

Review Article

AI in the Classroom: A Tool for Growth or a Crutch for Students?

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Abstract: Artificial intelligence (AI) is rapidly transforming classroom learning by offering personalised instruction, immediate feedback, and support for diverse learners. This opinion paper explores the dual nature of AI in education, highlighting its potential to enhance learning while also presenting significant risks, particularly the development of student dependence. The discussion examines how AI can improve engagement, facilitate metacognitive reflection, and assist teachers in managing instructional tasks, yet cautions that overreliance may undermine critical thinking, motivation, independent learning, and academic integrity. Ethical and systemic concerns, including data privacy, algorithmic bias, and equitable access, are also addressed as integral factors shaping AI's impact. The paper further considers the pivotal role of teachers in mediating AI use, fostering digital literacy, and promoting responsible, critical engagement among students. Recommendations are provided for embedding AI thoughtfully into pedagogy, supporting teacher development, establishing institutional policies, and cultivating student competencies to balance technological innovation with learner independence. The paper concludes that AI's educational value is contingent upon deliberate, ethically informed, and pedagogically grounded integration. When used thoughtfully, AI can enrich learning experiences without compromising the development of autonomous, reflective, and motivated learners. Ultimately, the discussion underscores that the effective use of AI in classrooms depends not solely on technological capability but on human guidance, intentional instructional design, and a commitment to nurturing independent cognitive and ethical capacities.

Keywords: Artificial Intelligence, Student Dependence, Independent Learning, Educational Ethics, Teacher Mediation.

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INTRODUCTION

The accelerating introduction of artificial intelligence (AI) into classrooms worldwide has prompted a mixture of optimism and unease among educators, policymakers and researchers. Proponents point to well-documented benefits: AI-driven systems can personalise instruction at scale, provide immediate adaptive feedback, scaffold learning for pupils with additional needs, and free teachers from routine administrative tasks so they can attend to higher-order pedagogic work (UNESCO, 2021). At the same time, authoritative bodies and scholars stress that the promise of AI in education will not be automatically realised; its effects hinge on how systems are designed, implemented and governed (Selwyn, 2022). In practice, AI tools already in schools range from algorithmic tutoring systems to generative language models, and the speed of

uptake—driven partly by consumer-grade chatbots and institutional procurement—means teachers and students are encountering these technologies in everyday learning situations long before consensus has been reached on best practice or regulation (UNESCO, 2021; Cedefop, 2024).

Yet alongside these pedagogic opportunities, there is a growing body of evidence and commentary suggesting a distinct pedagogical risk: that students may begin to offload essential cognitive work to AI systems in ways that reduce the development of independent learning capacities, critical thinking and sustained effort. Recent empirical and commentary work highlights troubling patterns—ranging from the ease with which generative models can be used to produce near-finished assignments, to neurocognitive evidence that heavy reliance on AI for composition tasks may be associated

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with diminished neural engagement and poorer memory retention for the content produced (Kosmyna *et al.*, 2025; Currie, 2023). These findings do not condemn AI as inherently harmful; rather, they signal that convenience and fluency in producing answers can come at the cost of the iterative, effortful practice through which durable learning and higher-order thinking are typically established. The implications are particularly acute for formative learning: when students repeatedly accept AI-generated explanations or solutions without critical interrogation, the very mental habits that underpin problem solving and creativity risk atrophy.

Beyond the cognitive dimension, the rise of AI in classrooms raises pressing ethical and systemic concerns that feed into the dependence argument. Generative and adaptive systems are not neutral: they embed design choices, training data limitations and commercial incentives that can amplify bias, erode privacy and create uneven access across socio-economic groups (Selwyn, 2022). Meanwhile, real-world reports of growing incidents of AI-assisted academic misconduct—where students use large language models to produce work that evades conventional detection—have catalysed institutional responses, from assessment redesign to new integrity protocols, but these responses are often reactive and inconsistent (The Guardian, 2025; Currie, 2023). If schools treat AI merely as a tool for efficiency without simultaneously cultivating robust digital literacy, ethical judgement and assessment formats that privilege process over product, then dependence is likely to deepen: students will develop habits of seeking immediate machine-produced solutions rather than learning how to pose problems, evaluate sources and construct arguments themselves. In short, the pedagogic benefits of AI are real and significant, but they coexist with a plausible and empirically suggested risk that overreliance will weaken the independent cognitive and ethical capacities that education aims to build.

