

AI IMPACT ON EDUCATION: TEACHER READINESS AND PEDAGOGICAL SHIFTS

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ABSTRACT:

Education is changing due to artificial intelligence (AI), and educators must adjust to new resources and techniques. A revolutionary change in the delivery, assessment, and personalization of teaching and learning is being brought about by the emergence of AI in education. As AI Power tools proliferate, educators must meet new standards for digital literacy, ethical awareness, and pedagogical flexibility. Interestingly, many of the teachers did not receive professional development specifically focused on AI. Essential training is needed, including fundamental AI literacy, ethical data and technology use, integrating AI into teaching, and fostering peer communities to boost confidence. In order to successfully integrate artificial intelligence (AI) into educational systems, the current research article examines the training needs of educators. The study also identifies issues such as lack of institutional support, ethical risk, and deficiencies in digital infrastructure, particularly in rural places. Research indicates that proficient AI integration fosters professional growth by fusing technical know-how with pedagogical understanding. The research study is prepared using data from secondary sources. In order to guarantee that educators are not left behind in the AI revolution, this article will provide a timely review of existing gaps and viable pathways.

Keywords: AI training, Teacher's capacity, Adaptive learning, Pedagogy, Digital literacy, India, Government and Institutional support.

1. BACKGROUND OF THE STUDY:

In this modern world, integrating AI technology grows rapidly in education. AI is there to assist and make our day-to-day tasks lighter. With a proper prompt, any activity that we wish to get done will be accomplished in a matter of seconds. The use of AI applications in teaching can enhance the learning experience in many ways such as personalized learning exercises thanks to AI algorithms or instant feedback and communication thanks to AI natural language processing. AI can also be employed to enhance gamified learning which can further make learning enjoyable, engaging, and rewarding. Using AI tools can guide educators to use a more interactive teaching approach which may result in increased engagement and motivation in the class as well as improved learning objectives. Another significant pro of artificial intelligence in education is that it can help enhance student performance with increased feedback. AI-powered systems can evaluate students' progress, provide them with targeted feedback, and identify areas where they need improvement. Moreover, AI can monitor students' behavior patterns, assess their attention levels, and determine if they need additional assistance in certain subjects, granular areas, or specific

skills. Instant, AI-powered feedback along will enhance learning experiences can be expected to push students' abilities to new heights.

Using AI in Education can also reduce the cost of education from an educational institution's perspective, and quite significantly if used to its potential. AI can automate a number of tasks assigned to administration, teachers, IT, and more. For example, AI can take on daily tasks such as grading, scheduling, data management, and even tutoring. With AI in education, educational institutions can save on budget by cutting down resources required to operate efficiently, thereby increasing cost-effectiveness. AI-powered EdTech tools can easily collect, analyze, and provide report data to teachers on student learning outcomes and behavior patterns. By using predictive analytics, AI can provide educators with valuable insights from predicting future performance, providing personalized interventions, early identification of at-risk students, and refining instructional strategies. This useful information can enable educators to have a more in-depth evaluation in understanding their student's strengths and weaknesses in the classroom. In addition, teachers can have the chance to take their teaching strategies to the next level and give the best learning experiences to their students.

2. INTRODUCTION:

The growing reliance on artificial intelligence (AI) has significantly influenced the field of education, reshaping teaching, learning and assessment practices. It is increasingly important that educators understand how AI can support teaching and learning (Crompton et al., 2022; Zawacki-Richter et al., 2019). Generative AI (GenAI) tools such as ChatGPT, DALL-E, Gemini, and others offer new opportunities to personalise learning, enhance student engagement and improve classroom efficiency (Chiu, 2023; Kohnke, Moorhouse, & Zou, 2023a). As these technologies are integrated into the classroom and pedagogical practice, educators must become AI literate: that is, able to understand AI tools and incorporate them into their pedagogy to prepare students for a future in which AI plays a central role (Cervera & Caena, 2022; Holmes & Tuomi, 2022). The mention of artificial intelligence brings to mind a supercomputer, a computer with immense processing capabilities, including adaptive behavior, such as inclusion of sensors, and other capabilities, that enable it to have human-like cognition and functional abilities, and indeed, which improve the supercomputers interaction with human beings. Indeed, different motion pictures have been made to showcase the abilities of AI, such as in smart buildings, such as the ability to manage air quality in a building, temperatures, and or playing music depending on the sensed mood of the occupants of the space. Within the education sector, there has been increased application of artificial intelligence, going over and above the conventional understanding of AI as a supercomputer to include embedded computer systems.

