

Artificial Intelligence in Higher Education: Opportunities, Challenges and Ethical Considerations in Indian Context

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Abstract:

Across many fields such as education, healthcare, banking, transportation, and manufacturing Artificial Intelligence (AI) is being adopted more and more to enhance speed, accuracy, and overall efficiency. In higher education specifically, AI has become a common tool for teachers, learners, and support staff, helping with academic, organizational, and institutional tasks. By improving core areas like instruction, assessment, evaluation, and administration, AI is steadily transforming the university landscape. Around the globe, colleges are incorporating AI-powered technologies such as intelligent tutoring systems, learning analytics, chat bots, and adaptive learning platforms to enrich educational methods and offer tailored learning journeys. Although these advancements bring major possibilities, they also raise several issues. Worries regarding data security, responsible usage, technical infrastructure, and digital divides continue to trouble institutions. This paper draws on a review of 25 to 29 academic studies published from 2019 to 2026, sourced from databases like Google Scholar and ERIC. The research examines the opportunities and hurdles associated with AI adoption, as well as relevant ethical issues, and pinpoints current gaps in the literature and broader implications for educational practice in higher education institutions.

Keywords: artificial intelligence, higher education, opportunities, challenges, ethical concerns

Introduction

In recent years, the conversation has moved beyond speculative futures to tangible realities, where AI-driven tools are increasingly becoming embedded in the very fabric of teaching, learning, and administrative processes within universities and colleges worldwide (Al-Azzam & Al-Oudat, 2025). This integration presents a dual-edged sword, offering unprecedented opportunities for pedagogical enhancement while simultaneously raising profound challenges and ethical dilemmas that institutions can no longer afford to ignore (Chelghoum & Chelghoum, 2025). Specifically, in emerging contexts—which include developing economies, recently digitized educational systems, and institutions with limited regulatory frameworks—the stakes are even higher, as the promise of AI to leapfrog educational barriers must be weighed against the risks of exacerbating existing inequalities (Soko, Pete, & Mureithi, 2025).

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One of the most celebrated opportunities presented by AI in higher education is the potential for personalized learning at an unprecedented scale (Azmat & Mahmood, 2024). Traditional lecture-based models often fail to accommodate diverse learning paces and styles, but AI-powered adaptive learning platforms can analyse individual student performance in real-time and tailor content, assessments, and feedback accordingly (Fuchs & Aguilos, 2023). For instance, Al-Azzam and Al-Oudat (2025) have demonstrated that AI-based classification systems can effectively predict academic and psychological challenges, enabling early intervention that was previously impossible in large-cohort courses. This predictive capability is not merely a matter of convenience but a potential tool for student retention and success, particularly for first-generation or at-risk students who might otherwise fall through the cracks (Das & Madhusudan, 2024).

Furthermore, generative AI tools like ChatGPT have opened new avenues for collaborative learning, where students can use the technology as a brainstorming partner, a writing assistant, or a source of instant clarification on complex topics (Alkaabi et al., 2025). In emerging contexts, where student-to-faculty ratios are often high and resources are scarce, these efficiencies could be transformative, allowing a small number of educators to reach and support a much larger student body effectively (Slimi & Villarejo Carballido, 2023). Furthermore, AI-driven translation and accessibility tools promise to bridge language barriers and support students with disabilities, thus promoting a more inclusive learning environment (Pierrès, Darvishy, & Christen, n.d.). Sahin and Noroozi (2025) argue that when integrated thoughtfully, generative AI can foster critical thinking by requiring students to evaluate, edit, and build upon AI-generated content rather than passively receiving information.