This opinion piece therefore argues that the correct stance for educators is neither blanket rejection of AI nor uncritical embrace; rather, schools and teachers must intentionally integrate AI as a supportive affordance while prioritizing practices that protect and strengthen student autonomy. That position follows both evidence and policy guidance calling for teacher professional development, clear institutional policies, and student competency frameworks that emphasize critical appraisal and ethical use (Cedefop, 2024; UNESCO, 2021). The remainder of the paper outlines how AI demonstrably improves aspects of learning, what the dependence risk looks like in cognitive, behavioral and ethical terms, and practical recommendations for teachers and institutions to balance innovation with the cultivation of independent learners.

How Artificial Intelligence Improves Learning

Artificial intelligence has demonstrated considerable potential to enhance learning by enabling a level of personalisation that is difficult to achieve in traditional classroom settings. AI-powered educational systems can analyse students' learning behaviours, performance patterns and response times to tailor content, pacing and feedback to individual needs. Research indicates that adaptive learning platforms help students progress at their own pace, revisiting concepts they find challenging while accelerating through material they have already mastered (Holmes *et al.*, 2022). This responsiveness is particularly valuable in diverse classrooms where learners vary widely in prior knowledge, confidence and learning styles. By adjusting instruction dynamically, AI supports more inclusive learning environments and reduces the likelihood that students will disengage due to material being either too difficult or insufficiently challenging.

In addition to personalisation, AI significantly improves access to timely and continuous feedback, which is widely recognised as a critical driver of learning improvement. Traditional feedback mechanisms are often constrained by time, workload and class size, limiting how quickly and consistently teachers can respond to student work. AI systems, however, can provide immediate formative feedback on quizzes, drafts and practice tasks, allowing students to identify mistakes and misconceptions while the learning activity is still cognitively active (Luckin *et al.*, 2020). Studies suggest that such immediate feedback supports self-regulated learning by helping students monitor their understanding and adjust strategies accordingly (Zhai *et al.*, 2021). When used appropriately, AI feedback does not replace the teacher's professional judgement but complements it, enabling teachers to focus on deeper conceptual guidance and personalised support.

AI tools also play an important role in supporting students with additional learning needs and those who face barriers to participation in conventional educational settings. Speech-to-text, text-to-speech and language translation systems powered by AI have expanded opportunities for students with disabilities, language differences and literacy challenges to engage meaningfully with curriculum content (UNESCO, 2021). For example, learners with dyslexia may benefit from AI-assisted reading tools, while multilingual students can use translation and explanation features to bridge language gaps. Evidence from inclusive education research suggests that such tools, when integrated thoughtfully, enhance learner confidence and reduce stigma by allowing students to access support discreetly and independently (Holmes *et al.*, 2022).

From a teacher's perspective, AI contributes to improved learning outcomes indirectly by reducing administrative and repetitive tasks. Automated grading of low-stakes assessments, data analysis of student

progress and lesson-planning support free up valuable instructional time that teachers can redirect towards interactive teaching, mentoring and relationship-building (Selwyn, 2022). This redistribution of teacher effort can improve the overall quality of instruction and classroom engagement. Furthermore, AI-generated analytics can help teachers identify at-risk students earlier, enabling timely intervention before learning gaps widen. Research on learning analytics indicates that data-informed teaching practices can lead to improved academic performance and retention when used ethically and transparently (Zhai *et al.*, 2021).