3. REVIEW OF LITERATURE:

The integration of GenAI tools in education system holds a significant promise for enhancing teaching and learning practices. GenAI tools have demonstrated the potential to automate repetitive tasks, provide personalised learning experiences, and enhance student engagement (Cheah et al., 2025). The AI tools can streamline administrative processes, support differentiated instruction, and foster greater engagement among students (Gestson & Core Team, 2024; Obeysekare, 2024). For example, Klopfer et al. (2024) highlighted that AI technologies could support differentiated instruction by adapting to individual learning needs, fostering greater equity in educational outcomes. Teachers have leveraged GenAI to assist in lesson planning, resource curation, and administrative tasks, thereby freeing time for more meaningful instructional activities (Cheah & Kim, 2025). Moreover, studies emphasize that

AI can cultivate higher-order thinking skills, such as critical reasoning and creativity, when integrated into project-based or inquiry-based learning frameworks (Holmes et al., 2019; Hsu et al., 2019; Shin & Shin, 2021). The AI also facilitates tailored feedback and adaptive assessments, enabling educators to address students' unique strengths and weaknesses more effectively (Ding et al., 2024; Sanusi et al., 2024). Despite its potential, evidence suggests that GenAI integration is underutilised in daily classroom teaching. Instead, it is predominantly used for administrative and preparatory tasks, limiting its transformative impact on pedagogy (Chakraborty, 2024; Noroozi et al., 2024). Another critical barrier is the skepticism surrounding AI's impact on education. Educators have expressed concerns about ethical issues, such as data privacy, algorithmic bias, and the potential for overreliance on AI among students (Mishra et al., 2023; Pangrazio & Selwyn, 2021). For instance, Zafar and colleagues (2025) found that some teachers worried that students using GenAI tools such as ChatGPT might bypass critical thinking processes, relying on AI-generated outputs instead. Additionally, teachers' pedagogical beliefs often influence their willingness to adopt new technologies. Resistance from educators, often stemming from unfamiliarity or discomfort with AI technologies, has also been cited as a critical challenge (Obeysekare, 2024). Educators with traditional, teacher-centred instructional approaches may view GenAI as misaligned with their teaching philosophy, while those with constructivist orientations are more likely to explore its potential (Ertmer et al., 2012; Liu, 2011).

4. OBJECTIVES OF THE STUDY:

- i. To study the various challenge faced by Teachers Preparedness for AI enhanced classrooms
- ii. To analyse the multiple AI tools for Teachers Preparedness
- iii. To identify government initiation for Teachers Preparedness for AI enhanced classrooms
- iv. To offer constructive suggestions for the stake holders

5. RESEARCH METHODOLOGY:

The present study is based wholly on secondary sources of data, collected from various Government publications like reports, Department of Higher education, Ministry of HRD, WHO and National, Journals, Research papers & Articles and also from newspaper articles. The researchers have made an attempted to analyze the various aspects of Teachers Preparedness for AI enhanced classrooms

6. ANALYSIS AND DISCUSSION:

6.1 AI Tools for Teachers Preparedness

AI can enhance lesson planning, simplify progress tracking, improve administrative efficiency, and facilitate better communication with students and parents. Embrace the power of AI tools to help you work smarter, not harder, and make a greater impact in your classroom some of the open-source AI tools that every teacher can be using in their classroom.

- a) **Education Copilot;** Education Copilot is an AI-powered teaching assistant integrated with Google Workspace. This smart tool assists teachers by creating quizzes, school improvement plans, grading assignments, designing differentiated lesson plans tailored to individual students, suggesting modifications for struggling learners, and generating reports with actionable insights. Using advanced natural

language processing and a deep understanding of pedagogical strategies and standards alignment, Copilot is a valuable resource for curriculum planning and tracking student progress. It can even send alerts about at-risk students based on assessment patterns it detects, helping educators address learning challenges early.

