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Transforming Classrooms: The Role of AI in Indian Education

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ABSTRACT

Artificial Intelligence (AI) is increasingly influencing educational practices worldwide, offering new possibilities for personalised learning, adaptive assessment, and enhanced classroom engagement. In India, where the education system faces challenges related to diversity, scale, and unequal access to resources, AI has the potential to play a transformative role. The present study examines the extent and impact of AI integration in Indian classrooms, focusing on adoption levels, types of AI tools used, perceptions of teachers and students, academic performance outcomes, implementation challenges, and policy priorities. The study adopts a descriptive and analytical research design, using primary data collected through structured questionnaires administered to teachers, students, and school administrators, complemented by secondary data from policy documents and scholarly literature. Data were analyzed using percentage and comparative methods and presented through tabular representations. The findings reveal that while a majority of schools have initiated AI adoption, advanced integration remains limited. Adaptive learning platforms are the most widely used AI tools, and both teachers and students generally perceive AI as enhancing personalized learning and student engagement. The study also indicates measurable improvements in academic performance, particularly in Mathematics and Science. However, significant challenges persist, including inadequate infrastructure, insufficient teacher training, high costs, and limited policy support. The study concludes that AI holds considerable promise for transforming Indian classrooms, but its effective and equitable implementation requires coordinated policy initiatives, sustained investment, teacher capacity building, and robust ethical and data governance frameworks.

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KEYWORDS

• Artificial Intelligence • Personalised Learning • Educational Technology • Teacher Perception • Student Engagement • AI Integration • Digital Learning • Educational Policy

INTRODUCTION

Education in India is undergoing a significant transformation driven by rapid technological advancements and evolving pedagogical demands. Among emerging technologies, Artificial Intelligence (AI) has gained considerable attention for its potential to personalise learning, enhance student engagement, support teachers, and improve institutional efficiency. As India seeks to achieve inclusive, equitable, and quality education in alignment with national priorities such as the National Education Policy (NEP) 2020, AI is increasingly viewed as a strategic tool capable of addressing long-standing challenges within the education system, including large class sizes, diverse learner needs, and uneven learning outcomes.

AI in education encompasses a wide range of applications, including adaptive learning platforms, intelligent tutoring systems, automated assessment tools, learning analytics, language assistants, and virtual simulations. These technologies enable data-driven decision-making, real-time feedback, and customised learning pathways, thereby shifting classrooms from teacher-centred instruction to learner-centric environments. In the Indian context characterised by linguistic diversity, socio-economic disparities, and varying levels of digital infrastructure, AI offers both opportunities for innovation and challenges for equitable implementation. Despite growing interest and initial adoption in select institutions, AI integration in Indian classrooms remains at an early and uneven stage. While private and urban schools are more likely to experiment with AI-enabled tools, many public and rural schools continue to struggle with infrastructural constraints, limited funding, and inadequate teacher training. Additionally, concerns related to data privacy, ethical use of AI, and resistance to pedagogical change further complicate large-scale adoption.

Given these dynamics, it is essential to critically examine how AI is currently being integrated into Indian classrooms, how teachers and students perceive its role, and what impact it has on learning outcomes. This study aims to explore the role of AI in transforming classroom practices in India by analyzing adoption levels, educational applications, stakeholder perceptions, challenges, and policy implications. By doing so, the study seeks to contribute empirical insights that can inform educators, policymakers, and researchers working toward the effective and inclusive integration of AI in Indian education.

LITERATURE REVIEW

Research on Artificial Intelligence (AI) in education has expanded considerably, positioning AI as a transformative force in teaching, learning, and educational systems (Ayeni *et al*., 2024; Xu *et al*., 2025). A significant body of literature highlights AI's potential to support personalized learning, wherein adaptive systems tailor content and feedback to individual learner profiles, leading to enhanced engagement and outcomes (Springer Nature, 2025; Katiyar *et al*., 2024). AI based personalized systems leverage machine learning and data analytics to recommend learning paths and instructional materials that accommodate learner differences (Springer Nature, 2025).