Emerging generative AI tools have broadened opportunities for exploratory and inquiry-based learning. When used as cognitive partners rather than answer generators, AI systems can help students brainstorm ideas, generate alternative explanations, simulate scenarios and explore complex problems from multiple perspectives (Kohnke *et al.*, 2023). Such uses can stimulate curiosity and deepen conceptual understanding, particularly in subjects that benefit from iterative questioning and reflection. Scholars argue that, under guided conditions, AI can enhance metacognitive awareness by prompting students to articulate their reasoning, evaluate outputs critically and refine their thinking (Luckin *et al.*, 2020). These benefits demonstrate that AI, when framed as a learning aid rather than a shortcut, can meaningfully enrich educational experiences.

The Risk of Student Dependence on Artificial Intelligence

Despite the clear educational advantages of artificial intelligence, a growing concern among scholars and educators is the risk that students may become overly dependent on AI tools for learning tasks that traditionally foster cognitive development. Student dependence emerges when AI systems are used not as supports for understanding but as substitutes for thinking, problem-solving and reflection. Research suggests that when learners regularly rely on automated tools to generate answers, explanations or entire assignments, they may bypass the productive struggle that is central to deep learning (Selwyn, 2022). Over time, this reliance can weaken students' ability to analyse problems independently, synthesise information and persist through intellectual difficulty. Such outcomes challenge the fundamental purpose of education, which extends beyond task completion to the cultivation of durable cognitive skills.

One of the most significant risks associated with AI dependence is the erosion of critical thinking skills. Critical thinking develops through evaluating evidence, questioning assumptions and constructing original arguments, processes that can be undermined when AI tools provide immediate, polished responses. Studies examining student interactions with generative AI indicate that learners may accept outputs uncritically,

especially when the responses appear authoritative or linguistically fluent (Kohnke *et al.*, 2023). This phenomenon is particularly concerning in younger learners, who may not yet possess the epistemic skills needed to assess the accuracy, bias or limitations of AI-generated content. Without explicit guidance, students may conflate fluency with correctness, thereby reducing opportunities to practise judgement, scepticism and analytical reasoning.

Student dependence on AI also poses risks to the development of independent learning habits and academic self-efficacy. Self-regulated learning involves setting goals, selecting strategies, monitoring progress and reflecting on outcomes. While AI can support these processes, excessive reliance may shift responsibility for learning away from the student and onto the system. Research on learning autonomy suggests that when external tools consistently perform cognitive tasks on behalf of learners, students may experience reduced confidence in their own abilities and diminished motivation to engage deeply with content (Zhai *et al.*, 2021). This dependency can create a cycle in which students increasingly turn to AI for reassurance or answers, further weakening their sense of agency and ownership over learning.

Another dimension of dependence concerns creativity and original thought. Creativity in education is nurtured through experimentation, failure and iterative refinement of ideas. Generative AI tools, however, often produce conventional or statistically average responses based on existing data patterns. When students depend heavily on such outputs, they may internalise these patterns rather than exploring novel perspectives or developing a personal voice (Luckin *et al.*, 2020). Scholars warn that habitual use of AI-generated content risks homogenising student work and discouraging intellectual risk-taking, particularly in writing-intensive and creative subjects. This trend may have long-term implications for innovation and expressive competence.

The risk of dependence intersects with ethical concerns around academic integrity and learning authenticity. As AI tools become more capable, distinguishing between student-generated and AI-assisted work becomes increasingly difficult. While the ethical issue of misconduct is often emphasised, a deeper concern lies in the learning loss that occurs when students rely on AI to complete assessed tasks without engaging with the underlying concepts (Currie, 2023). This reliance may result in superficial academic success that masks gaps in understanding, leaving students ill-prepared for advanced learning or real-world problem-solving. Consequently, dependence on AI should be viewed not merely as a behavioural issue but as a pedagogical challenge that requires deliberate instructional design and ethical education.

