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In the Era of Artificial Intelligence, the Role of Teachers in Transformation of Higher Education in Jharkhand

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ABSTRACT

Artificial Intelligence (AI) is emerging as a major force transforming higher education by influencing teaching, learning, assessment, research, academic administration, and student support. In Jharkhand, the transformation assumes particular importance because the state continues to work towards expanding access, improving the quality of higher education, strengthening digital infrastructure, and narrowing the gap between the state's higher-education participation and the national level. The Government of Jharkhand reports a Gross Enrolment Ratio (GER) of 19.4% for the state against a national average of 27.3 in AISHE 2023–24, highlighting the need for innovative approaches to improve participation and educational quality. This article examines the changing role of teachers in Jharkhand's higher education system in the era of AI. It argues that AI should not be viewed merely as a substitute for teachers but as a tool that can enhance their effectiveness. Teachers are increasingly required to function as facilitators, mentors, learning designers, researchers, evaluators, digital educators, and ethical guides. The article also discusses opportunities and challenges associated with AI adoption, including digital inequality, faculty preparedness, academic integrity, data privacy, language diversity, and the need for human-centred education. The article concludes that successful AI transformation in Jharkhand will depend on combining technological innovation with teacher capacity building, equitable digital access, contextualised pedagogy, and strong ethical safeguards.

KEYWORDS: *Artificial Intelligence, Higher Education, Jharkhand, Teachers, Digital Education, AI Literacy, NEP 2020, Higher Education Transformation, Pedagogy, Academic Integrity.*

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1. INTRODUCTION

Artificial Intelligence has rapidly moved from being a specialised technological concept to becoming an important component of contemporary education. AI-enabled systems can support content creation, personalised learning, automated feedback, learning analytics, translation, research assistance, assessment design, and administrative decision-making. As these technologies become more accessible, higher education institutions are increasingly required to reconsider traditional models of teaching and learning.

The transformation is particularly relevant for India following the **National Education Policy (NEP) 2020**, which emphasises technology-enabled education, digital infrastructure, teacher training, multidisciplinary learning, and preparation for emerging technologies. NEP 2020 specifically recognises AI and other disruptive technologies as areas requiring higher-education institutions to develop courses, research capabilities, and appropriate training. It also emphasises the need to train teachers in online pedagogy and learner-centred approaches.

For Jharkhand, this transformation presents both an opportunity and a challenge. The state's Higher and Technical Education Department identifies the need to improve higher-education participation, with the reported GER of 17.0 remaining below the national average of 27.3. At the same time, the state has been developing digital systems for universities and

colleges, including Learning Management Systems, e-Samarth ERP, academic-credit and digital-governance initiatives.

In this environment, teachers occupy a central position. Technology may change **how education is delivered**, but teachers continue to influence **what students learn, how they think, how they evaluate information, and how they apply knowledge to real-life situations**.

2. Background of Higher Education in Jharkhand

Jharkhand has a distinctive educational context characterised by geographical diversity, tribal and rural populations, socioeconomic disparities, linguistic diversity, and differences in digital access.

The state government's Higher and Technical Education Department reports that the state's GER was **17.0 in AISHE 2021–22**, compared with **27.3 nationally**. This indicates the importance of policies that can improve both access and retention in higher education.

Digital transformation can potentially help address some of these challenges by enabling:

- Flexible learning opportunities
- Online and blended courses
- Digital learning resources
- Remote academic support
- Personalised learning
- Access to expert content
- Virtual laboratories
- Digital academic administration

However, technology alone cannot solve educational inequalities. NEP 2020 itself recognises that digital education must address the **digital divide**, and it emphasises equitable access to technology and appropriate teacher training.

3. Objectives of the Study

The major objectives of this article are:

1) To analyse the impact of Artificial Intelligence on higher education in Jharkhand.
2) To analyse the role of teachers in an era of AI-based educational environment.
3) To identify opportunities for AI-based teaching and learning in Jharkhand.
4) To examine the major challenges associated with AI adoption in higher education.

4. Research Methodology-

The present study adopts a qualitative and exploratory research approach to examine the changing role of teachers in the transformation of higher education in Jharkhand in the era of Artificial Intelligence (AI).

The study is primarily based on interviews with teachers and academic professionals associated with higher education in Jharkhand. The interviews focus on teachers' experiences, perceptions and views regarding the use of AI in teaching, learning, assessment, research and academic activities.

In addition, secondary sources such as research papers, books, government reports, UGC documents, NEP 2020, UNESCO publications and relevant policy documents are used to provide conceptual and contextual support.

- **Study Area:** Higher-education institutions in Jharkhand.
- **Population:** Teachers and faculty members of universities and colleges of higher education in Jharkhand.
- **Data Sources:** Both **primary and secondary data** will be used.
- **Primary Data:** for this research, researcher used interview method directly from higher educations teachers in Jharkhand universities and colleges.
- **Secondary Data:** Collected from NEP 2020, UGC reports, government publications, UNESCO reports, research papers and journals.
- **Qualitative Analysis:** Open-ended responses may be analysed through **thematic analysis**.
- **Ethical Consideration:** Participation will be voluntary, with confidentiality and informed consent maintained.