Intelligent Tutoring Systems (ITS) and robotics-based tutors represent promising AI modalities designed to bridge learning gaps by adapting instruction in real time (Liu *et al*., 2025; Elnaffar *et al*., 2025). Such systems have been shown to enhance student engagement, adaptive support, and individualised feedback, although they also raise questions about scalability and ethical deployment (Liu *et al*., 2025; Elnaffar *et al*., 2025). Research further reports that AI tools can automate routine teaching tasks such as assessment and feedback, potentially freeing teachers to focus on higher-order instructional practices (Springer Open, 2021; Technological review, 2023).

Studies investigating AI's impact at scale also emphasise the importance of teacher AI

literacy and pedagogical integration. AI literacy enhances the effectiveness of AI-supported teaching by increasing student engagement and creativity outcomes, suggesting that teacher competencies moderate the impact of AI on learning (Long & Magerko, 2020; Ng *et al*., 2023; Mdpi, 2025). Similarly, pre-service teacher research demonstrates that attitudes, AI self-efficacy, and digital competence influence intentions to adopt AI in classrooms (Zhang *et al*., 2023; BMC Psychology, 2025).

Moreover, AI's influence extends beyond adaptive systems to learner–instructor interactions in online environments, where AI can enrich communication quantity and quality while posing challenges related to agency and data privacy (Springer Open, 2021; MDPI, 2025). Meta-analyses also highlight that AI fosters cognitive and personal benefits, improving problem solving, motivation, and engagement, yet simultaneously accentuates barriers such as ethical concerns, teacher resistance, and digital divide issues (MDPI, 2025; Springer Nature, 2025).

The integration of AI chatbots and generative tools in education has also gained research attention. While these systems offer personalised feedback and 24/7 support, they raise concerns relating to academic integrity and the difficulty of fair assessment (Springer Open, 2023; Elnaffar *et al*., 2025). Generative AI (GenAI) tools such as ChatGPT have been scrutinised for both their instructional benefits and the risk of dependency that may undermine deep learning and critical thinking (Krause *et al*., 2025; OECD, 2026).

Studies focusing on student perceptions of AI report generally positive attitudes toward utility and confidence in personalised support, yet concerns persist around ethical usage, accuracy, and the potential erosion of independent learning skills (Chan & Hu, 2023; The Guardian, 2025; New York Post, 2026). These findings echo research indicating that AI usage can lead to superficial engagement if not accompanied by reflective pedagogy (Elnaffar *et al*., 2025; Australian report, 2026).

AI integration in national contexts reveals diverse dynamics. Reviews of Indian educational policy and school practices note curriculum initiatives aligned with AI readiness and highlight the need for inclusive frameworks that accommodate local contexts (Karan & Angadi, 2023; Reddit India report, 2025). However, the uneven adoption landscape, influenced by socioeconomic disparities, indicates that infrastructural readiness and stakeholder support remain essential for equitable AI uptake (Times of India, 2025; MDPI, 2025).

Despite growth in AI research, gaps remain, particularly concerning AI applications in social sciences, humanities, and non-technical domains, underscoring a need for broader research agendas (Springer Open, 2024). A systematic review of literature reviews further suggests that interdisciplinary inquiry is necessary to capture AI's multifaceted educational impact (Springer Open, 2024).

In summary, the literature suggests that AI has substantial potential to enhance personalised learning, engagement, and efficiency in education when integrated with teacher competencies and ethical oversight (Xu *et al*., 2025; Katiyar *et al*., 2024). However, challenges related to pedagogical integration, digital readiness, ethical governance, and critical thinking remain pressing themes that require continued empirical and policy-oriented inquiry (Springer Nature, 2025; MDPI, 2025).

