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Artificial intelligence in education: A double edged sword for teaching and learning

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Abstract

Teachers are employing AI tools to streamline administrative tasks, design customized lesson plans, and monitor student progress with greater precision. Simultaneously, students are using AI to access personalized learning resources, receive instant feedback, and develop skills at their own pace. While these advancements offer numerous benefits such as increased efficiency, improved learning outcomes, and better resource management, they also introduce new challenges including ethical concerns, data privacy issues, and the risk of over- reliance on technology.

Keywords*: Artificial Intelligence, Guidance, Learning, Teacher etc.*

Introduction

In recent years, the integration of Artificial Intelligence (AI) tools into educational environment significantly reshaped traditional teaching and learning practices. Both teachers and students are increasingly utilizing AI-driven technologies to enhance instruction, engagement, and academic performance. From intelligent tutoring systems and automated grading platforms to personalized learning apps and virtual assistants, AI is transforming the modern classroom into a more interactive and data-informed space.

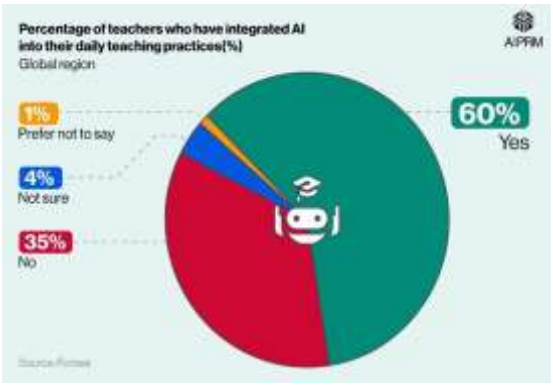
Teachers are employing AI tools to streamline administrative tasks, design customized lesson plans, and monitor student progress with greater precision. Simultaneously, students are using AI to access personalized learning resources, receive instant feedback, and develop skills at their own pace. While these advancements offer numerous benefits such as increased efficiency, improved learning outcomes, and better resource management, they also introduce new challenges including ethical concerns, data privacy issues, and the risk of over- reliance on technology.

This research report explores the diverse applications of AI tools by teachers in the classroom, examining their impact on student learning, teacher efficiency, and classroom dynamics. By analyzing recent studies and surveys (2019–2025), the report highlights both the transformative potential of AI and the challenges it poses, such as equity concerns and the risk of reduced human interaction. The aim is to provide a comprehensive under standing of how AI tools can be effectively integrated to optimize education while addressing their limitations to ensure holistic student development.

Use of AI by teachers

The COVID-19 pandemic has caused a significant shift to online/blended teaching and learning that educators tried to incorporate new technologies in their classrooms. Among these, artificial intelligence in education (AIED) technology has gained its popularity during the pandemic. Studies have started discussions on how AI reshapes education to reduce teachers' work load by automating some non-teaching related tasks, enhancing data analysis and optimizing online teaching. AIED has traditionally referred to intelligent tutors that help automate students' learning and track their progress or teachers can offer personalized assistance. Recently, AI-driven tools have become more teacher-focused and help teachers identify effective pedagogies based on students' learning data, automate operational tasks, generate assessments, automate grading and feedback which greatly save teachers' time and enhance efficiencies. Some studies argued that a technology can effectively promote students' personalized learning advance their knowledge acquisition and motivate students' learning using intelligent agents. However, without addressing the issue of teachers' roles and competencies, the claimed benefits could be

questionable. Therefore, it is important to consider how teachers' competencies change in an AI context.



Form of intelligent and interactive platforms. Leading adaptive systems can adjust difficulty levels dynamically; ensuring students remain engaged without feeling overwhelmed. They also create diverse content types, such as videos, infographics and quizzes to cater to different learning styles.

Approximately three in five (60%) teachers interviewed by Forbes claim to have integrated AI into their daily teaching practices, with around one in three (35%) saying they haven't.

How does AI help teachers?