Impact on Student Motivation and Effort

The increasing presence of artificial intelligence in classroom learning environments has significant implications for student motivation, particularly in how learners perceive effort, challenge and reward. Motivation in education is closely tied to students' sense of competence, autonomy and purpose, all of which can be influenced by the way AI tools mediate learning tasks. When used constructively, AI can enhance motivation by providing timely feedback, reducing frustration and offering achievable challenges that align with students' ability levels (Ryan & Deci, 2020). Adaptive systems that scaffold learning effectively may help students experience success more frequently, thereby reinforcing positive attitudes towards learning. However, these motivational benefits are highly contingent on purposeful integration; without careful guidance, AI may inadvertently reduce the perceived value of effort in academic work.

One key concern is that AI tools can shift students' orientation from mastery-focused learning towards performance- or convenience-driven behaviours. Mastery motivation thrives when students engage deeply with material, persist through difficulty and value learning as an end in itself. By contrast, performance-oriented motivation prioritises quick results and external validation. Research suggests that when AI systems provide immediate solutions or polished outputs, students may prioritise task completion over understanding, particularly when academic pressures are high (Selwyn, 2022). This dynamic risks weakening intrinsic motivation, as learners come to associate success with tool usage rather than personal effort, strategy or growth. Over time, students may perceive challenging tasks as unnecessary burdens rather than opportunities for learning.

The availability of AI-generated assistance also alters students' relationship with cognitive effort. Effort is a critical component of meaningful learning, as it signals engagement and supports long-term retention. However, studies on educational technology use indicate that when tools substantially reduce cognitive load without requiring active processing, students may disengage mentally while appearing productive on the surface (Zhai *et al.*, 2021). In such cases, AI may encourage passive learning behaviours, where students accept generated explanations or answers without interrogating them. This reduction in effortful engagement can undermine the development of perseverance and resilience, qualities that are essential not only for academic success but also for lifelong learning.

Excessive reliance on AI may influence students' beliefs about their own capabilities, with implications for academic self-concept and motivation. Self-efficacy develops when learners attribute success to their own actions and strategies. If students increasingly

credit AI tools for their achievements, they may develop diminished confidence in their independent abilities (Holmes *et al.*, 2022). This can lead to motivational fragility, where students feel unable to tackle tasks without technological support. Such dependency may be especially pronounced among younger learners or those with lower prior attainment, for whom confidence is still forming and external validation plays a stronger role.

Nevertheless, it is important to acknowledge that AI does not inherently reduce motivation or effort; rather, its impact depends on pedagogical framing. Research emphasises that when teachers explicitly position AI as a support for thinking, such as a tool for generating prompts, offering alternative perspectives or supporting reflection, students are more likely to remain cognitively engaged and motivated (Luckin *et al.*, 2020). In these contexts, effort is redirected rather than eliminated, allowing students to focus on higher-order reasoning and metacognitive processes. Therefore, the challenge for educators lies in designing learning experiences that preserve the value of effort and foster intrinsic motivation, even as AI tools become more embedded in everyday classroom practice.

Ethical and Educational Concerns

The integration of artificial intelligence into classroom practice raises a range of ethical and educational concerns that extend beyond questions of effectiveness and efficiency. One of the most prominent issues relates to data privacy and the protection of student information. Many AI-driven educational tools rely on the collection and analysis of large volumes of student data, including learning behaviours, performance records and sometimes personal identifiers. Scholars caution that students, particularly minors, are a vulnerable population whose data may be inadequately protected or repurposed for commercial interests without fully informed consent (Williamson & Eynon, 2020). The ethical challenge lies in balancing the pedagogical benefits of data-driven personalisation with the obligation to safeguard students' rights to privacy, autonomy and digital safety.

Closely related to data concerns is the issue of algorithmic bias and fairness. AI systems are trained on existing datasets that may reflect historical inequalities, cultural biases or dominant perspectives. When such systems are deployed in educational contexts, they risk reinforcing inequities rather than alleviating them. Research indicates that biased algorithms can disadvantage certain groups of learners by misrepresenting ability, narrowing opportunities or producing culturally insensitive outputs (Holmes *et al.*, 2022). From an educational standpoint, this raises serious questions about fairness, inclusion and equal access to learning opportunities. If AI tools are treated as neutral or objective without critical scrutiny, educators may unknowingly perpetuate systemic inequalities within the classroom.

