
Teacher Educators' Readiness for Integrating Artificial Intelligence into Classroom Teaching: A Case Study**Dr. Shubhra Mishra¹****DOI: <http://doi.org/10.5281/zenodo.23307461>****Review: 03/09/2026****Acceptance: 09/09/2026****Publication: 13/10/2026**

Abstract: Artificial intelligence (AI) is rapidly changing educational practices, introducing innovative approaches to teaching, learning, assessment, and classroom management. The successful implementation of AI in educational institutions largely depends on the preparation and acceptance of teachers, especially teacher trainers, who play a key role in training future teachers. This study examines the perceptions, perceptions, and readiness of bachelor's degree recipients in education. University teacher on the integration of artificial intelligence into school education. A descriptive survey design was used to collect data from 25 randomly selected undergraduate faculty members. Universities in Indore city were surveyed through a structured questionnaire. The collected data were analysed using percentage analysis. The results showed that the majority of participants had a positive view of AI and recognized its potential to improve teaching effectiveness, support personalized learning, and reduce administrative burden on teachers. However, concerns related to ethical concerns, data privacy, inadequate training, and inadequate organizational infrastructure continue to impact teachers' readiness to adopt AI. The study recommends integrating an AI Culture into teacher preparation programs, strengthening digital infrastructure, and organizing regular professional, development efforts to effectively and responsibly integrate AI into educational environments.

Keywords: Artificial Intelligence, Teacher Readiness, Teacher Education, AI Integration, Digital Competency.

1. Introduction:

Artificial intelligence (AI) has become one of the most influential technological innovations of the 21st century, revolutionizing a variety of sectors including healthcare, finance, manufacturing, and education. In education, AI is transforming traditional teaching and learning processes by enabling intelligent tutoring systems, adaptive learning platforms, automated assessments, virtual instructional assistants, and data-driven decision-making. These developments have the potential to improve learning outcomes by providing personalized educational experiences and enhancing the effectiveness of teaching practices. Integrating AI into educational environments creates many opportunities to improve the quality of education and student engagement. AI-powered technology can analyze student progress, identify individual learning needs, provide instant feedback, and automate repetitive administrative tasks. These innovations allow teachers to better focus on planning, teaching, and supporting students with diverse learning needs. Despite these benefits, implementing AI in education also comes with many challenges.

Issues related to ethical use, algorithmic bias, data security, privacy, technology infrastructure, and teacher professional competence require careful consideration. Therefore, the successful implementation of AI will depend not only on technological advances but also on the willingness, readiness, and ability of teachers to incorporate these tools into their educational practices. Teacher educators occupy a particularly significant position in this process because they are responsible for preparing future teachers to work effectively in technology-rich classrooms.

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Their awareness, perceptions, and readiness towards AI integration directly influence the quality of teacher preparation programmes. Therefore, examining teacher educators' readiness is essential for designing appropriate professional development initiatives and institutional policies that support the meaningful use of AI in education.

Artificial Intelligence: Concept and Evolution: Artificial intelligence refers to the field of computer science concerned with developing systems that can perform tasks that typically require human intelligence. These tasks include reasoning, learning, decision making, problem solving, language understanding, and pattern recognition. According to Russell and Norvig (2010), AI involves the development of intelligent systems that can perceive the environment, process information, and make decisions to achieve a given objective. The concept of artificial intelligence was formally introduced by John McCarthy at the Dartmouth Conference in 1956, marking the beginning of AI as an independent field of scientific research. Since then, rapid advances in computing power, machine learning, and data analysis have dramatically expanded the application of AI in many fields, including education.

Impact of Artificial Intelligence on Education: Artificial intelligence has revolutionized educational practices, improving teaching, student support, and institutional management. AI- Powered educational applications foster personalized learning by tailoring learning content to students' abilities, interests, and learning pace. Automated assessment systems reduce teacher workload, and intelligent learning systems provide students with personalized instruction and timely feedback. AI can also help teachers analyse student performance data, identify learning gaps, and implement evidence-based teaching strategies.

Review of Literature:

Anomah (2025) examined the institutional preparedness of public audit organizations in Ghana for the adoption of Artificial Intelligence. Using an AI readiness framework, the study identified digital infrastructure, workforce competencies, and organizational culture as the major determinants of successful AI implementation. The findings highlight the importance of investment in technology resources, continuous professional development, and organizational transformation to facilitate effective adoption of AI. The authors also suggested that future research should examine the impact of institutional trust and organizational culture on AI adoption.