The most immediate impact of AI in teaching has been in streamlining administrative tasks .AI tools for Indian teachers which automate repetitive tasks like grading assignments, attendance tracking and maintaining student records, allow them more time to engage with students and improve lesson delivery. Lesson planning and curriculum design is also undergoing radical shifts, with teachers utilizing AI to design lesson plans tailored to specific curriculum standards or student needs. For example, Indian edtech companies have developed solutions where learners get self-generated quizzes and tests during lessons based on deep understanding of a student's areas of struggle. They also suggest additional option such as supplementary reading materials in real-time. This level of personalization also allows teachers to view dashboards of specific developmental areas of focus of each individual student. Edtech platforms are continually pushing the envelope as how to equip teachers with better real-time intelligence and teaching aids. We will continue to see more innovation in this space in 2025

Bridging Different Learning Path

AI is helping educators unlock talent in differential learning paths who may typically have unrealized potential. AI for multilingual education is helping students bridge learning gaps from language difficulties. Development of voice- based learning models in local languages is on the rise. A stream of companies is continually working to enrich datasets in Tamil, Telegu, Hindi and other such Indian languages. This is helping students bridge language gaps by offering lessons in local languages or learn new languages effectively.

Policy-level initiatives for AI inclusion

Government of India's New Education Policy (NEP) 2020 emphasizes the integration of AI curriculum at all educational levels and aims to equip students with skills like digital literacy, coding and computational thinking. CBSE introduced Aias a subject for students in classes IX to XII ,and has also partnered with IBM to launch the Skills Build Program, which includes orientation sessions on generative AI. In collaboration with Intel, CBSE has also developed an AI Facilitator Handbook which provides educators with comprehensive training materials and real-life examples. From the 2025-26 sessions, the CISCE board has introduced robotics and AI as part of its curriculum. AI/GenAI features prominently in the curriculum of India's top business schools, including the IIMs and ISB.

Empowering Learners

AI technologies have the potential for supporting learner-centered pedagogical strategies, classroom differentiation and personalized learning to engage students in their learning process. The use of Ai in differentiated learning enables personalized learning, which was not possible in the past when teaching large classes. It enables teachers to understand the students' learning strategies, background, progress and academic interests. It addresses students' diverse learning needs, by allowing them to advance at different levels and speeds and follow their learning pathways. Second, it can help reduce learners' gap due to inequality issues, promote and ensure accessibility for all learners, including those with special educational needs. AI can help ensure accessibility to learning resources and activities. For example, NWEA (a Microsoft project) makes mathematics assessment more accessible for students with vision disabilities, which can exclude students from higher-level STEM careers. Other examples remove accessibility barriers through image and facial recognition for students with visual impairment, lip-reading recognition for students with hearing impairment, and real-time captioning and translations for students with hearing impairment and those who do not speak the language.

Educators enable learners to creatively and responsibly use AI technologies for information, communication, content creation and problem solving. The DigiCompEdu framework proposes that educators need to equip themselves with five competencies: (1) information and media literacy skills, (2) digital communication and collaboration, (3) digital content creation, (4) responsible use of AI, and (5) digital problem solving.

First, information and media literacy skills are important for educators who need to incorporate AI into learning activities and assessments to full fill students' information needs (e.g., find resources in AI-driven environments; organize, analyze and interpret information using AI). Second, educators need to enable students to effectively use AI for communication and collaboration. When students want to share their files publicly online, teachers need to be aware that the materials can be used to train AI on social media platforms. Third, AI can automatically create digital content (e.g., texts, news, essays, images) using existing digital content as its source. The AI-generated content may be indistinguishable from human creations. Educators should incorporate learning activities and assessments for students to create content through creative writing, music composition and stylizing painting. Third, it is important for teachers to be aware of the ethical concerns behind AI systems. Teachers need to take measures to ensure students' psychological

and social well-being (e.g., self- data in teaching, learning, and assessment. Finally, AI can facilitate teacher's work and enable them to solve teaching problems, and empower learners to be creative problem solvers (European Commission, 2022). Teachers need to enhance their pedagogical and technological competencies to design appropriate learning environments for students to solve authentic problems using AI with their classmates. Image, self-efficacy) while using AI technologies. They need to recognize potential risks, ethical and safety concerns when using AI technologies forteaching, learning and assessment. They also need tore mind their students of these issues.

The Negative effects of artificial intelligence in Education

Artificial intelligence (AI) doesn't always have a good reputation, especially in education, leaving many people to think about how AI affects education negatively.

When AI launched in a tangible form that the average Joe (and the eager-to-do- less-work student) could use, educators quickly raised concerns. ChatGPT was the teacher's nemesis because, as you would expect, students were using the technology to complete their studies and, in some cases, their final papers.

And still, now, a study by Trinity College London found one-third of teachers think AI in the classroom should be banned—but one-quarter of teachers are using it—with74% of teachers believing AI misuse by students will forever be an ongoing problem.