5. Literature Review

(Mota et al., 2026)examined the evolving role of higher education teachers in the age of Artificial Intelligence through a scoping review of 13 peer-reviewed studies. The review identified five major themes: **teachers' perceptions of AI, the impacts and challenges of AI integration, anxiety and psychological factors, institutional responses and policies, and broader conceptualizations of AI in higher education**. The findings indicate that AI can improve learning efficiency, support research, and reduce routine workload; however, concerns related to academic integrity, increased workload, job displacement, reliability, and technology-related anxiety remain significant.

(R. Kumar & Kumari, 2026) investigated school teachers' readiness and challenges in integrating the Indian Knowledge System through AI in Jharkhand. The study revealed moderate overall readiness, with teachers showing favourable attitudes but comparatively limited technological and pedagogical preparedness. Training deficiencies and inadequate digital infrastructure were identified as the major barriers, with rural teachers facing significantly greater challenges than their urban counterparts. The study emphasized the need for structured AI training, improved digital infrastructure, and context-specific content to facilitate effective AI integration in education.

(Ceallaigh & Murphy, 2026) conducted a systematic review of 17 studies to examine the Technological Pedagogical Knowledge (TPK) required by teacher educators for integrating Generative Artificial Intelligence into teacher education. The study found that GenAI-related teacher competence extends beyond technological skills to include pedagogical reasoning, critical AI literacy, ethical decision-making, and the ability to design AI-supported instruction. The review identified major concerns related to bias, privacy, transparency, accountability, authorship, and students' over-reliance on AI.

(Satish Dhokare, 2024) The study highlighted that AI has the potential to enhance **personalized learning, adaptive assessment, institutional governance, student support, and research productivity**. It further emphasized that AI can contribute to the NEP 2020 objectives of access, equity, quality, affordability, and accountability. However, the study identified several challenges, including **digital infrastructure gaps, limited faculty AI literacy, data privacy, algorithmic bias, cultural and linguistic concerns, and inadequate institutional governance frameworks**.

(Chiu et al., 2023) The study examined the applications of AI across four major educational domains: **learning, teaching, assessment, and administration**. The findings showed that AI can support personalized learning, adaptive teaching, automated assessment, prediction of student performance, administrative efficiency, and evidence-based educational decision-making.

(A. Kumar et al., 2025)forecasted the computer literacy rate of Jharkhand up to 2030 using a machine-learning-based ARIMA model and district-level historical data. The study projected an overall improvement in digital literacy but identified considerable regional variations across Jharkhand. While districts such as Bokaro, Jamtara, Ranchi and Ramgarh demonstrated comparatively higher growth potential, districts including Pakur, Latehar and West Singhbhum required greater policy attention. The authors highlighted **digital infrastructure, awareness programmes and digital-skills development** as important measures for reducing regional disparities in computer literacy.

(Gupta 2019) conducted a comparative analysis of the future prospects of modern education in Jharkhand and other Indian regions. The study revealed that although Jharkhand is making efforts toward modernization through technology adoption, curriculum development, and teacher training, significant challenges remain in terms of **educational infrastructure, digital connectivity, resource availability, and regional disparities**.

(Bihari, 2026) investigated the acceptance and adaptation of e-learning in Bokaro district of Jharkhand. The study revealed a gradual increase in the willingness of teachers and students to adopt digital learning, mainly due to its flexibility, accessibility, and availability of diverse learning resources. However, the study identified **poor internet connectivity, inadequate digital devices, limited digital literacy, insufficient technical skills, and lack of training and institutional support** as major barriers.

(Goswami & Sharma, 2024) explored the role of Artificial Intelligence in addressing socio-economic inequities in Indian education. The study identified disparities in educational infrastructure, teacher technological competence, income, gender, caste, and regional access as major barriers to equitable education. The authors proposed that AI-based personalized learning, adaptive assessment, intelligent tutoring, automated grading, and remote education can help address individual learning needs and improve educational inclusion.

6. Role of Teachers in Transformation of Higher Education in Jharkhand

Teachers in Jharkhand's higher education system can act as facilitators, mentors, technology integrators, innovators, researchers, ethical guides, and agents of change, making them central to the effective and human-centred transformation of higher education through AI.

- **Facilitators of Learning:** Teachers are shifting from traditional knowledge providers to facilitators who guide students in using digital and AI-enabled learning resources.
- **Technology Integrators:** Teachers play an important role in integrating AI, e-learning platforms, digital classrooms, and other technologies into teaching-learning practices.