Şıru, Gerheş, Stojkov, and Stanic (2025) investigated Romanian pre-university teachers' negative perceptions of artificial intelligence. This quantitative study surveyed 1,110 teachers and investigated how digital literacy, demographic variables, and previous experience with AI influence teacher attitudes. The results revealed two main aspects of negative attitudes. They are the perceived threat posed by AI and concerns about fairness and ethical issues. Although female teachers reported significantly higher levels of perceived threat than male teachers, beliefs about ethical justice remained relatively similar across all demographic groups. The study concludes that improving teachers' digital literacy can help reduce resistance to AI adoption. Sujanna, Suwarso, and Unsiyah (2026) investigated novice English teachers' perspectives on using artificial intelligence as a teaching material during their teaching practice in Indonesia. Researchers surveyed 105 student teachers using a structured questionnaire based on cognitive load theory and covering perceived usefulness, readiness, student engagement, and implementation challenges.

The results showed that education level did not significantly influence participants' perceptions. However, frequent AI users showed greater trust, acceptance, and more positive perceptions of AI learning compared to infrequent users. This study highlights the importance of regular exposure to artificial intelligence technology during teacher training programs.

Nwakele, Izuakor, Omeh, and Chukwu (2026) assessed the readiness of technical and vocational education and training (TVET) teachers to adopt artificial intelligence-based teaching methods. The study was a cross-sectional survey of 416 university teachers that assessed their AI readiness, digital literacy, teaching adaptability, AI awareness, and professional skills.

The results revealed that AI readiness and digital competency were moderate, while pedagogical adaptability and positive attitudes toward AI were relatively high. Significant differences were observed across different age groups and categories of educational experience, indicating that demographic characteristics influence educators' readiness for AI integration.

Nadaf and Aglon (2025) conducted a comprehensive analysis of teachers' readiness and attitudes toward integrating artificial intelligence into classroom instruction. Drawing on the Technology Acceptance Model (TAM) and the Technology Pedagogical Content Knowledge (TPACK) framework, the authors synthesized findings from previous empirical studies. Their analysis demonstrated that teachers' technology self-efficacy, instructional beliefs, organizational support, and professional skills significantly influenced AI adoption. This study recommends systematic professional development programs and supportive institutional policies to increase teachers' confidence in using AI technology. Dorongon and Sarmiento (2025) examined teacher readiness for AI integration at the Southern Luzon College of Technology Foundation in the Philippines. Using a qualitative research design, the study collected data through focus group discussions and questionnaires from twelve teachers. The results showed that although participants expressed positive attitudes toward AI, they needed additional training in knowledge of AI, its ethical use, and practical application in the classroom. The researchers further emphasized the need for reliable digital infrastructure, up-to-date technical resources, and comprehensive institutional guidelines to facilitate the responsible implementation of AI.

Research Gap

A review of the available literature reveals that existing studies mainly focus on teachers' perceptions, technical skills, institutional preparation, and attitudes toward artificial intelligence in different educational contexts and different countries. However, empirical evidence regarding the preparation of undergraduate faculty is limited. Universities in India, especially in Madhya Pradesh. Teacher educators play a critical role in preparing future teachers to participate in technology classrooms, so understanding their readiness for AI integration is essential. Therefore, this study aims to fill this gap by investigating the awareness, awareness, and preparation of B.Ed students. To university teachers in Indore for effective integration of artificial intelligence in school education.

Objectives of the Study:

The goal of the current study was to evaluate teacher educators' readiness for incorporating artificial intelligence (AI) into the classroom. The study's particular goals were:

- To assess B.Ed. college instructors' knowledge of AI and its educational uses.
- To determine how prepared teacher educators are to incorporate AI tools into instruction.
- To determine the perceived advantages and difficulties of using AI in learning environments.
- To provide suitable tactics for enhancing AI integration in programs for teacher preparation.

Research Methodology

Design of Research: In order to investigate teacher educators' understanding, perceptions, and preparedness for incorporating artificial intelligence into classroom instruction, the study used a descriptive survey research approach. Because it allows information about current conditions to be gathered and analyzed without changing the study variables, the descriptive technique was deemed suitable.

