

# Use of AI in Education: Benefits, Risks, and the Case for a 70/30 Integration Model

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## Abstract

Artificial intelligence is rapidly permeating education, inspiring enthusiasm for its benefits and caution about its risks. Synthesizing 26 recent studies, we review AI's adoption across K–12 and higher education, including early AI-literacy initiatives and post-ChatGPT uptake. Evidence highlights key gains—personalized learning, stronger engagement, improved accessibility, and operational efficiency—while also surfacing ethical and pedagogical challenges that demand balanced integration. We propose a 70/30 model in which roughly 70% of learning remains human-led and 30% is AI-augmented, preserving teacher centrality while leveraging automation where it adds value. This article presents the landscape and positive impacts, addresses risks, mitigations, and implementation of the 70/30 approach. Our literature-based analysis underscores the need for strategic, ethical, and human-centered AI use in education.

**Keywords:** Education, Artificial Intelligence, Technology, Higher Education, Management

## 1. Introduction

Artificial intelligence has shifted from a niche computer science topic to a transformative force in education, fundamentally changing "the way we live, learn, and work"[1]. This evolution presents both immense opportunities and urgent questions. Education systems worldwide are moving to integrate AI into curricula, with many countries incorporating AI topics into K–12 programs as a "global strategic initiative" [1], [2]. The rationale is clear: as AI permeates daily life, future generations must gain relevant skills and understanding. Pre-college AI education is expected not only to explain how AI technologies work, but also to "inspire future AI users, ethical designers, software developers, and researchers" [1]. International organizations likewise emphasize broad AI literacy; for example, the Council of Europe's Commissioner for Human Rights urges schools to teach both how AI works and its positive and negative societal impacts [3]. This underscores that integrating AI into education is increasingly essential for preparing learners to thrive in an AI-driven future.

At the same time, the rise of AI in education has sparked intense debate. In late 2022, the public release of generative AI tools like ChatGPT sent "shock waves throughout the global education community"[4]. By 2023, a survey found roughly one-third of U.S. university students had used AI chatbots to complete homework assignments [5]. Such findings alarmed many educators: some institutions banned AI tools for coursework, while others debated how to incorporate them responsibly [5]. Educators recognize that AI offers powerful new capabilities to enhance learning but also poses serious challenges related to academic integrity, equity, and the role of teachers. Most agree that generative AI will "substantially affect curriculum, instruction, and assessment" in the near future, yet many feel unprepared and lack confidence to address its implications in practice [4]. This gap between rapid AI advancements and educators' readiness has become a central concern in current discussions.

Thus, while there are "many good reasons to increase opportunities for children and adolescents to learn about AI"[6], equally strong reasons for caution persist given the ethical and pedagogical complexities. This paper addresses both sides of the issue: it reviews the positive impacts of AI in education identified in recent research and examines the negative impacts and challenges. Potential solutions are also considered, including a proposal for a balanced 70/30 integration model as a way forward. Drawing on evidence from multiple education sectors and international contexts, we aim to clarify how AI is currently used in education, what benefits it offers, and why careful, strategic integration is advisable. Ultimately, this analysis seeks to guide educators and policymakers in harnessing AI's advantages without compromising educational values or quality.

In sum, this article offers a timely and valuable contribution by synthesizing recent evidence and proposing a concrete path forward for AI in education. Unlike prior discussions that focus narrowly on either the benefits or the risks of educational AI, this review combines both perspectives to present a nuanced, actionable framework for integration. By introducing the 70/30 model, we bridge the enthusiasm for AI's potential with practical strategies to address its challenges, providing educators and policymakers with clear guidance on balanced implementation. This literature-based analysis not only distills insights from K–12 and higher education contexts but also fills a critical gap in the discourse – offering a strategic model that maximizes AI's advantages while safeguarding educational values and human-centered learning.

## 2. The Current State of AI in Education

Global adoption of AI in education is accelerating through a mix of top-down initiatives and grassroots experimentation. In K–12 schooling, there is widespread agreement on introducing AI concepts much earlier than before [6]. Until recently, AI topics were usually confined to university courses, but now they are "making their way into K–12 classrooms as a global strategic initiative"[1]. National curricula are being updated to include AI literacy under computing or STEM education [2]. Many countries have launched pilot programs to teach machine learning, robotics, and data science fundamentals before students graduate high school [2]. This reflects recognition that AI will heavily influence the future of work and daily life. Indeed, education is seen as preparing students a decade or more ahead for an AI-driven future [7]. In higher education, a parallel movement is underway: universities are integrating AI content not only in computer science but across diverse fields (business, healthcare, humanities) to ensure graduates are AI-competent. Notably, institutions that added AI-related courses report improved student outcomes. In China, for instance, several universities saw a marked rise in graduate quality and national rankings after adding AI coursework [8]. These trends suggest that embedding AI knowledge across disciplines can enhance overall educational quality and student preparedness.

