

THE ROLE OF GENERATIVE AI IN MODERN CLASSROOMS

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Abstract: Ahead of schedule, tools such as ChatGPT and Google Gemini shift school routines in ways few expected. Because they run on advanced language patterns, these platforms unlock value but bring challenges too. Lessons can now adjust to individual progress, offering learners more freedom, whereas help reaches further for students dealing with obstacles. As routine chores ease up, educators gain room to connect more fully with pupils. Still, confidence in genuine work slips when responses appear without struggle. Not everyone gets the same chance - where you live or how much you earn can shut doors. Too much dependence might soften minds, especially if habits go unexamined. When private facts slip into artificial systems lacking strong guardrails, unease grows. Hidden slants in code sometimes echo old injustices, almost unnoticed. Grounded in recent studies and actual teaching moments, the discussion finds steady ground - a way forward where tools serve wisely, evenly, and with purpose in learning spaces.

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I. INTRODUCTION

Something different is happening with artificial intelligence in classrooms. While older versions mainly noticed trends or grouped information, today's tools write clear sentences, respond to tough queries, create working software, while exploring layered discussions - skills that fit closely into education tasks. Tools like ChatGPT by OpenAI, Gemini from Google, alongside Claude made by Anthropic, reach countless learners and teachers globally, slowly changing the way instruction gets built, shared, and evaluated.

Right off the bat, nearly half of college learners turned to generative AI once ChatGPT launched, according to findings from Tyton Partners. Since then, teachers, decision makers, and tech experts have been wrestling with its role in classrooms - unsure whether it fits as tool, trap, or something in between. Questions swirl around how teaching might shift, what counts as fair work, who gets left behind. Instead of picking sides, this piece lays out a clear look at what's gained and what's risked when schools welcome this technology.

II. LITERATURE REVIEW

Over ten years, studies on artificial intelligence in schools have expanded fast. Notably, Zawacki-Richter and colleagues pointed out key uses - like forecasting student outcomes, guiding individual learners, helping grade work, and shaping lessons that change as students move forward. With generative AI, these roles shift further; practice becomes more tailored, tests take new forms. Progress here reshapes not just methods, but expectations too.

Kasneci et al. looked at how ChatGPT might affect universities, one of the first to do so - their thoughts helped shape how people see AI that creates content. Because it was among the earliest studies, others still turn to it when starting research in this area. Starting with student needs matters most when bringing AI into classrooms - people still need to guide how tools are used, not hand everything over to machines.

Another worry comes up too: invisible biases hiding inside smart software. If the information used to teach these systems covers only some groups, then unfair outcomes can deepen instead of disappear. This becomes particularly tricky in places like India, where many cultures and languages mix together in schools.

III. GENERATIVE AI IN EDUCATION - OPPORTUNITIES

A. Personalised Learning

When lessons shift based on how a student reasons, their pace, and specific hurdles, understanding grows. While standard classrooms often stick to one route, smart software builds unique walkthroughs and sharp drills because it watches each step live. This kind of fit-to-you support once meant high fees for tutors alone.

B. Enhanced Accessibility

Captions appear instantly through generative AI, helping students with hearing difficulties follow along. Speech output from written words opens access for people unable to see text clearly. Tough ideas get broken down into easier parts when

needed. Translation happens fast between languages, no waiting required. Places such as India often lack enough textbooks or trained instructors in certain areas. Free AI systems step in quietly there, reaching those just arriving or struggling to find help.

C. Intelligent Tutoring and 24-Hour Support

Finding help late at night? These tools stay awake, talking back like real people. When students ask again or need clarity, answers shift naturally. Their words change depending on what learners say. In topics like math or coding, studies show they often do just as well as teachers. Some evidence even points to equal results in certain cases.

D. Teacher Support and Administrative Efficiency

What used to take ages - marking clear-cut exams, sketching out class schedules, composing notes for learners, replying to common questions - now gets done fast with help from smart software. Once educators step back from those heavy paper chores, room appears for real guidance, fresh teaching moves, and deeper talks with pupils. Focus shifts naturally to what counts.

IV. CHALLENGES GENERATIVE AI BRINGS TO EDUCATION

A. Academic Integrity

Essays that come straight out of a machine often sound confident, tightly built, even polished, yet glide right through standard plagiarism checks without setting off alarms. Yesterday's detection tools falter now. Different strategies must step in - watching how learners shape thoughts, speak through logic piece by piece, or work live while seated in the classroom.

B. Digital Divide and Fair Access

When internet access falters, so does the chance to use powerful AI tools - especially if knowing how to navigate digital spaces isn't second nature. Left unchecked, smart-seeming software might widen school gaps instead of closing them, favoring learners who already have support while pushing others even farther out of reach.

C. Over-Reliance and Weaker Thinking

Relying too much on AI to get answers might slowly weaken how well someone thinks deeply, breaks down problems, or explains thoughts clearly. Something meant to save time could gradually replace real learning if used too often. This gets worse because some AI tools make up details - giving replies that seem believable but aren't true. When a learner accepts everything without checking, they pick up mistakes

so smoothly delivered that spotting them feels nearly impossible.

D. Data Privacy and Algorithmic Bias

One reason people feel uneasy: so much data gets pulled into AI machines without clear rules, especially under India's new 2023 law guarding personal details. On another note, training methods built around English-heavy sources tend to overlook knowledge from non-Western roots - quietly pushing some students to the edges.

V. KHAN ACADEMY'S KHANMIGO - CASE STUDY

Khan Academy's AI helper called Khanmigo runs on OpenAI's GPT-4, showing how schools might use smart tools without cutting corners. Instead of giving solutions straight up, it nudges students with prompts so they uncover ideas themselves. The real progress shows up during those moments when thinking gets tough - that awkward stretch before clarity hits. By shaping responses carefully, the system lets minds stay active, honoring the effort behind true understanding. Anyone building classroom tech could learn something from this path.

VI. RECOMMENDATIONS

Looking at what we've seen so far, these moves seem like they could make sense:

- Picking their stance early helps schools handle AI wisely during lessons. Talk-based evaluations show how well students truly grasp ideas. Working out loud through drafts makes learning visible over time. Tasks done inside classroom walls reduce outside interference. Simple rules prevent confusion when machines join the thinking.
- Starting with better internet setups helps shrink the divide in who can get online. Rules must follow, shaping how schools guard young learners' information against profit-driven grabs. Guardrails appear where tech meets classroom, quietly stopping firms from using homework habits to sell stuff.
- Some days, teachers face new tech with little support. Real help means showing them how to use it during class. Not theory, just clear steps. When lessons get busy, knowing what works saves time. Tools should serve students, not distract from learning. Training built around real routines makes a difference.
- A learner might pause before trusting an answer from software, treating it more like a sketchpad than a final draft. One mind works better when nudged by another - even if that second one is code. Machines run programs; humans hold purposes. The real work stays with those who push buttons, not the ones built to be pressed.

VII. CONCLUSION

Here lies a chance, yet also trouble, inside modern classrooms thanks to generative AI. It opens doors - custom lessons, broader reach, lighter loads for teachers - the effects run far. Still, concerns rise: fairness stumbles, cheating whispers, minds grow soft unless we answer wisely. Moving ahead means not banning it outright, nor grabbing it blindly - it asks for careful methods built on morals and true care for growth. Should schools, lawmakers, instructors, and learners align here, then machines might walk beside people, shaping places where learning feels more just, alert, and prepared for whatever waits.

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