Sample and Population: Teacher educators employed by B.Ed. colleges in Indore, Madhya Pradesh, made up the target population. To ensure equal participation, a sample of twenty-five teacher educators was chosen using the simple random selection technique.

Research Tool: A systematic questionnaire created by the researcher was used to gather primary data. In order to gauge teachers' awareness, perceptions, readiness, perceived benefits, challenges, and recommendations regarding the use of artificial intelligence in education, the questionnaire included demographic data and statements based on a five-point Likert scale.

Data Gathering: The chosen teacher educators were given the surveys in person. Participants gave their voluntary answers, and the study protected the anonymity of their answers.

Methods of Statistics: The gathered information was categorized, tallied, and subjected to percentage analysis. To enable a meaningful comprehension of the outcomes, the findings were displayed in tables with descriptive interpretations.

Interpretation and Analysis of Data

An Example of a Profile:

The following lists the participants' demographic details:

There are twelve male and thirteen female teacher educators.

Age Group: The participants' ages ranged from 25 to 55.

Teaching Experience: Both early-career and seasoned teacher educators have a range of 1 to 25 years of teaching experience. Diverse viewpoints on the incorporation of AI into teacher education were offered by the sample's diversity.

Major Findings

The following key conclusions were drawn from the survey:

- Ninety-two percent of those surveyed said they knew about artificial intelligence technology and how they are used in education. According to 76% of respondents, AI might lessen teachers' workloads by automating repetitive administrative and academic chores. 68% of respondents voiced worries about ethical dilemmas, data privacy, and the responsible application of AI technologies. Eighty-four percent of respondents agreed that the B.Ed. curriculum should include AI-related courses and training programs. Just 36% of respondents thought their organizations had the necessary IT infrastructure to enable the successful application of AI.

These results show that while teacher educators have positive sentiments about AI, institutional preparedness is still quite low.

Table 1: Teachers' Awareness and Use of AI Tools

Category	Percentage (%)
Teachers currently using AI-powered educational tools	36
Teachers not using AI-powered educational tools	64
Total	100

Interpretation: Only 36% of the participating teacher educators presently use AI-powered applications in their teaching methods, according to the data, while 64% have not yet integrated such technology into classroom instruction. This shows that even if there is a comparatively high level of awareness about AI, its practical application in the classroom is still in its infancy, highlighting the need for further institutional support and professional development.

Table 2A: Perceived Benefits of AI Integration

Benefit	Percentage of Teachers (%)
Personalized learning	72
Automated grading and assessment	65
Improved student engagement	60

Interpretation: The educational benefits of artificial intelligence were acknowledged by a significant percentage of teacher educators. The largest number (72%) thought that by attending to each learner's unique demands, AI enables individualized learning. Furthermore, 65% of respondents valued AI's potential to automate assessment procedures, and 60% recognized its role in raising student participation and engagement in class.

Table 2B: Perceived Challenges of AI Integration

Challenge	Percentage of Teachers (%)
Inadequate professional training	70
Limited technological resources	66
Technical difficulties during implementation	61

Interpretation: The findings show that the biggest obstacle (70%) that teacher educators confront is inadequate professional training. Technical problems (61%) and a lack of technological infrastructure (66%) were also noted as significant obstacles to the effective application of AI. These results imply that effective AI deployment requires institutional investment in both infrastructure and capacity creation.

Table 3: Readiness of Teacher Educators for AI Integration

Readiness Level	Percentage (%)
Highly prepared	18
Moderately prepared	55
Slightly prepared / Not prepared	27

Interpretation: Just 18% of respondents said they were well-prepared to use AI in the classroom. While 27% said they were only partially prepared, more over half (55%) said they were moderately prepared. These results imply that although while teacher educators typically have favorable opinions about AI, further professional development is necessary to boost their competency and confidence..

Table 4: Suggested Strategies for Effective AI Integration

Suggested Strategy	Percentage of Teachers (%)
Professional training and continuous support	78
Improvement of technological infrastructure	71
Revision of teacher education curriculum	69

Interpretation: With 78% of teacher educators endorsing regular training programs, they highly urged ongoing professional development as the most crucial tactic for successful AI integration. Redesigning teacher education programs (69%) and bolstering institutional infrastructure (71%) were also noted as crucial steps for encouraging the efficient and long-term application of AI in educational institutions.