Beyond curriculum content, AI technologies are increasingly used as tools in classrooms and for school operations. Intelligent tutoring systems and AI-driven analytics platforms have existed for years, but only recently have they gained wider traction. The release of user-friendly AI systems like ChatGPT brought AI's capabilities to the forefront for many educators. Teachers are now experimenting with AI teaching assistants that answer student questions or provide feedback on assignments, and students are discovering AI as a study aid (e.g. chatbots for language practice or automatic essay generators). Usage varies widely: some educators remain hesitant or have "encountered none" of these AI applications so far [9], while others are actively exploring them. A recent review found that training teachers to use AI is still in its infancy, and most teachers have not been systematically prepared to incorporate AI in teaching [3]. Nonetheless, teachers' practical knowledge of AI is gradually expanding through informal professional development and early adopters' experiences [3]. In some contexts, the COVID-19 pandemic's push toward digital learning increased teachers' general tech competence and openness to new tools [4]. This has created a more favorable climate to introduce AI, though generative AI brings new challenges since it can do far more than earlier software and demands "unique competencies" from educators [4].

Crucially, the current landscape is marked by both optimism and concern. On one hand, early implementations show promise: studies report that AI-enhanced learning can improve student outcomes, and educators in pilot projects often give positive feedback. For example, after an AI-driven personalized learning experiment, college instructors rated the new AI-based method 4.8 out of 5 for effectiveness [10]. On the other hand, significant reservations persist. Ethical issues such as data privacy, algorithmic bias, or impacts on student mental health are widely acknowledged challenges accompanying AI's rise [11]. Educators also fear that AI could undermine fundamental aspects of education if misused – for instance, AI tutoring systems or content generators might replace human teachers, weaken teacher-student relationships, or enable cheating [9]. These dilemmas have already begun to surface, prompting some institutions to respond. In higher education, several universities have formed task forces and issued guidelines on the use of generative AI in coursework [5]. Meanwhile, scholars are calling for more empirical research on AI-in-education outcomes, noting that demand for AI-based lessons is outpacing the evidence base on how students learn with AI [6]. In summary, AI's presence in education is rapidly expanding, with enthusiastic adoption in some quarters and caution in others.

### **3. Positive Impacts of AI in Education**

The integration of AI into education has yielded numerous benefits, as documented in recent studies. One of the most significant advantages is personalized and adaptive learning. AI systems can analyze individual learner data and tailor instruction in real time, effectively addressing the diverse paces and styles of students. Studies have shown that AI-driven personalization can measurably improve learning outcomes. For example, in a college course, an AI-based recommendation system that provided each student with personalized content and video tutorials led to higher engagement and better performance compared to a control group without AI support [12]. In secondary education, using AI to support a high school curriculum eliminated traditional achievement gaps: in one study, classes that integrated adaptive AI support saw female students perform on par with males, and lower-achieving students kept up with higher-achievers, a stark contrast to typical classrooms [2]. By dynamically adjusting difficulty and providing instant feedback, AI tutors can give each student an individualized learning experience that was previously unattainable at scale. This individualized support not only boosts academic performance but can also enhance learners' self-efficacy by helping them overcome challenges with timely, tailored guidance. Researchers note that AI-based conversational agents in learning (such as chatbot tutors) offer

unique advantages including interactive dialogue, immediate feedback, and personalized recommendations, all of which can bolster a student's confidence and motivation to learn [13].