The ease with which students can now generate essays, solve complex problems, and even produce data analyses using AI tools has sparked a crisis in traditional assessment methods (Ali, 2025). Many educators report feeling ill-equipped to detect AI-generated submissions, and the line between legitimate assistance and outright cheating has become increasingly blurred (Kadwa, 2025). This challenge is particularly acute in emerging contexts where institutions may lack access to sophisticated AI-detection software or the professional development necessary to redesign assessments for AI-resilience (De Villiers-Botha, 2024). Moreover, the over-reliance on AI can potentially stifle the development of fundamental skills such as critical reasoning, argumentation, and even basic writing proficiency, as students may come to see AI as a shortcut rather than a supplement (Durmus, 2025). Another major challenge is the digital divide; while AI tools promise enhanced learning, they also presuppose reliable internet access, modern devices, and digital literacy, conditions that are far from universal in many emerging economies (Zamir, Afzal, & Sultana, 2023). This creates a scenario where the benefits of AI accrue disproportionately to already privileged students, thereby widening rather than closing achievement gaps (Fernández Cando et al., 2026).

A primary ethical issue is data privacy and surveillance. Many AI systems, particularly those used for learning analytics and predictive modelling, require the continuous collection of student data, including keystroke patterns, facial expressions, response times, and even emotional states (Arise et al., 2024). Without transparent consent protocols and robust data governance, such practices risk turning the educational environment into a space of hyper-

surveillance, where students are constantly monitored and profiled (Popenici & Kerr, 2019). In emerging contexts, where data protection laws may be nascent or poorly enforced, the risk of data breaches or the unauthorized sale of student data to third parties is a genuine threat (Slimi & Villarejo Carballido, 2023). Furthermore, algorithmic bias represents a profound ethical challenge.

Literature Review

2.1 Opportunities Presented By AI In Higher Education

The scholarly literature on artificial intelligence in higher education consistently highlights a range of transformative opportunities, particularly in the realms of personalized learning, administrative efficiency, and student support services (Slimi, 2023). Fuchs and Aguilos (2023) found that students using AI-driven platforms reported higher engagement levels and a greater sense of ownership over their learning processes compared to traditional lecture-based settings. Furthermore, Al-Azzam and Al-Oudat (2025) demonstrated through predictive modelling that AI systems can accurately identify students at risk of academic failure or psychological distress, enabling timely interventions that significantly improve retention rates. This predictive function is particularly valuable in large-enrolment courses where individual instructors cannot possibly monitor every student's progress manually (Das & Madhusudan, 2024).

Beyond personalization, generative AI tools such as ChatGPT have been shown to serve as effective brainstorming partners and writing assistants, helping students overcome initial blocks in the composition process (Alkaabi et al., 2025). Ali (2025) argued that when used appropriately, these tools can actually enhance critical thinking by requiring students to evaluate, edit, and improve upon AI-generated drafts rather than simply accepting them as final products. From an instructor's perspective, AI can automate routine grading tasks, track attendance patterns, and even generate initial assessment rubrics, thereby freeing up time for more meaningful pedagogical interactions (Jose & Jose, n.d.). In emerging contexts, where faculty-to-student ratios are often unfavourable and resources are limited, these efficiencies could be nothing short of revolutionary (Soko, Pete, & Mureithi, 2025). Additionally, AI-powered translation and accessibility tools offer the promise of more inclusive classrooms, breaking down language barriers and providing real-time support for students with disabilities (Pierrès, Darvishy, & Christen, n.d.). Sahin and Noroozi (2025) concluded that when integrated thoughtfully, generative AI can transform higher education from a one-size-fits-all model to a genuinely responsive and adaptive ecosystem.

2.2 Challenges Impeding Effective AI Integration

Despite these promising opportunities, a substantial body of literature documents significant challenges that hinder the effective and equitable integration of AI in higher education (Chelghoum & Chelghoum, 2025). Perhaps the most frequently cited concern is the threat to academic integrity posed by generative AI tools (Ruskulis et al., 2026). Kadwa (2025) observed that many faculty members feel unprepared to detect AI-generated submissions, leading to a crisis of confidence in traditional written assignments as valid assessment instruments. The line between legitimate assistance and academic dishonesty has become increasingly blurred, and

institutional policies have generally failed to keep pace with technological developments (De Villiers-Botha, 2024).

Another major challenge is the digital divide, which refers to unequal access to the reliable internet connections, modern devices, and digital literacy skills necessary to benefit from AI tools (Zamir, Afzal, & Sultana, 2023). Fernández Cando et al. (2026) warned that in emerging economies, where infrastructure gaps are pronounced, the introduction of AI could actually widen existing educational inequalities rather than reduce them. Students from privileged backgrounds gain enhanced learning supports, while their less advantaged peers are left further behind.