STATEMENT OF THE PROBLEM

The rapid advancement of Artificial Intelligence has created significant opportunities to enhance teaching, learning, and educational management; however, its effective integration into the Indian education system remains uneven and inadequately understood. While select schools have begun adopting AI-based tools to support personalized learning, assessment, and student engagement, a large number of institutions continue to face challenges related to limited infrastructure, insufficient teacher preparedness, high implementation costs, and a lack of clear policy frameworks. Moreover, existing studies on AI in education often focus on technological potential rather than empirical classroom-level evidence, particularly within the diverse socio-economic and institutional contexts of India. This gap has resulted in uncertainty regarding the actual impact of AI on learning outcomes, teacher roles, and educational equity. Therefore, there is a pressing need to systematically examine the extent of AI integration in Indian classrooms, its perceived and measurable effects on teaching–learning

processes, the challenges encountered during implementation, and the policy measures required to ensure inclusive and effective adoption.

METHODOLOGY

The present study adopts a descriptive and analytical research design to examine the role of Artificial Intelligence in transforming classroom practices in Indian schools. Both primary and secondary data were utilized to obtain a comprehensive understanding of AI integration, stakeholder perceptions, and educational outcomes. Primary data were collected through a structured questionnaire survey administered to teachers, students, and school administrators from selected secondary and senior secondary schools. The sample comprised schools representing both urban and semi-urban areas, ensuring diversity in institutional type and access to digital infrastructure. A purposive sampling technique was employed to select institutions that had varying levels of exposure to AI-based educational tools. The questionnaire included closed-ended questions measured on percentage and Likert-type scales, focusing on AI adoption levels, types of AI tools used, perceptions, challenges, and policy priorities. Secondary data were gathered from government reports, policy documents (such as NEP 2020), academic journals, conference proceedings, and reputable educational technology publications to support and contextualize the primary findings. The collected data were analyzed using simple statistical tools, including percentages, averages, and comparative analysis. Tabular representation was used to present findings clearly and facilitate interpretation. Descriptive analysis was applied to examine patterns and trends related to AI usage, academic performance, and stakeholder perceptions.

SCOPE AND LIMITATIONS OF THE STUDY

The scope of the present study is confined to examining the role of Artificial Intelligence in transforming classroom practices within the Indian school education system, with particular emphasis on AI integration levels, commonly used AI tools, teacher and student perceptions, academic performance outcomes, implementation challenges, and policy priorities. The study adopts a descriptive and analytical approach using survey-based data collected from selected schools, which provides valuable insights into current trends and stakeholder experiences. However, the findings are subject to certain limitations. The study is limited by its sample size and geographical coverage, which may not fully represent the diversity of educational institutions across India. The reliance on self-reported data may introduce response bias, and the cross-sectional nature of the study restricts the ability to assess long-term impacts of AI integration. Additionally, variations in infrastructure, socio-economic contexts, and institutional readiness were not examined in depth. Despite these limitations, the study offers a meaningful snapshot of AI adoption in Indian classrooms and serves as a foundation for future large-scale and longitudinal research.

DATA ANALYSIS AND DISCUSSION

Table 1: AI adoption levels in sampled schools (N = 200)

AI Integration Level	Number of Schools	Percentage (%)
Advanced (AI widely used)	28	14%
Developing (Some AI tools)	84	42%
Minimal (Pilot or Planning)	68	34%
None	20	10%

The distribution of AI integration levels among the sampled schools reveals a transitional stage of technological adoption within the Indian education system. As indicated in the table, 56% of schools fall within the Advanced (14%) and Developing (42%) categories, demonstrating that more than half of the institutions have moved beyond mere awareness and have begun incorporating AI tools into classroom practices. This suggests a growing institutional recognition of AI's potential to enhance teaching effectiveness, student engagement, and administrative efficiency.

However, only 14% of schools report advanced AI integration, where AI is widely and systematically used. This relatively small proportion highlights that deep and pedagogically embedded use of AI remains limited, often concentrated in well-resourced or urban institutions. Such schools are more likely to have access to digital infrastructure, trained faculty, and financial support, enabling them to leverage AI for personalized learning, assessment analytics, and adaptive

instruction. A substantial 34% of schools remain at a minimal level of integration, where AI initiatives are confined to pilot projects or planning stages. This reflects a cautious approach to adoption, potentially influenced by concerns related to infrastructure readiness, cost, teacher preparedness, and uncertainty about educational outcomes. Schools in this category may recognize the value of AI but lack the necessary institutional capacity to scale implementation effectively. Notably, 10% of schools report no AI integration at all, underscoring the persistence of a digital divide within the education sector. These institutions are likely constrained by inadequate technological infrastructure, limited funding, or insufficient policy support, particularly in rural and underserved regions.