Another key benefit of AI in education is increased student engagement and motivation. AI-powered tools often make learning more interactive, responsive, and fun, which in turn keeps students more engaged. In contrast to passive lecture-based learning, students using AI tutors or educational chatbots participate actively through continuous input and feedback. Empirical evidence supports this boost in engagement. For example, English language learners who practiced writing and conversation with a ChatGPT-based tutor outperformed peers who received traditional instruction; the AI's interactive and personalized practice was cited as a major factor in the experimental group's higher language proficiency [13]. These learners also described the AI-assisted sessions as more engaging and enjoyable, noting that practicing with an ever-available, non-judgmental AI partner increased their comfort and confidence. Similarly, in a study of 279 university students, those who learned with the help of AI tools rated their experience significantly higher in terms of comfort and convenience (averaging 4.6 out of 5) than students in a conventional learning setting [10]. Several mechanisms explain why AI bolsters engagement: it provides immediate feedback that encourages persistence, it can adapt content or examples to align with students' personal interests (for instance, framing problems in the context of sports or music to capture a particular student's attention)[2], and it often introduces elements of gamification or challenge at just the right level. Exposure to AI in learning has also been observed to spark curiosity and positive attitudes toward technology. After participating in an AI-integrated STEM program, for example, elementary students expressed markedly greater excitement and curiosity about AI topics, indicating that the engaging experience had fueled their interest in learning more about technology [7].

AI also shows promise in making education more accessible and inclusive. Because AI-driven tools can be customized to individual needs and delivered online, they help bridge gaps for learners who have historically been underserved. For example, the adaptive high school curriculum mentioned above not only improved overall performance but also ensured that groups often left behind—such as girls in STEM or lower-performing students—achieved outcomes on par with their peers when supported by AI personalization [2]. AI tutoring systems and online learning platforms can reach students in remote or resource-limited areas, reducing reliance on the local availability of specialized teachers. In settings where qualified instructors are scarce, AI can offer a substitute or supplement; a study in Nigeria noted extremely high enthusiasm for learning about AI among

students but found a lack of infrastructure and trained teachers to be major obstacles, suggesting that virtual AI labs and intelligent tutoring could help mitigate these challenges [14]. AI tools can also accommodate learners with disabilities by adjusting how content is presented. For instance, AI features like speech-to-text and computer vision can assist students with disabilities (e.g., providing captions for the deaf or descriptions for the visually impaired), allowing them to learn alongside peers using the same tools. By offering multiple ways to interact with content, AI supports the principles of Universal Design for Learning and helps all students benefit together. Inclusivity through AI is not limited to K–12. In continuing and professional education, AI-driven courses provide flexibility for learners who must study on their own schedule. A recent study of an online AI course for Hispanic healthcare professionals found that an AI-enhanced curriculum significantly improved participants’ AI knowledge and attitudes, despite their varied backgrounds and limited prior exposure to AI [9]. Delivered asynchronously with interactive modules, the program “bridged gaps in AI knowledge among participants”, highlighting that AI education can be made accessible to non-traditional learners. The success of this course also underscored the value of culturally responsive design (using context-relevant examples) in AI education. Efforts to use AI for inclusivity also extend to empowering underrepresented communities. As one case study in South Korea showed, a software and AI education camp targeting multicultural (immigrant and minority) students led to marked improvements in these students’ awareness of AI, their confidence in learning technology, and their interest in pursuing tech-related studies or careers [15]. By providing bilingual instruction, culturally relevant examples, and an inclusive learning environment, the program leveraged AI tools in a way that engaged students who often feel marginalized. Such outcomes suggest a virtuous cycle: as AI helps education reach a broader and more diverse group of learners, those learners may develop greater interest and skills in technology, contributing to a more diverse AI workforce in the future. In sum, when applied thoughtfully, AI can act as an equalizer – expanding quality learning opportunities and helping those who might otherwise be left behind catch up.

A further benefit of AI integration is the efficiency it brings to educational processes and the support it provides for educators. AI can automate a range of routine tasks that consume teachers’ time, such as grading quizzes, checking homework, and even drafting basic lesson materials. By handling these repetitive duties, AI frees teachers to concentrate on higher-level instructional design and one-on-one mentoring. For example, AI systems can instantly grade quizzes and even provide preliminary feedback on essays, flagging errors and offering suggestions within seconds. This

immediacy lets students learn from mistakes right away, while freeing teachers to concentrate on deeper aspects of instruction. A review of ChatGPT’s potential in education identified multiple ways AI can aid teachers – from generating practice questions and examples to giving feedback and personalized recommendations – effectively accelerating many tasks teachers perform [13]. Significant time savings have been reported – for instance, auditors using AI finished their reports much faster, suggesting similar speed-ups are possible in grading and feedback cycles for teachers [8]. Indeed, the universities that embraced AI saw institutional improvements partly due to more efficient teaching practices [8]. Achieving these benefits requires investment in technology and teacher training. Experts note that schools must provide infrastructure and professional development so educators can use AI tools effectively [5]. Once those supports are in place, AI can track student progress and alert teachers to patterns that would be hard to spot manually – such as a concept many students are struggling with or a student who is falling behind. In effect, AI serves as a tireless teaching assistant, helping educators make data-informed decisions and allocate their time where it is needed most.