Another significant ethical concern involves the accuracy and reliability of AI-generated content. While AI systems often produce fluent and convincing responses, they are also prone to errors, oversimplifications and fabricated information. Students may struggle to recognise these inaccuracies, particularly when they lack strong foundational knowledge in a subject area (Selwyn, 2022). This creates an educational risk in which misinformation can be absorbed uncritically, undermining learning quality and epistemic trust. The responsibility for addressing this challenge does not rest solely with students; educators and institutions must ensure that learners are equipped with the skills needed to question, verify and contextualise AI outputs.

Academic integrity represents a further area of ethical tension. The increasing sophistication of generative AI has blurred traditional boundaries between acceptable assistance and misconduct. While much attention has focused on detecting AI-generated work, scholars argue that an overemphasis on surveillance risks neglecting deeper educational values such as honesty, responsibility and learning authenticity (Currie, 2023). From an educational perspective, the ethical issue is not merely whether students use AI, but how and why they use it. When AI enables students to bypass learning processes, assessment loses its formative purpose, and educational outcomes become misaligned with actual competence.

There are broader educational concerns regarding the shifting role of teachers and the nature of pedagogy in AI-rich environments. Overreliance on automated systems may marginalise professional judgement, reducing teachers to facilitators of technology rather than active designers of learning experiences (Williamson & Eynon, 2020). This risks undermining the relational, moral and contextual dimensions of teaching that cannot be replicated by machines. Ethical integration of AI therefore requires recognising teachers not as passive users of technology, but as critical agents who mediate, interpret and shape AI use in ways that align with educational values and learner wellbeing.

The role of Teachers in Managing AI Use

As artificial intelligence becomes increasingly embedded in educational settings, the role of teachers remains central in determining whether these technologies enhance learning or foster dependency. Far from rendering teachers obsolete, AI intensifies the need for professional judgement, pedagogical expertise and ethical leadership. Teachers act as mediators between learners and technology, shaping how AI tools are introduced, framed and utilised in classroom practice. Research emphasises that when teachers actively guide AI use, students are more likely to engage critically with technology rather than treating it as an unquestionable authority or shortcut to answers (Holmes *et al.*, 2022).

This mediation role is essential in ensuring that AI supports, rather than supplants, meaningful learning processes.

One of the primary responsibilities of teachers in AI-rich classrooms is to establish clear expectations and boundaries around appropriate use. Without explicit guidance, students may default to using AI for task completion rather than learning support. Studies suggest that transparent classroom policies, clarifying when and how AI may be used, help students develop a shared understanding of ethical and productive practices (Selwyn, 2022). Teachers can model responsible use by demonstrating how AI outputs should be questioned, refined and supplemented with independent reasoning. Such modelling reinforces the message that AI is a tool for augmentation, not a replacement for human thinking.

Teachers also play a critical role in fostering students' digital literacy and critical evaluation skills. Digital literacy in the age of AI extends beyond basic technological proficiency to include understanding how algorithms function, recognising potential bias and evaluating the credibility of generated information. Scholars argue that teaching students to interrogate AI responses, by checking sources, identifying assumptions and comparing multiple perspectives, is essential for safeguarding learning quality and intellectual autonomy (Williamson & Eynon, 2020). Through guided practice and reflective discussion, teachers can help students develop the metacognitive skills necessary to use AI thoughtfully and responsibly.

Professional development is another key dimension of the teacher's role in managing AI use. Many educators report feeling underprepared to integrate AI tools confidently and ethically, particularly given the rapid pace of technological change. Research highlights the importance of ongoing training that addresses not only technical functionality but also pedagogical design, assessment strategies and ethical considerations (Luckin *et al.*, 2020). When teachers are supported to experiment, reflect and share best practices, they are better positioned to integrate AI in ways that align with curricular goals and learner needs. Institutional investment in teacher capacity-building is therefore crucial to preventing uncritical or inconsistent AI adoption.