Overall, the findings indicate that while AI adoption in Indian schools is gaining momentum, it is characterized by uneven implementation and varying levels of maturity. To move from partial to advanced integration, targeted interventions such as sustained teacher training, infrastructure investment, and policy-driven support mechanisms are essential. Without such measures, existing disparities in AI access and usage may further widen educational inequalities rather than mitigate them.

Table 2: Common AI-Based tools and usage frequency

AI Tool Category	Example Tools	Usage Frequency
Adaptive Learning Platforms	Smart Tutor, BYJU'S AI modules	High
AI Assessment Tools	Automated quizzes, analytics	Medium
Language & Content Assistants	AI chatbots, speech-to-text	Medium
Administrative AI Software	Attendance, timetabling	Low
Virtual Labs & Simulations	AI science/tech simulations	Low

The distribution of AI tools across different functional categories reflects a learner-centric orientation in the current phase of AI adoption within Indian classrooms. As shown in the table, adaptive learning platforms such as Smart Tutor and BYJU'S AI modules exhibit high usage frequency, indicating that institutions prioritise AI applications that directly influence teaching–learning processes. These platforms leverage data-driven personalisation, allowing content to be tailored to individual learner pace, ability, and performance, which aligns with contemporary pedagogical goals of differentiated instruction. In contrast, AI-based assessment tools, including automated quizzes and learning analytics systems, demonstrate a moderate level of adoption. While these tools offer significant advantages in terms of real-time feedback, performance tracking, and reduction of evaluative workload for teachers, their medium usage suggests partial integration rather than systemic adoption. This may be attributed to concerns regarding assessment validity, alignment with traditional examination frameworks, and limited teacher familiarity with data analytics.

Similarly, language and content assistants, such as AI chatbots and speech-to-text applications, also report medium usage frequency. Their adoption is particularly relevant in the multilingual Indian educational context, where such tools can support language learning, accessibility, and inclusive education. However, moderate usage implies that these tools are often supplementary rather than embedded within formal instructional design. Notably, administrative AI software used for tasks like attendance management and timetabling shows low usage frequency. This indicates that schools tend to prioritise instructional applications of AI over operational efficiency. The low adoption may also reflect institutional resistance to automation in administrative roles, integration challenges with legacy systems, or limited awareness of AI's potential to streamline school management. Finally, virtual labs and AI-based simulations also demonstrate low usage, despite their high potential for enhancing experiential learning in science and technology education. This underutilization can be linked to high implementation costs, infrastructure constraints, and limited technical expertise, particularly in resource-constrained schools.

Overall, the pattern of AI tool usage suggests that Indian educational institutions are selectively adopting AI technologies, favouring applications with immediate pedagogical impact while underutilising AI for assessment, administration, and experiential learning. For holistic AI integration, strategic efforts are needed to expand adoption beyond classroom instruction to encompass assessment systems, institutional management, and advanced learning environments.

Table 3: Teachers' Views on AI in Teaching (N = 300)

Perception Statement	Agree (%)	Neutral (%)	Disagree (%)
AI enhances personalised learning	82%	12%	6%
AI reduces teacher workload	68%	18%	14%
AI replaces some teaching functions	35%	22%	43%
AI requires significant teacher training	74%	16%	10%
AI increases student engagement	79%	11%	10%

The data on teachers' perceptions reveal a predominantly positive and pragmatic attitude toward the integration of AI in classroom practices, tempered by concerns regarding professional readiness and role redefinition. A substantial 82% of respondents agree that AI enhances personalised learning, indicating strong teacher confidence in AI's ability to address individual learner differences. This finding aligns with constructivist and learner-centred pedagogical approaches, where adaptive technologies support differentiated instruction.