- **Promoters of Critical Thinking:** Teachers help students critically evaluate AI-generated information and distinguish reliable knowledge from inaccurate or misleading content.
- **Developers of Digital and AI Literacy:** Teachers need to develop their own AI literacy and help students understand the responsible and effective use of AI tools.
- **Ethical Guides:** Teachers can guide students regarding academic integrity, plagiarism, privacy, responsible AI use, bias, and ethical issues associated with AI.
- **Researchers and Knowledge Creators:** AI can support literature searches, data analysis, research writing, and other academic activities, enabling teachers to strengthen research and innovation.
- **Bridging the Digital Divide:** In Jharkhand, teachers can help address differences in digital access and technological preparedness, particularly between rural and urban educational environments.
- **Supporting Inclusive Education:** Teachers can use digital and AI tools to improve access to educational resources for students from geographically and socio-economically disadvantaged backgrounds.
- **Connecting Local Context with Technology:** In Jharkhand, teachers can help ensure that technology-based education remains relevant to local social, cultural, linguistic, and educational contexts.
- **Human–AI Collaboration:** The emerging role of teachers is therefore not to compete with AI but to **work alongside AI**, combining technological capabilities with human judgement, creativity, empathy, and ethical responsibility.

7. Importance of AI in Higher Education in Jharkhand

- **Personalized Learning**
  - ✓ AI can help identify individual students' learning needs, strengths and weaknesses.
  - ✓ Adaptive learning systems can provide differentiated learning materials and feedback.
  - ✓ This can be particularly useful for students with diverse educational backgrounds.
- **Improvement in Teaching Quality**
  - ✓ AI can assist teachers in preparing lesson plans, learning materials, quizzes and assessments.
  - ✓ Teachers can spend more time on mentoring, discussion and higher-order learning rather than routine tasks.
  - ✓ Jharkhand's existing digital higher-education infrastructure provides a foundation on which AI-enabled teaching can be developed.
- **Bridging Regional and Socio-Economic Gaps**
  - ✓ AI-supported digital learning can potentially extend quality learning resources beyond better-resourced urban institutions.
  - ✓ This is important because higher education in Jharkhand continues to face disparities related to geography, infrastructure and access.
- **Support for Students in Remote Areas**
  - ✓ AI-powered tutoring, virtual assistance and digital resources can provide additional academic support where access to specialized teachers or resources is limited.
  - ✓ Jharkhand State Open University already emphasizes technology-enabled distance and continuing education to expand access across the state.
- **Development of Future-Ready Skills**
  - ✓ AI can help students develop competencies in AI literacy, data analysis, computational thinking, problem-solving and digital technologies.
  - ✓ These skills are increasingly important for employability and entrepreneurship.
  - ✓ NEP 2020 explicitly recognizes AI and emerging technologies as important areas for future education and skills development.
- **Enhancement of Research**
  - ✓ AI can support literature analysis, data processing, coding, research design, language assistance and knowledge discovery.
  - ✓ This can strengthen research productivity in universities and colleges.
- **Improved Assessment and Feedback**
  - ✓ AI can assist with formative assessment, automated feedback and identification of learning gaps.
  - ✓ Teachers can use these insights to provide more targeted academic support.
- **Administrative Efficiency**
  - ✓ AI can support student services, admissions, academic records, predictive analytics and institutional decision-making.
  - ✓ Jharkhand already has a centralized Chancellor Portal for admissions, registration, academic

services and reporting, demonstrating the state's movement toward digitally enabled higher-education administration.

8. Future Scope of the Research

1) **AI Readiness of Higher Education Teachers** Future studies can assess the level of AI literacy, technological competency, and preparedness of teachers across universities and colleges in Jharkhand.

2) **Comparative Studies** Research can compare AI adoption among **urban and rural institutions, government and private institutions, and different universities/colleges** in Jharkhand.

3) **Impact of AI on Teachers' Roles** Future research can examine how AI is changing teachers' responsibilities in **teaching, assessment, mentoring, research, curriculum development, and academic administration**.

4) **Teacher Training and Professional Development** Further studies can investigate the effectiveness of AI-related training programmes and identify the competencies teachers need for successful AI integration.

5) **AI and Student Learning Outcomes** Researchers can examine whether AI-supported teaching improves students' **academic performance, engagement, critical thinking, creativity, and employability**.

6) **AI and the Digital Divide** Future research can explore whether differences in **internet connectivity, digital infrastructure, devices, and institutional resources** are creating unequal opportunities for AI-based education in Jharkhand.

Conclusion

Artificial Intelligence is emerging as an important force in the transformation of higher education, and its significance is particularly relevant to Jharkhand, where institutions are simultaneously addressing issues of digital infrastructure, access, teacher preparedness, and regional disparities. The review of existing literature indicates that AI can support **personalized learning, teaching and assessment, research, academic administration, digital literacy, and student support**. At the same time, concerns relating to academic integrity, data privacy, reliability of AI-generated information, ethical use, digital inequality, and inadequate technological preparedness cannot be overlooked.

In the context of Jharkhand, the effective use of AI requires greater attention to **digital infrastructure, reliable connectivity, teacher training, institutional support, inclusive access, and context-specific educational needs**. The existing literature on Jharkhand also indicates that technological adoption is affected by regional and socio-economic disparities. Therefore, simply providing AI tools will not ensure meaningful transformation unless teachers and institutions are adequately prepared to use them.

Overall, the transformation of higher education in Jharkhand in the era of AI will depend not merely on technological adoption but on the **effective integration of technology, teachers, institutions, and learners**. Empowering teachers with appropriate AI competencies and institutional support can help Jharkhand move towards a more **accessible, inclusive, innovative, student-centred, and quality-oriented higher education system**.

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