Teachers serve as advocates for balanced and humane approaches to educational innovation. While AI offers efficiency and scalability, teachers are uniquely positioned to preserve the relational and moral dimensions of education. By prioritising dialogue, feedback, empathy and contextual understanding, teachers ensure that learning remains a fundamentally human endeavour (Selwyn, 2022). In this sense, managing AI use is not merely a technical task but an ethical and pedagogical responsibility. Teachers' active involvement is essential to maintaining equilibrium

between technological innovation and the development of independent, reflective and motivated learners.

Balancing Innovation and Independence

Balancing the innovative potential of artificial intelligence with the preservation of student independence represents one of the most pressing challenges facing contemporary education. While AI offers powerful tools for enhancing access, efficiency and personalisation, education fundamentally aims to cultivate learners who can think critically, act autonomously and apply knowledge creatively. Scholars argue that innovation in education should not be measured solely by technological advancement, but by the extent to which it strengthens learners' intellectual agency (Biesta, 2020). In this context, the challenge is not whether AI should be used in classrooms, but how it can be integrated without diminishing students' capacity for independent thought and decision-making.

A key strategy for maintaining this balance lies in intentional pedagogical design. When learning activities are structured to require students to engage actively with content, such as justifying answers, reflecting on reasoning processes or critiquing AI-generated outputs, AI can function as a catalyst for deeper learning rather than a substitute for effort (Luckin *et al.*, 2020). Research indicates that students are more likely to retain independence when AI is positioned as a secondary support, used after initial problem-solving attempts rather than at the outset of tasks (Holmes *et al.*, 2022). This sequencing preserves the cognitive struggle necessary for learning while still allowing students to benefit from AI-enhanced feedback and guidance.

Assessment design also plays a crucial role in balancing innovation and independence. Traditional assessments that emphasise final products over learning processes may inadvertently encourage overreliance on AI tools. In contrast, assessments that foreground reasoning, reflection and iterative development reduce the incentive to outsource thinking to technology (Selwyn, 2022). Portfolio-based assessments, oral explanations and in-class problem-solving tasks provide opportunities for students to demonstrate understanding in ways that AI cannot easily replicate. Such approaches align innovation with educational integrity, ensuring that AI supports learning rather than distorting it.

Equity considerations further complicate the balance between innovation and independence. Unequal access to AI tools can exacerbate existing educational inequalities, giving some students technological advantages while leaving others dependent on limited or outdated resources. Scholars emphasise that equitable integration requires schools to ensure fair access while simultaneously teaching all students how to use AI responsibly and critically (Williamson & Eynon, 2020). Without this dual focus, innovation risks becoming a

driver of dependency for some learners and exclusion for others.

Maintaining equilibrium between AI innovation and student independence requires a shared commitment from educators, institutions and policymakers. Teachers must be empowered to exercise professional judgement, institutions must support pedagogically sound implementation, and students must be guided to see AI as a means of extending their thinking rather than replacing it. As Selwyn (2022) argues, the goal of educational technology should not be to make learning effortless, but to make it more meaningful. When innovation is guided by this principle, AI can enhance education while preserving the independence that lies at the heart of learning.

Counterarguments and Response

In any discussion of artificial intelligence in education, it is essential to consider counterarguments that challenge the view that AI risks fostering student dependence. Proponents often argue that AI merely reflects broader trends in technological integration rather than posing unique threats to learning. From this perspective, students have always relied on external tools, ranging from calculators to search engines, and education has adapted accordingly. Advocates suggest that, like previous technological shifts, AI can enhance learning when integrated thoughtfully, providing personalised instruction, access to information and opportunities for skill development without undermining independence (Luckin *et al.*, 2020). Such arguments emphasise the potential for AI to support creativity, critical thinking and metacognitive reflection if used as a tool rather than a crutch.