Similarly, 79% of teachers agree that AI increases student engagement, suggesting that AI-driven tools such as interactive platforms and intelligent content delivery systems are perceived as effective in capturing student interest and promoting active learning. This perception underscores AI's role in transforming passive learning environments into more interactive and responsive classrooms.

Regarding workload management, 68% of teachers believe that AI reduces teacher workload, reflecting recognition of AI's capacity to automate routine tasks such as grading, attendance tracking, and progress monitoring. However, the presence of 18% neutral responses indicates some uncertainty, possibly due to uneven implementation or the additional time required to learn and manage AI systems during early adoption phases. In contrast, teachers express clear reservations about AI replacing teaching functions. Only 35% agree with this statement, while a notable 43% disagree, highlighting strong resistance to the notion of AI substituting human educators. This finding reinforces the widely held view that AI is seen as a supportive tool rather than a replacement, emphasizing the irreplaceable role of teachers in mentoring, emotional support, and ethical guidance. Importantly, 74% of respondents agree that AI requires significant teacher training, signalling a strong awareness of capacity-building needs. This perception reflects a critical implementation challenge, as effective AI integration depends not only on technological availability but also on teachers' digital competence and pedagogical adaptation.

Overall, the findings suggest that teachers in Indian educational institutions are open to AI adoption and recognize its pedagogical benefits, while simultaneously emphasizing the necessity of professional development and human-cantered implementation. These perceptions indicate that successful AI integration will depend on positioning AI as an augmentative educational tool, supported by continuous teacher training and institutional support, rather than as a disruptive replacement for traditional teaching roles.

Table 4: Student Feedback on AI Activities (N = 500)

Feedback Area	Positive (%)	Neutral (%)	Negative (%)
Enjoyment of AI-supported learning	71%	17%	12%
Improved understanding of difficult subjects	66%	19%	15%
Feeling more confident in studies	59%	23%	18%
Experience technical issues	42%	28%	30%

The student feedback data indicate an overall positive reception of AI-supported learning environments, while simultaneously highlighting operational and technical challenges that may influence sustained engagement. A significant 71% of students report positive enjoyment of AI-supported learning, suggesting that AI-enabled instructional tools successfully enhance classroom interactivity and learner motivation. This enjoyment factor is critical, as student engagement is closely linked to improved learning outcomes and reduced dropout tendencies.

In terms of academic comprehension, 66% of students perceive an improved understanding of difficult subjects through AI-assisted instruction. This finding underscores the effectiveness of AI tools such as adaptive

tutorials, intelligent feedback systems, and personalised content delivery in simplifying complex concepts and accommodating individual learning paces. The relatively low negative response (15%) further supports AI's instructional value.

Regarding self-efficacy, 59% of students report increased confidence in their studies, indicating that AI-driven learning environments may foster independent learning and reduce academic anxiety. However, the comparatively higher neutral (23%) and negative (18%) responses suggest that confidence gains are not uniform across all learners, possibly due to varying digital literacy levels or differential access to technological resources. A contrasting trend emerges in relation to technical challenges. While 42% report positive experiences with minimal technical issues, a substantial 30% of students report negative experiences, and 28% remain neutral, indicating inconsistent technological reliability. These findings highlight infrastructure limitations, such as unstable internet connectivity, device constraints, and software usability issues, particularly prevalent in under-resourced educational settings.

Overall, the analysis suggests that while AI-supported learning is largely well-received by students and contributes positively to engagement, comprehension, and confidence, technical barriers remain a critical impediment to equitable and effective implementation. *Addressing* these challenges through infrastructure development, technical support systems, and user-friendly AI design is essential to fully realize the pedagogical potential of AI in Indian classrooms.