- b) **Grade Scope:** Grading stacks of papers can be tedious, but the AI-powered app Grade scope streamlines the process, making it faster while providing valuable insights into student performance and learning gaps. Teachers simply scan and upload tests or homework into **Grade scope**. Advanced computer vision algorithms accurately interpret responses, even handwritten ones. The AI then automatically generates grades and uses machine learning to detect patterns of misconceptions, offering detailed question-level performance data for teachers to analyze. By reducing the grading workload by up to 90%, Gradescope allows educators to spend more time re-teaching challenging concepts and personalizing instruction to meet student needs.
- c) **Otter:** Otter makes it easy to convert audio from quick memos or extended presentations into editable written notes, using machine learning to eliminate the need for human transcribers. Teachers can use Otter to record live lessons, discussions, peer reviews, or interviews. Its advanced speech-to-text engine produces highly accurate transcripts, even identifying different speakers. Users can then edit transcripts directly in Otter, adding photos, annotations, and highlights as needed. Whether sharing lesson summaries with absent students or analyzing key discussion points, Otter reliably captures verbal interactions for future reference, learning records, and meeting notes.
- d) **Parlay:** Parlay enables teachers to quickly create interactive video lessons that align with major textbook publishers and state standards, saving hours of manual work in developing custom visual learning activities tailored to student needs. After selecting curriculum resources and standards, educators can easily customize engaging video lessons using Parlay's templates and drag-and-drop media features or integrate third-party tools for more advanced customization. The AI takes over from there, personalizing learning supports, adjusting difficulty levels, ensuring full alignment with standards, and even automating assessments as **students'** progress. With Parlay, teachers can transform static textbook content into dynamic, adaptive lesson sequences that captivate 21st-century learners, leveraging the power of AI to enhance education.
- e) **Quizizz:** Quizizz turns assessments into interactive, game-like experiences that feel more like fun competitions than formal exams. Behind the scenes, powerful analytics track student performance, providing valuable insights to guide instruction. Teachers can easily create custom quizzes using pre-made content or build their own from a vast question bank. Engaging features like memes, music, and avatars help maintain student focus and enthusiasm while they complete the quizzes. The detailed reports generated by Quizizz allow educators to pinpoint student strengths and weaknesses, even down to specific learning objectives. By combining motivation with robust progress tracking, Quizizz enhances both engagement and instructional planning.
- f) **Speechify:** Reading complex textbooks and academic materials can be challenging for struggling readers and students with vision impairments. Speechify addresses this by converting documents into clear audio files. Teachers can easily upload course

materials, lessons, or references into Speechify, which uses AI to generate spoken MP3s. These audio files include navigable tables of contents, footnote citations, and highlightable sections. Customizable voices and adjustable speeds ensure the audio suits each student's needs. With Speechify, all students can access course materials through audio, making learning more accessible. This tool saves teachers time while promoting equity and meeting the accessibility needs of their classrooms.

- g) **Grammarly:** Grammarly is an AI-powered writing assistant that helps teachers, parents, and students quickly compose clear, concise messages. It checks for grammar mistakes, spelling errors, punctuation issues, vocabulary improvements, plagiarism risks, and adjusts tone and formality for better communication. Educators use Grammarly to enhance lesson plan clarity, craft polished newsletters for parents, give constructive assignment feedback, and support students in improving their writing. The AI even suggests more formal or inclusive vocabulary to elevate writing quality. Since effective communication is essential in both administrative and instructional roles, Grammarly acts as a "grammar guardian" and "vocabulary booster" for every piece you write.
- h) **Canva:** Creating standout visuals no longer requires a designer's skill or advanced software, thanks to Canva. This user-friendly graphic design platform provides a vast library of customizable templates for presentations, social media graphics, posters, and more—all easily personalized with simple drag-and-drop tools. Teachers can quickly create visually appealing assignments, presentation decks, newsletters, certificates, flyers, charts, and animations. Canva's coordinated themes and fonts apply universal design principles, giving even amateur creators a professional touch in no time. With Canva, technology barriers are no longer an excuse for falling short. It empowers educators to meet the expectations of digitally-savvy 21st-century students by providing the tools needed to create engaging, multimodal learning materials that truly resonate.
- i) **Synthesia:** Create videos for lessons has great instructional potential but often involves time-consuming editing until now. Synthesia makes video creation easier by using AI-generated avatars paired with real human voice narration. Teachers simply record an audio explanation or lesson script, and Synthesia transforms it into a polished video with a life-like animated instructor delivering the content. No filming or editing is required! Educators can customize the avatar's appearance, backgrounds, gestures, and camera angles to match their personal teaching style. With Synthesia, self-paced video lessons come to life, offering clarity and engagement beyond traditional slides. Learners benefit from personalized instruction anytime, while teachers gain the ability to create high-quality, asynchronous lessons with ease something that was once logistically challenging.
- j) **Chatgpt:** Generative AI platform ChatGPT functions like a skilled educator, responding to inquiries on demand. It can explain academic concepts, summarize lessons, provide writing feedback, generate quiz questions, recommend learning resources, and even draft lecture slides using credible references all with impressive accuracy! Teachers can boost productivity by outsourcing tasks like research, lesson planning, and remediation to ChatGPT, allowing them to focus on their core strengths and offer personalized support for student growth. By reducing repetitive tasks, educators can devote more energy to fostering higher-level thinking and building meaningful relationships with students. Powered by knowledge from 200 billion web

documents, ChatGPT's rapid intelligence is a game-changer in education. Underutilizing this technology would be a missed opportunity—embrace the future of AI-enhanced teaching today.