Another common counterargument posits that concerns about dependence may be overstated because students retain agency and choice in how they engage with AI. Scholars highlight that effective pedagogical frameworks, coupled with teacher guidance, can mitigate overreliance by encouraging critical evaluation and active problem-solving (Holmes *et al.*, 2022). In this view, the risks of dependency are not inherent to AI itself but arise from insufficient guidance, lack of digital literacy and poorly designed assessment structures. Supporters of AI contend that rather than limiting its use, educators should focus on building students' competencies to interact with technology responsibly, turning potential vulnerabilities into learning opportunities.

While these counterarguments offer valuable perspectives, they do not fully address the cognitive, motivational and ethical dimensions of dependence identified in recent research. Studies demonstrate that even when guidance is available, students may overtrust AI outputs, particularly in high-pressure contexts where efficiency is prioritised over understanding (Selwyn, 2022). Cognitive research further indicates that

bypassing effortful problem-solving in favour of automated solutions can reduce retention, inhibit critical thinking and weaken metacognitive skills over time (Zhai *et al.*, 2021). Consequently, while student agency and teacher facilitation are important mitigating factors, they do not eliminate the underlying risk that AI can become a default solution, rather than a supportive tool, if integration is not carefully managed.

The response to these counterarguments is therefore not to reject AI or its potential benefits, but to advocate for deliberate, structured and ethical implementation. Teachers, curriculum designers and policymakers must ensure that AI is embedded in ways that preserve student autonomy, promote active engagement and uphold educational integrity (Williamson & Eynon, 2020). By framing AI as an adjunct to, rather than a replacement for, critical thinking and independent learning, the risks associated with dependency can be mitigated while still leveraging the pedagogical advantages of technological innovation. In short, acknowledging counterarguments reinforces the need for balanced, reflective and evidence-based integration of AI into educational practice.

CONCLUSION

Artificial intelligence in the classroom presents a dual reality: it offers powerful tools to enhance learning, personalise instruction, and support students with diverse needs, yet it also carries the risk of fostering dependency and diminishing essential cognitive skills. While AI can provide timely feedback, generate creative prompts, and assist teachers in managing instructional demands, overreliance may weaken critical thinking, reduce motivation, and erode independent learning habits. Its benefits are undeniable, but they must be balanced against the potential for students to become overly reliant on technology as a shortcut rather than an aid to understanding.

The key deduction is that AI is neither inherently beneficial nor inherently harmful; its value is determined by how it is integrated into educational practice. Thoughtful, ethical, and guided use ensures that AI complements learning rather than replacing it, preserving student autonomy, critical thinking, and engagement. Educators, institutions, and policymakers must therefore approach AI not as a replacement for human effort but as a tool to enrich the educational experience, empowering students to become independent, reflective, and motivated learners.

Recommendations

Based on what have been written and concluded upon, the following recommendations were made:

1. Integrate AI in the classroom as a supportive tool, not a replacement for independent thinking.

2. Design learning activities that require students to critically engage with AI outputs and reflect on their reasoning.
3. Encourage students to attempt problems independently before consulting AI and to compare multiple AI-generated solutions.
4. Provide professional development for teachers on AI, combining technical skills, pedagogical strategies, digital literacy, and ethical awareness.
5. Allow teachers to experiment with AI in low-stakes contexts, reflect on outcomes, and share best practices collaboratively.
6. Establish clear institutional policies on AI use, including acceptable applications, academic integrity, data protection, and equitable access.
7. Design assessments that prioritise learning processes over final products, such as reflective portfolios, in-class problem-solving tasks, and oral presentations.
8. Educate students in responsible AI use, focusing on critical evaluation, ethical awareness, and understanding the limitations and biases of AI.
9. Encourage students to treat AI as a learning partner rather than an unquestionable authority.
10. Implement a holistic approach that embeds AI thoughtfully into pedagogy, supports teacher capacity, guides student use, and ensures balanced, independent learning.

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