Finally, integrating AI into education helps foster critical skill development and future preparedness among students. By learning with AI (and about AI), students develop digital and AI literacy – the foundational understanding of how AI works, what it can and cannot do, and how to use it responsibly. Many schools now explicitly include “AI literacy” or “AI fluency” as a learning objective [3], [16], [17], reflecting the need for citizens who can function in a world permeated by artificial intelligence[18]. Universities are beginning to incorporate topics like algorithmic bias, data privacy, and the social impact of AI into their courses to ensure students become conscientious as well as competent in using these technologies[19]. AI can also be a springboard for creativity and innovation. Rather than stifling creativity, AI tools can stimulate it when used appropriately. In writing or design tasks, for example, an AI can suggest ideas or drafts that students might not have come up with, which students can then refine and expand. By handling some tedious, low-level tasks (like basic coding debug or repetitive calculations), AI frees learners to focus on big-picture thinking and original ideas. In this way, students can treat AI as a creative partner that broadens their perspective and inspires more divergent thinking. Working with AI in projects also builds collaboration and communication skills. Students learn to formulate clear questions or prompts to get useful results from an AI, and to incorporate AI-generated insights into their team’s work. This experience of human–AI teaming prepares them for future workplaces where collaboration with AI

will be common. As educators have noted, preparing students for an AI-rich future includes teaching them to work effectively alongside AI tools [4].

In the long run, students educated in an AI-integrated environment enter the workforce not just as technology consumers, but as informed users and potential innovators. Familiarity with concepts like machine learning and algorithmic bias means they can more quickly adapt to new AI tools. National policymakers increasingly view AI competence as vital for economic development and competitiveness, making AI education a strategic priority[7]. As one scholar noted, introducing AI at the K–12 level can “inspire future AI users, ethical designers, software developers, and researchers” by sparking interest early on[1]. There are already signs of this: students exposed to AI have built simple AI projects (like basic image classifiers or chatbots) in high school, demonstrating that even teenagers can grasp foundational AI principles. Various youth AI programs around the world further show that young learners can apply AI to solve real problems, exercising creativity, critical thinking, and entrepreneurship. In short, integrating AI into education enriches current learning while equipping the next generation with the skills and mindset to thrive in an AI-driven future.

#### **4. Negative Impacts and Challenges**

Despite its promise, the rise of AI in education has also given way to significant concerns. Foremost among these is the threat to academic integrity. Advanced generative AI tools can produce human-like essays, answers, and solutions, which some students have used to cheat on assignments. A 2023 survey revealed that roughly one-third of university students had already used AI chatbots like ChatGPT to complete homework, sparking alarm among educators [5]. Incidents of AI-assisted plagiarism and dishonesty undermine the validity of assessments and have led some institutions to enact outright bans or strict usage policies [5]. Educators must now grapple with how to maintain fair assessments in an era when students can ask an AI to do their work. Overreliance on AI can short-circuit the learning process: if students simply use an AI to generate answers or write essays, they may bypass the critical practice and struggle needed to develop their own skills. Many teachers worry that the increasing use of AI could diminish the role of the teacher and the quality of student learning. For instance, if students turn to AI systems for instant answers or tutoring, they might engage less with teachers or peers, weakening the human interactions that are crucial to education. Some fear that AI technologies might eventually replace certain teaching functions and erode the teacher-student relationship [9]. Compounding these worries, most educators feel ill-equipped to

deal with AI's impacts. Many teacher preparation programs have not yet incorporated AI training, and practicing teachers often lack professional development in this area. Surveys indicate that while teachers overwhelmingly recognize AI will affect instruction and assessment, a majority do not feel confident in managing these changes [4]. As a result, some educators might misuse AI tools or avoid them entirely, leading to uneven implementation in schools [3].