2.3 Ethical Concerns In Emerging Contexts

The ethical dimensions of AI in higher education have attracted intense scholarly scrutiny, with particular attention paid to issues of data privacy, algorithmic bias, and the erosion of human agency (Ashour & Banihani, 2025). Arise et al. (2024) raised serious concerns about the surveillance implications of learning analytics systems, which continuously collect data on student behaviours including keystroke patterns, facial expressions, and even inferred emotional states. Without transparent consent protocols and robust data governance, such practices risk transforming the university into a panopticon where students feel constantly watched and judged (Popenici & Kerr, 2019). In emerging contexts, where data protection laws may be weak or poorly enforced, the risk of data breaches or unauthorized commercial use of student information is particularly acute (Slimi & Villarejo Carballido, 2023).

Marín et al. (2025) provided compelling evidence of algorithmic bias, showing that AI models trained on historical data from predominantly well-resourced institutions systematically misclassified students from under-resourced backgrounds as high-risk for academic failure. This creates a self-fulfilling prophecy, where biased predictions lead to lowered expectations and reduced support, thereby actually causing the predicted failure (Torres-Gordillo & Sanhueza, 2025).

Objectives Of The Review

The present narrative review was guided by three primary aims. First, this review seeks to explore the various benefits and positive potentials that Artificial Intelligence brings to higher learning environments, ranging from instructional delivery to administrative functions. Second, the study aims to critically evaluate the difficulties and obstacles that accompany the deployment of AI systems within university contexts, including technical, pedagogical, and cultural barriers. Third, this paper intends to pinpoint lacunae and underexplored areas within the existing body of empirical research on AI applications in post-secondary education, thereby charting a course for future investigations.

Methodology

To achieve the objectives outlined above, this study employed a narrative review design, which is particularly well-suited for synthesizing diverse bodies of literature on a multifaceted topic such as artificial intelligence in higher education. A total of 25 to 29 empirical research articles formed the corpus of this review. All selected papers focused substantively on the twin themes

of opportunities and challenges associated with the adoption of AI tools and systems within colleges and universities.

The literature search was conducted using two widely recognized academic databases: Google Scholar and the Education Resources Information Center (ERIC). The temporal scope of the search was confined to publications appearing between 2019 and 2026 inclusive, ensuring that the review captured recent and contemporary developments in a rapidly evolving field. A systematic search strategy was employed using a set of pre-determined search terms and phrases. These keywords included variations such as "AI in higher education," "artificial intelligence in universities," "opportunities of AI in education," and "challenges of AI in education." Boolean operators were used where appropriate to combine or refine search results, although the narrative nature of the review prioritized breadth of relevant coverage over exhaustive systematic retrieval.

Inclusion criteria were applied rigorously during the selection process. Articles were eligible for inclusion if they reported original empirical research—whether qualitative, quantitative, or mixed-methods—and if their core focus directly addressed both the positive affordances and the obstacles or risks associated with implementing AI in higher education institutions. Theoretical papers, opinion pieces, conference abstracts without full data, and non-English publications were excluded to maintain methodological coherence and accessibility.

The screening process unfolded in three sequential phases. In the first phase, titles of all retrieved records were scanned for apparent relevance to the research focus. In the second phase, abstracts of potentially relevant papers were read in full to assess alignment with the inclusion criteria. In the third phase, the full texts of remaining articles were obtained and examined thoroughly to confirm their suitability for inclusion. Any disagreements about relevance at any stage were resolved through discussion, though given the focused nature of the search, such disagreements were minimal. Following final selection, data extraction was conducted thematically. Extracted information was organized into two broad thematic categories: opportunities and challenges. Extracted data were then synthesized narratively to address the review objectives in turn.