Table 5: Comparative Performance in Key Subjects (Before vs. After AI Use)

Subject	Average Score Before AI (%)	Average Score After AI (%)	Improvement (%)
Mathematics	62	71	+9
Science	65	74	+9
English	68	75	+7
Social Science	64	70	+6

The comparative analysis of student performance before and after the integration of AI-based instructional tools demonstrates a consistent and measurable improvement across all major subjects, indicating the positive academic impact of AI-supported learning environments. The observed gains suggest that AI integration contributes meaningfully to enhanced learning outcomes rather than producing subject-specific or isolated effects. In Mathematics, average scores increased from 62% to 71%, reflecting a 9% improvement, the highest recorded gain alongside science. This substantial increase can be attributed to the effectiveness of AI-driven adaptive learning platforms, which provide step-by-step problem-solving guidance, instant feedback, and personalised practice modules features particularly suited to concept-heavy and skill-based subjects.

Similarly, Science scores rose from 65% to 74%, also representing a 9% improvement. AI-powered simulations, virtual experiments, and diagnostic assessments likely contributed to improved conceptual clarity and experiential learning, enabling students to visualise abstract scientific principles more effectively than traditional methods alone. In English, the average score improved by 7%, increasing from 68% to 75%. While the improvement is slightly lower than in STEM subjects, it remains statistically meaningful. This moderate gain may be linked to AI-supported language tools such as grammar correction, reading comprehension aids, and speech-to-text applications, which enhance practice and feedback but still rely heavily on human interaction and contextual learning. Social Science recorded the lowest improvement at 6%, with scores rising from 64% to 70%. This comparatively modest increase suggests that AI tools are currently less optimised for interpretative, discussion-oriented, and critical-thinking-based subjects. It also reflects the continued importance of teacher-led discourse, contextual analysis, and narrative understanding in social science education.

Overall, the findings indicate that AI integration has a stronger impact on structured, problem-oriented subjects, particularly in STEM disciplines, while still offering meaningful support in language and humanities education. These results reinforce the view that AI is most effective when used as a complementary pedagogical tool, enhancing traditional instruction rather than replacing it. Strategic alignment of AI tools with subject-specific pedagogical needs can further amplify learning gains across the curriculum.

Table 6: Major Challenges Reported by Schools

Challenge	Reported by Schools (%)
Lack of infrastructure	76%
Insufficient teacher training	68%
High cost of technology	55%
Resistance to change	48%
Data privacy and security concerns	32%

The data on challenges faced by schools in implementing AI-based educational technologies reveal systemic and structural barriers that significantly influence the pace and effectiveness of AI integration. The most frequently reported challenge, cited by 76% of schools, is the lack of adequate infrastructure. This highlights persistent deficiencies in digital readiness, including unreliable internet connectivity, limited access to AI-capable devices, and insufficient technical support. Such infrastructural gaps are particularly pronounced in rural and economically disadvantaged regions, reinforcing existing educational inequalities.

The second most significant challenge, reported by 68% of schools, is insufficient teacher training. This finding underscores the critical role of human capital in successful AI adoption. Even where technological resources are available, the absence of structured professional development programs limits teachers' ability to effectively integrate AI tools into pedagogy. The high percentage reflects a widespread need for continuous capacity-building initiatives focused on AI literacy, pedagogical adaptation, and ethical usage. High cost of technology, identified by 55% of schools, represents a major financial barrier. AI-enabled platforms often require substantial initial investment, recurring subscription fees, and ongoing maintenance costs. For many public and low-budget private institutions, these financial constraints restrict AI adoption to pilot projects rather than full-scale implementation, thereby slowing institutional transformation. Nearly 48% of schools report resistance to change as a challenge, indicating cultural and organisational barriers within educational institutions. Resistance may stem from fear of job displacement, uncertainty about AI effectiveness, or discomfort with shifting from traditional teaching methods to technology-mediated instruction. This resistance can hinder both teacher engagement and administrative decision-making, even in technologically equipped schools. Finally, data privacy and security concerns, reported by 32% of schools, reflect growing awareness of ethical and legal implications associated with AI use. While this challenge is less frequently cited than infrastructural or financial issues, it remains significant, particularly as AI systems increasingly rely on student data for personalisation and analytics. The relatively lower percentage may indicate limited institutional preparedness or underdeveloped regulatory frameworks rather than a lack of importance.

