challenges are also acute: many institutions may lack required infrastructure (reliable internet, computers), or funds to invest in AI tools; faculty may not be trained; there may be resistance to change; data privacy laws and institutional governance may be weak or absent; potential bias or inequity risks may be magnified in a diverse, stratified society.

Therefore, for India, AI adoption in higher education must be thoughtful, inclusive, and supported by policy, infrastructure, training, and awareness — not just technology deployment.

➤ Future Prospects & Research Directions

Based on current literature and observed trends, several future directions and research needs emerge:

- Longitudinal empirical studies — to monitor longitudinally the impact of AI integration on the learning outcomes, equity, student retention, institutional efficiency, faculty workload, student satisfaction, and institutional cost-benefit.

- Context-specific studies — particularly developing countries: how AI works in resource-constrained environments, in rural universities/colleges, in multilingual/ multicultural environments, in highly diverse institutions, and with disadvantaged groups.

- Ethics, governance & policy research — data privacy, transparency, algorithmic fairness, accountability, frameworks and guidelines to institutional adoption, protecting student rights, studying human-AI balance in decision-making.

- Pedagogical innovation research — the way AI may be used to promote active learning, project-based learning, collaborative learning, experiential learning; AI as creativity, critical thinking, not content delivery tool.

- Teacher training & capacity-building models — good method to embed AI training to teachers; staff development; encourage digital literacy, AI literacy both to the staff and the students.

- Accessibility & inclusion studies — design and testing of AI-based assistive technologies to support disabled students, learners with language differences, marginalized students, making AI merely enhance inequalities and not increase them.

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- Institutional strategies & scalability studies — how institutions (particularly in developing situations) can adopt AI in a sustainable way (cost, infrastructure, partnerships), and scale pilot projects to adoption across a system.

2. CONCLUSION

AI is a strong prospect to change higher education, make it more personalized and efficient, inclusive, innovative, and sensitive to different learning needs. Intelligent tutoring, adaptive learning, automated support, data-driven insights, accessibility, and research assistance could also transform the manner in which we teach, learn and run higher education institutions with the assistance of AI.

However, this possibility is associated with a range of issues: the ethical issues, the threat to privacy, the bias, the limitations of infrastructure and capacity, the threat to academic honesty, and the risk of dehumanizing education. This means that an approach which is balanced, ethics-based, inclusive and context-sensitive is required.

The role of AI should not be discussed as a replacement of human educators but as an assistant to improve human learning and human values, but it must not substitute human values and human values. This should be implemented with institutional governance, clear policies, training of the educators and constant research and monitoring.

The prospect of AI is especially attractive in the context of India (or other developing countries), yet it will still have to be implemented by investing, building capacity, and adopting an inclusive policy. Overall: AI can be instrumental in the field of higher education, though its implementation should be considerate, accountable, and human.

3. AUTHOR(S) CONTRIBUTION

The writers affirm that they have no connections to, or engagement with, any group or body that provides financial or non-financial assistance for the topics or resources covered in this manuscript.

4. CONFLICTS OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

5. PLAGIARISM POLICY

All authors declare that any kind of violation of plagiarism, copyright and ethical matters will take care by all authors. Journal and editors are not liable for aforesaid matters.

6. SOURCES OF FUNDING

The authors received no financial aid to support for the research.

REFERENCES

[1] Artificial intelligence in higher education with bibliometric and content analysis for future research agenda.(2025) (SpringerLink)

Venkitachalam Jayasree (2025). *Role of Artificial Intelligence in Higher Education. International Journal of Multidisciplinary Research & Reviews, 4(4), 171-181.*

[2] Artificial intelligence in higher education: exploring faculty use, self-efficacy, distinct profiles, and professional development needs.(2024) (SpringerLink)

[3] Artificial Intelligence in Higher Education: Teaching Mode Innovation and Quality.(2025) (RSIS International)

[4] Ethical Problems in the Use of Artificial Intelligence by University Educators. (2025) (MDPI)

[5] Systematic Review: The Role of Artificial Intelligence in Higher Education — Contributions to Sustainable Development Goals.(2025) (Preprints)

[6] Transforming Higher Education with Artificial Intelligence: Benefits, Challenges, and Future Directions. (2024) (bryanhousepub.com)

[7] Chan, C. K. Y., & Hu, W. "Students' Voices on Generative AI: Perceptions, Benefits, and Challenges in Higher Education." (2023) (arXiv)

[8] Krause, S., Panchal, B. H., & Ubhe, N. "The Evolution of Learning: Assessing the Transformative Impact of Generative AI on Higher Education." (2024) (arXiv)

[9] Ogunleye, B., Zakariyyah, K. I., Ajao, O., Olayinka, O., & Sharma, H. "Higher education assessment practice in the era of generative AI tools." (2024) (arXiv)

[10] Parikh, V. (2022). How to revitalize management education in India. Journal of Management & Entrepreneurship, Vol – 16, Issue – 1, Pg. 151-155

[11] Pirani, S. (2024a). Navigating Research Ethics: Strategies for preventing and Addressing Research Misconduct, International Journal of Multidisciplinary Research & Reviews, Vol 03, No. 02, PP.96-104.

[12] Sajja, R., Sermet, Y., Cikmaz, M., Cwiertny, D., & Demir, I. "Artificial Intelligence-Enabled Intelligent Assistant for Personalized and Adaptive Learning in Higher Education." (2023) (arXiv)

[13] Thakkar, K (2023) Challenges in front of Tourism Sector in South Konkan region (Ratnagiri and Sindhudurg) during the post covid period. Journal of Education (Rabindra Bharti University), Vol XXIII No 1, 84-89.

Venkitachalam Jayasree (2025). *Role of Artificial Intelligence in Higher Education. International Journal of Multidisciplinary Research & Reviews, 4(4), 171-181.*

[14] Thakkar, K. & Pandangale P (2021) A Comparative Analysis of Performance of Power Supply Companies In The Duopoly Market of Mumbai Region. Journal of Contemporary Issues in Business and Government, 27(4), 357-362.