6.2 The various challenge faced by Teachers Preparedness for AI enhanced classrooms:

- a) **Threat to Teacher's Job Security:** First on the list are the threats to teachers' job security. This is not happening yet, but it is a concern that the advancement and adoption of AI could impact the need for certain job roles in education. The way AI continues to automate more aspects of the education process, there may be fewer demands for human educators, which could lead to both improved productivity and potential job loss.
- b) **Dehumanized Learning Experience:** One of the biggest cons of AI in education is that it can dehumanize the learning experience. With AI algorithms generating content and deciding the pacing of the lessons, students may miss out on the nuanced approach that a human teacher can offer. Additionally, AI algorithms can perpetuate bias, meaning that they may fail to provide an inclusive and diverse curriculum that is tailored to the needs of every student.
- c) **Costly to Implement for Teachers:** Another disadvantage of AI in education is that it can be costly to implement for teachers. Not all schools and educational institutions have a dedicated budget for investing in AI tools and technologies. Plus the cost of mass-implementing AI into schools may be too great at this time. If the teacher will be the one to shoulder the cost, it can be expensive, and challenging to maintain.
- d) **Dependence on Technology:** As schools become increasingly reliant on AI-powered solutions, there is a risk that teachers and students may become too reliant on technology. In the long run, this dependence could result in the neglect of important traditional teaching methods and the development of critical thinking and problem-solving skills.

6.3 Government initiation for Teachers Preparedness for AI enhanced classrooms

To mark 10 years of the Skill India Mission, the Ministry of Skill Development and Entrepreneurship (MSDE) has rolled out a national-level initiative SOAR (Skilling for AI Readiness) focused on building AI literacy among school students (Classes 6–12) and teachers across the country. SOAR aims to introduce young learners to core artificial intelligence concepts like machine learning, natural language processing, neural networks, and ethical AI practices. Designed in partnership with leading tech companies and academic experts, the curriculum meets international benchmarks. The program offers a mix of online learning and hands-on workshops, encouraging schools to set up AI labs and student-led AI clubs. This initiative ensures that even students in remote areas have access to quality AI education, supporting the government's goal of bridging the digital divide. Structured Modules for Students and Teachers aims

- i. **For Students:** Three progressive 15-hour modules AI to be Aware, AI to Acquire, and AI to Aspire
- ii. **For Teachers:** A standalone 45-hour course titled AI for Educators Topics covered include generative AI, ethical use of AI, basic programming, cybersecurity, and insights into AI-driven careers

7. SUGGESTIONS:

Artificial intelligence is playing an increasingly significant role in transforming how students learn and how teachers instruct. However, as with any innovation, there are both pros and cons of AI when incorporating it into the classroom and when there are too many challenges happening in the class, this is where human intervention is set to come in. Now the question is, what important role should teachers be taking to ensure AI usage for education among students is still in moderation?

Teachers and AI can collaborate in co-teaching scenarios, where AI systems may assist in instruction, assessment, and real-time feedback & tutoring, while teachers offer guidance, interpretation, and deeper engagement with the material. Some of the suggestions, that can be drawn based on the analysis.

- a) The role of teachers as mentors, motivators, and facilitators of learning will remain essential. Teachers bring human connection, empathy, social-emotional skills, and the ability to foster creativity and critical thinking, which cannot be replicated by AI.
- b) The teacher-AI collaboration will harness the power of technology while upholding the invaluable human elements of education.
- c) As simple as it looks, teachers can still have the power to set rules and boundaries in class. Set a strict rule of prohibiting the usage internet in any face-to-face class activities and allow students to think freely and creatively using their gained knowledge from past lessons.

8. CONCLUSION

Overall, the evolving role of AI in education offers both opportunities and challenges for teachers. By being proactive in their approach to this technology, educators can leverage AI to improve student outcomes and promote equity in the classroom, while still preserving the unique role that teachers play in fostering growth, development, and learning in their students. That is why it is still necessary to incorporate the usage of AI-powered EdTech tools as a part of teachers' teaching strategies. With the help of ClassPoint AI, teachers wouldn't need too much work on creating insightful quiz questions. ClassPoint AI is made to analyze teachers' lesson slides and generate questions from it. It promotes a healthy balance of trusting the teacher's expertise in any subject by purely relying on the information they wrote in the PowerPoint and working its magic in stimulating questions in just seconds. Policy and leadership play a crucial role in guiding AI implementation, requiring ethically informed policies that ensure equitable access and responsible AI use. As AI technologies evolve, collaborative efforts across educators, policymakers, and institutional leaders will be essential to maximizing their transformative potential. Long-term research is necessary to evaluate AI's ongoing impact on student outcomes, teacher roles, and systemic equity, ensuring its sustainable and inclusive adoption in AI education.

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