Discussion

The results of this study show that teacher educators have a generally positive view on the use of artificial intelligence (AI) in the classroom. AI has the potential to improve instructional efficacy by enabling tailored learning, cutting down on repetitive administrative duties, and increasing student engagement, according to the majority of respondents. These results imply that teacher educators view AI as an important pedagogical tool that can facilitate creative teaching methods. Despite this optimistic view, the report also identifies a number of obstacles that could prevent AI from being successfully incorporated into teacher preparation. Inadequate professional training, a lack of technology infrastructure, technical hurdles, and ethical and data privacy concerns are the main issues mentioned by the participants. These problems show that successful AI adoption requires more than just favorable attitudes. Equally important are ongoing capacity-building initiatives, access to technology resources, and appropriate institutional support.

The results align with earlier research. According to Nadaf and Aaglawne (2025), instructors' desire to incorporate AI into their teaching techniques is greatly influenced by their institutional support and technological self-efficacy. In a similar vein, Dorongon and Sarmiento (2025) stressed the significance of AI literacy initiatives, dependable infrastructure, and clearly defined institutional regulations for the effective application of AI. The current study corroborates the findings of Sujannah et al. (2026), who discovered that instructors' confidence and preparedness for classroom integration are improved by frequent exposure to AI technologies.

Overall, the findings show that teacher educators are open to AI's instructional potential. However, rigorous professional development, innovative curricula, better infrastructure, and institutional commitment to responsible AI application can significantly increase their readiness.

Conclusion

A significant technology advancement that has the potential to revolutionize teaching methods at all educational levels is artificial intelligence. There are numerous chances to enhance teaching efficacy and learning outcomes through its applications in academic administration, classroom management, intelligent assessment, and individualized learning. The results of this study show that teacher educators in B.Ed. programs generally have a favorable opinion of artificial intelligence and are aware of its potential to improve instruction in the classroom. However, because of a lack of training opportunities, a lack of technology resources, and privacy and ethical concerns, the overall level of practical competence is still moderate.

The study emphasizes that more than just having access to technology is necessary for the effective integration of AI into teacher education. For the appropriate use of AI technologies, it necessitates ongoing professional development, institutional support, curriculum change, and explicit ethical norms. Strengthening teacher educators' AI competencies is key for creating a teaching workforce that is digitally competent and able to meet the demands of twenty-first-century education, as they play a critical role in preparing future educators.

Recommendations

The following suggestions are put forth in light of the study's findings:

1. Pre-service and in-service teacher education programs ought to include classes on digital competency and AI literacy.
2. To improve instructors' practical understanding of AI applications, educational institutions should provide frequent workshops, faculty development programs, and practical training sessions.
3. Colleges should bolster their technology infrastructure by offering AI-enabled learning platforms, updated digital gadgets, licensed instructional software, and dependable internet access.
4. To guarantee the moral, open, and responsible application of AI in instruction, evaluation, and academic administration, comprehensive institutional policies should be created.
5. New AI technologies, digital pedagogy, data literacy, and ethical technology use should all be incorporated into teacher education programs on a regular basis.
6. To give students hands-on experience with AI tools and breakthroughs, educational institutions should work with universities, EdTech companies, and IT specialists.
7. To ensure that AI initiatives are implemented successfully in teacher education institutions, government organizations and educational authorities should provide policy guidelines and offer financial support.

Limitations of the Study

When evaluating the results, it is important to take into account the limitations of the current study.

1. Because the study was limited to B.Ed. colleges in the city of Indore, the results might not apply to other areas.
2. The results' representativeness is limited because there were only 25 teacher educators in the sample.
3. Because the data were gathered via a self-reported questionnaire, social desirability effects and personal bias could have an impact on the answers.

4. No sophisticated statistical methods were used to look at correlations between variables; instead, the study mostly used descriptive statistics (percentage analysis).

Scope for Future Research

The current work may be expanded upon in a number of ways by future research.

1. Larger samples from several Indian states or regions could be used for comparable research
2. A more comprehensive understanding of AI readiness could be obtained through comparative studies between public and private teacher education institutes.
3. Future studies should look at how factors like age, teaching experience, digital literacy, technical self-efficacy, and institutional support relate to AI preparedness.
4. To assess the efficacy of AI training programs for teacher educators, experimental or longitudinal studies may be conducted.
5. Teachers' experiences, perspectives, and difficulties with integrating AI may be better understood through mixed-method and qualitative study methodologies.

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