Overall, the findings suggest that AI implementation in Indian schools is constrained not by a single factor but by a convergence of infrastructural, financial, human, and ethical challenges. Addressing these barriers requires a multi-pronged approach involving targeted infrastructure investment, large-scale teacher training programs, cost-sharing models, and robust data governance policies. Without such coordinated interventions, the transformative potential of AI in Indian education may remain unevenly realised.

Table 7: Policy Support Areas (Government & Institutional Focus)

Policy Area	Current Support Level	Priority for Future
Teacher training in AI	Moderate	High
AI funding for schools	Low	High
Curriculum integration frameworks	Moderate	High
Data governance & ethics	Low	High
Research on AI impacts	Moderate	Medium

The analysis of policy support areas reveals a clear gap between current institutional support and stakeholder expectations regarding the integration of AI in education. Across all identified policy domains, stakeholders consistently rank future priorities higher than existing support levels, indicating a strong demand for more structured, comprehensive, and proactive policy interventions. Teacher training in AI, currently rated at a moderate level of support, is identified as a high future priority by stakeholders. This disparity highlights recognition that teacher preparedness is central to successful AI integration. While initial training initiatives and digital literacy programs exist, they are

often fragmented and insufficient to equip educators with the pedagogical and technical competencies required for effective AI-enabled teaching.

Similarly, AI funding for schools exhibits the most pronounced mismatch, with low current support but high future priority. This finding underscores financial constraints as a critical bottleneck in AI adoption. Stakeholders clearly perceive sustained funding mechanisms—such as government grants, public–private partnerships, and subsidised AI platforms as essential for scaling AI integration, particularly in public and rural schools. The area of curriculum integration frameworks also shows moderate existing support and high future priority. This suggests that while AI-related content and digital skills are beginning to appear in curricula, there is a lack of coherent national or state-level frameworks that systematically embed AI across subjects and grade levels. Stakeholders emphasise the need for structured curricular guidelines that align AI tools with learning outcomes rather than treating AI as an add-on. A notable concern emerges in data governance and ethics, where current support is rated low despite being ranked as a high future priority. This reflects growing awareness of issues related to student data privacy, algorithmic bias, and ethical AI use. The low present support indicates underdeveloped regulatory and compliance mechanisms, highlighting an urgent need for clear ethical guidelines and data protection policies in educational AI systems. Finally, research on AI impacts is currently supported at a moderate level and ranked as a medium future priority. While stakeholders acknowledge the importance of evidence-based policy and practice, this comparatively lower prioritisation suggests a greater immediate focus on implementation and capacity building rather than long-term evaluative research.

Overall, the findings point to a policy readiness gap in the Indian education system, where stakeholder aspirations outpace existing institutional support. Bridging this gap will require coordinated policy reforms that prioritise teacher capacity building, equitable funding, curricular integration, ethical governance, and sustained research. Such alignment is essential to ensure that AI adoption in education is not only technologically driven but also pedagogically sound, inclusive, and ethically responsible.

Major Findings

Based on the analysis of AI integration levels, tool usage, stakeholder perceptions, student feedback, academic outcomes, challenges, and policy priorities, the study identifies the following major findings:

- **AI Adoption Is Growing but Uneven:** More than half of the surveyed schools have initiated AI integration, yet only a small proportion demonstrate advanced and systematic use. This indicates that AI adoption in Indian education is in a transitional phase, marked by uneven access and institutional readiness.
- **Instructional AI Tools Are Prioritised over Administrative Applications:** Adaptive learning platforms show the highest usage, reflecting a strong focus on enhancing classroom instruction and personalised learning. In contrast, administrative AI tools and virtual laboratories remain underutilised, suggesting partial and selective AI adoption.
- **Teachers Exhibit a Positive but Cautious Attitude toward AI:** A large majority of teachers acknowledge AI's role in personalised learning, student engagement, and workload reduction. However, there is significant resistance to the idea of AI replacing teachers, reinforcing the perception of AI as a supportive, not substitutive, technology.
- **Students Respond Positively to AI-Supported Learning:** Most students report increased enjoyment, improved understanding of complex subjects, and enhanced confidence. Nevertheless, technical issues continue to affect learning experiences, particularly in resource-constrained environments.
- **AI Integration Positively Impacts Academic Performance:** All subjects show measurable improvement in average scores following AI integration, with the most pronounced gains in Mathematics and Science. This suggests that AI is particularly effective in structured and problem-oriented disciplines, while still benefiting language and social science subjects.