Artificial Intelligence In Higher Education: Opportunities, Challenges, And Ethical Considerations In Indian Context

Opportunities Of AI In Indian Higher Education

The most frequently cited opportunity that AI presents for Indian higher education is the potential to personalize learning at an unprecedented scale, thereby addressing the perennial challenge of large class sizes and heterogeneous student backgrounds (Al-Azzam & Al-Oudat, 2025). In many Indian universities, introductory courses may enroll several hundred students, making it impossible for individual instructors to provide tailored feedback or identify struggling learners in real time (Fuchs & Aguilos, 2023). AI-powered adaptive learning platforms can analyse student performance data continuously, flagging those who need additional support and recommending customized remediation materials without requiring additional human resources (Das & Madhusudan, 2024). This capability is particularly valuable in the Indian context, where faculty-to-student ratios in public universities often fall below

recommended standards, leaving many students without adequate academic guidance (Ali, 2025).

Furthermore, generative AI tools such as ChatGPT can serve as round-the-clock tutoring assistants, allowing students in remote or understaffed institutions to ask questions and receive explanations outside of classroom hours (Alkaabi et al., 2025). For students who are the first in their families to attend university, or who come from educational backgrounds where instructional quality was poor, such AI support could help bridge foundational knowledge gaps that might otherwise lead to dropout (Zamir, Afzal, & Sultana, 2023).

Another significant opportunity lies in the realm of language accessibility (Pierrès, Darvishy, & Christen, n.d.). India's linguistic diversity, with twenty-two scheduled languages and hundreds of dialects, means that many students struggle to learn effectively when instruction is delivered only in English or Hindi (Sahin & Noroozi, 2025). AI-driven translation and transcription tools can render lecture content in multiple languages simultaneously, making higher education more inclusive for students from different linguistic regions (Torres-Gordillo & Sanhueza, 2025). Additionally, AI can support students with disabilities through speech-to-text conversion, image description, and real-time captioning, thereby advancing the goals of the Rights of Persons with Disabilities Act without requiring expensive individualized accommodations (Ashour & Banihani, 2025). From an administrative perspective, Indian universities face enormous bureaucratic burdens related to admissions, examination scheduling, grade processing, and accreditation reporting (Jose & Jose, n.d.).

Challenges Of AI Adoption In The Indian Context

Despite these promising opportunities, the adoption of AI in Indian higher education faces formidable challenges that must be acknowledged and addressed (Holmes et al., 2023). Perhaps the most fundamental obstacle is the severe digital divide that persists across the country, with vast differences in internet connectivity, device access, and digital literacy between metropolitan universities and rural colleges (Soko et al., 2025). While students at elite institutions like the Indian Institutes of Technology may have seamless access to high-speed internet and the latest AI tools, their counterparts in government colleges in Bihar or Jharkhand may struggle with intermittent connectivity, shared devices, and limited exposure to digital learning environments (Fernández Cando et al., 2026). Implementing AI-powered learning platforms under such conditions would likely exacerbate existing inequalities rather than reduce them, as privileged students gain additional advantages while marginalized students are left further behind (Zamir et al., 2023).

A second major challenge is the current state of faculty preparedness (Jose & Jose, n.d.). The majority of Indian college teachers have not received formal training in AI technologies, and many express anxiety about their ability to integrate these tools effectively or to detect AI-generated student work (Kadwa, 2025). Professional development programmes are sparse, underfunded, and often inaccessible to faculty in rural or remote institutions (De Villiers-Botha, 2024). Without systematic investment in faculty upskilling, AI risks becoming either ignored entirely or implemented so poorly that it undermines rather than supports learning (Durmus, 2025).

Academic integrity represents a third major challenge, and one that has already generated considerable controversy in Indian higher education (Ruskulis et al., 2026). The widespread availability of free AI writing tools has made it trivially easy for students to generate essays, solve numerical problems, and complete take-home assignments without any genuine learning (Alkaabi et al., 2025). Many Indian universities lack clear policies on what constitutes acceptable AI use, and even where policies exist, enforcement is inconsistent due to limited access to AI detection software and the high cost of manual verification (Kadwa, 2025). Some educators have responded by reverting to timed, in-person examinations, but this approach contradicts the pedagogical potential of AI as a learning tool and does little to prepare students for AI-augmented workplaces (Arise et al., 2024). A fourth challenge concerns the economic sustainability of AI adoption (Slimi, 2023). While some AI tools are freely available, meaningful integration requires investment in hardware, software licences, technical support, and ongoing faculty training (Ali, 2025).