Beyond academic integrity, AI in education raises broad ethical, legal, and logistical challenges. One major concern is the accuracy and bias of AI-generated content. AI systems can sometimes produce incorrect information or reflect biases present in their training data. If students or teachers rely on such outputs without verification, misconceptions can spread. Algorithmic bias is particularly worrisome: if an educational AI tool has been trained on data that does not represent diverse populations, it may perform worse for or even discriminate against certain groups of students [11]. Another challenge is data privacy. AI applications often require collecting detailed data on student performance, behavior, or personal characteristics to function effectively. This raises concerns about data storage, access, and potential misuse. Protecting student privacy is paramount, but not all AI tools are transparent about their data use [11]. There are also concerns about the impact of AI on student well-being. If learners spend more time interacting with AI tutors and less time with classmates or teachers, they might miss out on social-emotional learning opportunities. Overuse of AI or screen-based instruction could potentially affect students' attention spans or mental health, though research in this area is still emerging [11].

Equity is another significant challenge. Without deliberate measures, AI could widen the digital divide between well-resourced and under-resourced communities. Schools in affluent areas are more likely to have the latest technology, stable internet access, and staff trained to use AI, whereas students in rural or low-income regions may struggle to access AI-enhanced education. As one study highlighted, enthusiasm for learning AI can be high even in underprivileged contexts, but a lack of infrastructure and trained teachers can severely hinder implementation of AI topics in the classroom [15]. If such disparities persist, AI integration could inadvertently deepen inequities. Finally, there is the challenge of navigating the hype versus the reality of AI in education. The push to adopt AI tools has in some cases outpaced the evidence that those tools improve learning. Researchers have pointed out that the demand for AI-based lessons is surging ahead of our scientific understanding of how AI can best support learning, creating a risk of investing in tools without proven benefit [6], [20]. More empirical studies are needed to determine which AI applications truly enhance teaching and learning and under what conditions. Implementing AI without guidance can lead to unintended

consequences. One experiment noted that when an AI tool took too much control of the learning process, students reported lower engagement, likely because the teacher's active involvement was reduced in that scenario [10], [21], [22], [23]. This shows that AI is not a plug-and-play solution for education, and its success depends on careful integration and ongoing human oversight.

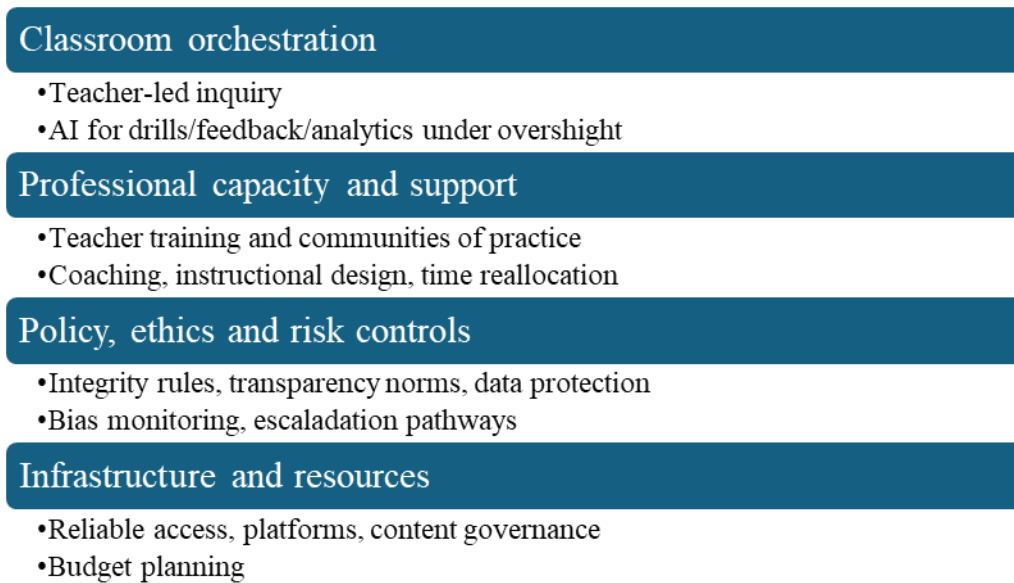
## **5. The 70/30 Model**

Given the dual nature of AI's impact, a balanced approach to integrating AI in education has been proposed as the most prudent path forward. We refer to this as the 70/30 integration model: roughly 30% of teaching and learning activities are delegated to AI tools, while the remaining 70% continue to be led by human educators. In practice, this means leveraging AI for what it does best – automating routine tasks, providing personalized drills and practice, analyzing learning data – and reserving for teachers those roles that require human judgment, creativity, and emotional intelligence. The goal of the 70/30 model is to harness AI's advantages without undermining the irreplaceable value of human teachers. It positions AI as a powerful assistant rather than a replacement. An AI tutor might handle repetitive practice problems or answer basic questions for students (the 30% portion), freeing the teacher to devote more time to one-on-one mentorship, class discussions, and developing students' higher-order thinking (the 70% human-driven portion). This division of labor plays to the strengths of each: AI offers speed, scalability, and personalization, while teachers provide guidance, motivation, and ethical oversight.