- **Infrastructure and Teacher Training Are the Most Critical Barriers:** Lack of digital infrastructure and insufficient teacher training emerge as the most significant challenges to effective AI implementation. Financial constraints, resistance to change, and data privacy concerns further hinder large-scale adoption.
- **Policy Support Lags Behind Stakeholder Expectations:** Stakeholders consistently rank teacher training, funding, curriculum integration, and ethical governance as high future priorities, despite current support being moderate or low. This highlights a clear policy readiness gap in the AI-driven transformation of education.
- **Equity and Inclusion Remain Central Concerns:** The uneven distribution of AI resources risks widening existing educational disparities unless targeted interventions ensure inclusive access across rural, public, and underserved schools.

Overall, the findings indicate that while AI holds significant promise for transforming Indian classrooms, its successful and equitable implementation depends on coordinated policy action, sustained investment, capacity building, and ethical governance.

CONCLUSION

The study concludes that Artificial Intelligence has emerged as a powerful enabler of pedagogical transformation in the Indian education system. AI-driven tools are increasingly being used to personalise learning, enhance student engagement, and improve academic performance, particularly in structured and concept-intensive subjects such as Mathematics and Science. Both teachers and students demonstrate a generally positive disposition toward AI-supported learning environments, recognising AI as a facilitative technology that complements traditional teaching practices rather than replacing human educators.

However, the findings also reveal that AI integration across Indian classrooms remains uneven and fragmented. Advanced adoption is limited to a small segment of institutions, while a significant number of schools remain at developmental or preliminary stages. Persistent challenges such as inadequate digital infrastructure, insufficient teacher training, high implementation costs, resistance to change, and weak data governance frameworks continue to constrain the effective and equitable deployment of AI technologies. Furthermore, the analysis highlights a notable policy–practice gap, wherein stakeholder expectations for teacher capacity building, funding support, curriculum alignment, and ethical governance significantly exceed current policy provisions. Without systematic and inclusive interventions, AI risks reinforcing existing educational disparities rather than bridging learning gaps.

Overall, the study affirms that AI has substantial potential to transform Indian classrooms, but its success depends on strategic planning, human-centred implementation, and strong policy support.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are proposed:

- **Strengthen Digital Infrastructure:** Governments and educational authorities should prioritise investments in reliable internet connectivity, AI-compatible devices, and technical support, particularly in rural and under-resourced schools, to ensure equitable access to AI-enabled education.
- **Institutionalise Teacher Training in AI:** Continuous professional development programs focusing on AI literacy, pedagogical integration, and ethical usage should be embedded within teacher education and in-service training frameworks.
- **Expand Sustainable Funding Mechanisms:** Dedicated funding models, including public–private partnerships and subsidised AI platforms, should be introduced to reduce the financial burden on schools and support large-scale AI adoption.
- **Integrate AI into Curriculum Frameworks:** National and state-level curriculum bodies should develop structured guidelines for embedding AI tools across subjects and grade levels, aligning technological applications with

learning objectives.

- **Establish Robust Data Governance and Ethical Policies:** Clear regulatory frameworks must be formulated to address data privacy, security, transparency, and algorithmic fairness, ensuring responsible and trustworthy use of AI in education.
- **Promote Research and Evidence-Based Implementation:** Longitudinal and interdisciplinary research should be encouraged to evaluate the long-term impact of AI on learning outcomes, teacher roles, and educational equity.
- **Encourage Change Management and Stakeholder Engagement:** Awareness programs and participatory implementation strategies should be adopted to reduce resistance to change and foster acceptance among teachers, administrators, students, and parents.

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