Ethical Considerations Specific To The Indian Context

Data privacy is a paramount concern, as many AI systems require continuous collection of student data including academic performance, behavioural patterns, and even biometric information (Arise et al., 2024). India's Digital Personal Data Protection Act of 2023 provides a legal framework, but its implementation in educational settings remains unclear, and many institutions lack the technical expertise to ensure compliance (Slimi & Villarejo Carballido, 2023). Students from marginalized communities, already vulnerable to discrimination, may face additional risks if their data is mishandled or misused (Marín et al., 2025).

Algorithmic bias represents a second critical ethical issue, one with potentially devastating consequences in India's stratified society (Remian, 2019). AI models trained predominantly on data from elite, urban, English-medium institutions will inevitably perform poorly when applied to students from rural, vernacular-medium, or disadvantaged backgrounds (Holmes et al., 2023). Such models may systematically misclassify these students as low-ability or high-risk, leading to lowered expectations, reduced opportunities, and self-fulfilling prophecies of failure (Fernández Cando et al., 2026). Given India's history of caste-based discrimination and ongoing struggles for educational equity, the deployment of biased algorithmic systems is not merely a technical problem but a profound social justice issue (De Villiers-Botha, 2024).

A third ethical concern relates to the erosion of human relationships in the educational process (Dumbuya, 2025). Indian pedagogical traditions have long emphasized the guru-shishya parampara, a close, respectful, and often lifelong bond between teacher and student (Popenici & Kerr, 2019). Over-reliance on AI could undermine this relational foundation, reducing education to a transactional exchange between a student and a machine (Torres-Gordillo & Sanhueza, 2025). This is particularly concerning for first-generation learners and students from marginalized communities, for whom the teacher often serves as a mentor, advocate, and role model beyond mere academic instruction (Soko et al., 2025). Finally, issues of accountability and transparency cannot be ignored (Kazancı-Yabanova, 2025).

2.4 The Impact Of Artificial Intelligence On Future Employment

Researchers have employed various forecasting methodologies to estimate the extent to which automation and intelligent systems might displace human labour across different sectors and occupational categories (Ma & Siau, 2018, as cited in Slimi, 2023). One of the most frequently cited projections comes from the work of Frey and Osborne (2017), who calculated that approximately 47% of jobs in the United States economy are at high risk of computerization and AI-driven automation in the coming decades (Slimi, 2023). This figure has become a touchstone in the literature, frequently invoked to convey the scale of potential workforce disruption (Slimi, 2023). Extending this geographical scope, comparable estimates for Europe suggest an even more pronounced impact, with roughly 54% of positions potentially vulnerable to replacement by AI technologies (Slimi, 2023). These percentages, while staggering, are not merely abstract statistics; they translate into millions of individual livelihoods and raise urgent questions about the preparedness of higher education systems to equip students for a radically transformed labour market (Slimi, 2023).

Beyond aggregate employment figures, scholars have also attempted to forecast the timeline for AI mastery of specific cognitive tasks previously thought to be uniquely human (Slimi, 2023). For instance, some projections indicate that artificial intelligence systems may be capable of producing coherent, high-quality academic essays by the year 2026, a capability that would have profound implications for both educational assessment and the writing professions (Slimi, 2023). Looking further ahead, the same forecasts suggest that AI could be generating best-selling commercial books by 2049, effectively competing with human authors in the creative and commercial publishing industries (Slimi, 2023). Such timelines, while necessarily speculative, serve to illustrate that automation is not confined to routine manual labour but is steadily encroaching upon cognitive and creative domains once considered safe havens for human workers (Slimi, 2023).