Implementing a 70/30 integration requires intentional strategies and support. From a management perspective, this means adopting principles of effective organizational change: engaging stakeholders early, defining policies, and allocating resources to sustain the model. Educators must be equipped with the skills and knowledge to effectively orchestrate human–AI collaboration in the classroom. Teachers remain important agents in determining society's response to AI tools and need training in new competencies to integrate these tools wisely [4], [24], [25], [26]. School leaders and administrators should articulate a clear vision for AI use, provide adequate infrastructure, and support professional development to build teacher AI literacy. Frameworks have been proposed to help instructors plan the incorporation of AI into their courses in a structured and pedagogically sound way[14]. Institutions also play a role by establishing policies that define acceptable use of AI in learning. Early examples include institutional guidelines on generative AI usage that emphasize transparency (e.g., requiring students to disclose if they used AI in an

assignment) and integrity (clarifying what constitutes appropriate assistance versus cheating) [5]. These policies, together with the 70/30 model, aim to create an environment where AI is used ethically and effectively: students are encouraged to use AI for exploration and practice, but critical thinking and original work are still expected and valued.

Figure 1. Governance and implementation stack of the model



Source: Own contribution

The 70/30 approach also directly addresses many of the challenges outlined earlier. By keeping human educators at the helm 70% of the time, the model ensures that teacher–student interactions, mentorship, and social-emotional learning remain central. This helps safeguard against the isolation or reduced engagement that might occur if AI were to dominate instruction. Since teachers guide the overall learning process, they can intervene if an AI tool is leading a student astray with incorrect information or biased outputs, thereby maintaining academic quality and fairness. The presence of the teacher as an active facilitator also acts as a check on AI’s influence: students are less likely to become overly reliant on AI or misuse it if teachers are closely involved in monitoring progress and setting boundaries for AI use. Moreover, teachers can use the time saved by AI automation to focus on equity – identifying which students need extra help or lack access to resources and then providing targeted support. In this way, a balanced model can help narrow gaps rather than widen them.

Table 1 RACI Matrix (R=Responsible, A=Accountable, C=Consulted, I=Informed)

Task	Tutors/Teachers	Students	AI systems	School leadership	IT/Policy
Curriculum design	A	I	C	C	I
Mentoring & SEL	R	R	I	C	I
Assessment policy	C	I	I	A	R
Personalized drills/exercises	C	R	R	I	I
Data analytics	I	I	R	C	A
Integrity Safeguards	C	I	C	A	R

Source: Own contribution

By design, the 70/30 model promotes a reflective use of AI: teachers and students are continually evaluating what AI produces. This cultivates critical thinking about AI, turning each AI interaction into a learning opportunity (for example, discussing why an AI might have made an error or what biases might be present). It also reinforces the notion that AI is a tool to be used under human guidance, which is crucial for ethical and safe outcomes. Under a guided integration approach, students not only benefit from AI-driven learning enhancements but also witness their teachers modeling responsible AI usage and addressing its limitations or ethical issues in real time.

## 6. Conclusion

In conclusion, artificial intelligence is poised to become an integral part of education. Evidence shows that AI can greatly enhance learning and teaching – from tailoring education to each learner and boosting engagement, to expanding access and easing teachers’ workloads. Yet these opportunities come with serious risks. If applied without care, AI can undermine academic integrity, exacerbate inequalities, infringe on privacy, or erode the human connections that define good education.

The way forward, therefore, lies in a balanced integration of AI guided by a deliberate strategy. Educators and policymakers should neither reject AI out of fear nor embrace it uncritically. Instead, they should adopt strategies like the proposed 70/30 model that leverage AI's strengths while keeping human educators at the center of the educational process. This balanced approach, supported by clear guidelines and further research, will ensure AI is used ethically and effectively. It also aligns with the imperative set forth by international education leaders: to teach students both how AI works and how it impacts society – empowering future generations to use AI responsibly and for the benefit of all.

Ultimately, integrating AI into education is not a goal in itself but a means to an end – namely better learning outcomes and better preparation for the future. By proceeding with caution and foresight, the education community can harness the positive impacts of AI while mitigating the risks. In doing so, we can transform AI from a disruptive challenge into a powerful tool that enriches education for every learner.

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