The statistics give a conflicted picture, but it's not necessarily all doom and gloom. AI does have some benefits in education; it's about striking an essential balance.

Still, we're here to focus on the negatives of AI use in education. Read on to find out more.

Students are using AI to cheat

New research from study.com has some interesting statistics about students using AI to cheat—and yes, sorry, students, getting AI to write a paper for you is cheating.

48%of students use Chat GPT for an at-home test or quiz. 53% had ChatGPT write an essay, 22% had I t written an outline for a paper (not technically cheating). The result is plagiarism, cheating, and stunted learning.

And it's scarier than you think. An INSIDER report talked about researchers who asked ChatGPT to complete the United States Medical Licensing exam and it almost passed. And that was probably without training it precisely on what it needed to—we guarantee AI could pass.

The only holy grail is that, now, most online Turnitin-style systems have AI checkers built in. Still, some students are clever enough to figure out how to trick the system.

Bias and Unethical Results

AI bias and unethical results have always been a big problem that would affect learning. Meta-analysis found that out of 555 AI models, 83.1% of them had a high risk of bias, making it one of the primary disadvantages of AI in education.

What does that mean? AI bias essentially means you can get the system to be biased towards what you want it to be, producing results unfairly favoring groups of people or being disadvantages toward them. These distorted and potentially damaging results aren't appropriate for education.

One example is the Google AI overviews launch. The launch was nothing short of an epic fail and highlighted how easy it is to manipulate and skew original training data to give false results. One example of an outlandish AI Overview search result was the engine telling users it's OK to make a pizza using glue. It's unethical to teach people to make pizza using glue.

Lack of human engagement

Where's the human engagement in AI? If you're asking how AI does affect education negatively? This is one of the biggest ways.

Despite how hard it's trying, AI still can't understand and replicate human emotions the way humans can.

We will say that using AI to do teaching plans or assignment outlines is fine, as long as the outlines are only the subtitles. If teachers or students are asking AI to do all the work for them, it takes away the human element of learning and the connection higher education professionals have with their students.

The reduction in face-to-face interactions can and will negatively **impact** learning, making it tricky for students to grasp concepts and comprehend what they're learning.

AI isn't always correct

People make the mistake of thinking AI knows everything. And yes, it does know a lot, but it knows as much as it knows if that makes sense, **and** what it knows isn't always correct. A recent study published by Defense One found AI tools are incorrect 1/4 of the time, which is a pretty high number to think it's OK to rely on for educational purposes. And again, the Google AI Over views is an example of just how wrong AI can be.

Higher education professionals and students simply can't trust every answer AI gives, and that in itself is simply unacceptable for learning. The AI Security and Governance report had some interesting statistics about the privacy issues surrounding AI.

80% of data experts thought AI increases data security issues. 55% of experts also thought AI could possibly in advertently expose sensitive information, and it's one of their biggest concerns, and 57% reported AI-driven attacks over the last12 months.

For education professionals and vulnerable students, this is an absolute no-go. Student online safety and data security should be of the utmost importance to higher education professionals.

You simply can't, for now, trust that AI isn't accessing data that its shouldn't.

Disengagement in Learning

Students relying on AI are essentially numbing themselves to the concept of learning. When you can ask AI to do anything for you, students can simply sit back and go on the, in their opinion, much more interesting TikTok.

There's no critical thinking, analysis, or evaluation involved. And according to Psych4Schools, 25% of students already feel disengaged in their learning; there doesn't need to be a reason for that number to increase. Students must be engaged with real-life learning experiences and simulations for learning to be impactful.

Finding the Balance

Are you still asking 'Why is AI bad for education?' We don't necessarily think AI in the classroom is negative, but the negative effects of artificial intelligence in education speak for themselves.

It'showhighereducationstudentsandteachersuseitan dfindapositivebalance of using it in education. There still needs to be creativity, emotion, and real classroom teacher-to-student engagement for education to be impactful.

A 2019 study published on the Taylor and Francis online platform about the teacher and student connection found students who feel connected to their teachers are more engaged, perform better, and are more likely to attend their studies.

More than that, higher education students need the real-life experiences AI simply can't and will not give. That's where striking a balance is essential. Higher education teachers and professionals can still leverage technology to create meaningful human interactions.

One example is using interactive learning tools focusing on real-world applications. For example, business simulations offered by StratX Simulations or work experiences in a related field.

Without that interactivity with the real world and the human connection, students can't apply what they're learning.

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