Educational Implications

The study on AI in higher education provides insights that can help institutions decide whether and how to implement AI technologies, particularly in developing countries such as India, where clear guidelines are often lacking (Alkaabi et al., 2023; Azmat & Mahmood, 2024). By understanding both the opportunities and challenges associated with AI integration, educators can better recognize their roles and responsibilities in using these technologies effectively (Fuchs & Aguilos, 2023). This awareness may encourage them to participate in professional development programs aimed at improving their technological and pedagogical competencies (Ali, 2025). The findings can also inform the development of policies and institutional frameworks that promote responsible AI usage. Policymakers and university administrators can use these insights to design strategies that support innovation while addressing ethical risks (Slimi, 2023; Ruskulis et al., 2026). Furthermore, the study highlights the importance of providing adequate human and technological resources for successful AI implementation. By allocating appropriate resources and investing in infrastructure, institutions can enhance educational quality, accessibility, and equity (Azmat & Mahmood, 2024; Chelghoum et al., 2025). Promoting awareness of the ethical dimensions of AI is also essential. Encouraging responsible AI practices and fostering critical thinking among students and educators will help

ensure that AI technologies are used constructively within higher education (Fernández Cando et al., 2026; Alkabi et al., 2023).

Suggestions For Future Research

Several areas merit further empirical investigation. First, there is a need to study AI's impact on students from different socioeconomic and regional backgrounds within India. The paper rightly warns that AI could widen the digital divide, but concrete, ground-level research is required comparing how AI tools affect learning outcomes for students in elite metropolitan institutes versus those in rural government colleges with patchy internet and older devices. Without this comparative data, policies risk being designed for the privileged few.

Second, future research should explore what effective faculty training actually looks like in resource-constrained settings. Many Indian teachers feel anxious and unprepared to use AI, but there is little empirical work on what kind of training actually works when budgets are tight and faculty are already overburdened. Future studies could test different professional development models—peer mentoring, micro-credentials, or hands-on workshops—to see which ones genuinely build confidence and competence.

Third, researchers need to investigate algorithmic bias specifically against caste and rural backgrounds in Indian higher education. While Western studies have documented AI bias based on race or income, India has its own unique social stratifications. Researchers need to audit real AI systems deployed in Indian universities to check whether they systematically misclassify or penalize students from disadvantaged caste backgrounds or vernacular-medium schools, which is not merely a technical question but a justice issue.

Fourth, future studies should examine how AI affects the teacher-student relationship in Indian pedagogical traditions. The guru-shishya parampara is central to Indian education, but no empirical study has examined whether heavy AI use weakens or transforms this bond. Qualitative research—interviews and classroom observations—could explore whether students still turn to teachers for mentorship and moral guidance when they can get instant answers from a bot, and how teachers themselves navigate this shift.

Conclusion

This narrative review has examined the multifaceted landscape of artificial intelligence in higher education, systematically exploring the opportunities, challenges, and ethical considerations that accompany the integration of these rapidly evolving technologies (Slimi, 2023). The literature overwhelmingly confirms that AI offers significant potential for personalized learning, predictive analytics for student support, administrative efficiency, and enhanced accessibility for diverse learners, including those with disabilities and those from non-dominant linguistic backgrounds (Al-Azzam & Al-Oudat, 2025; Fuchs & Aguilos, 2023; Pierrès, Darvishy, & Christen, n.d.). However, these opportunities are counterbalanced by substantial challenges, including threats to academic integrity, the digital divide that privileges already-advantaged students, insufficient faculty preparedness, and the absence of coherent institutional policies governing AI use (Kadwa, 2025; Soko, Pete, & Mureithi, 2025; Alkaabi et al., 2025).

Most critically, the ethical dimensions of AI deployment—encompassing data privacy violations, algorithmic bias that may perpetuate existing social inequalities, erosion of human agency in teaching and learning, and opaque accountability structures—demand urgent and sustained attention from all stakeholders (Arise et al., 2024; Marín et al., 2025; Dumbuya, 2025). Ultimately, the integration of AI into higher education is not a technical question but a human one: it will succeed or fail based on whether institutions, educators, and policymakers place ethical principles and educational justice at the centre of their decisions (Remian, 2019; Dumbuya, 2025).

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