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Teaching, AI, and the Human Core of Education : The Future Worth Defending



Armand Doucet
April 2026



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*“Human history becomes
more and more a race between
education and catastrophe.”*

- H.G. Wells -

Acknowledgements:

To my four children, Audreanne, Arianne, Auguste, and Alfred, I hope this paper becomes one small inflection point in the world's decision to act, so that you may inherit the future I have always dreamed of helping build for you.

To Alison Bartlett, my colleague who has been through it all with me, thank you!



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KEY TERMS

- Agentic AI** - AI that can take actions across multiple steps with some degree of autonomy, such as navigating platforms, managing tasks, or carrying out parts of a workflow. Examples include an AI system that books meetings, drafts and sends follow-up emails, completes forms across websites, or manages parts of a teacher's planning or reporting process.
- AI Fluency** - A deeper level of understanding that includes not only the technology, but also the systems around it, the person using it, the person using its expertise and context, as well as the relationships it affects.
- AI Literacy** - A basic level of understanding that helps people recognize what AI is, what it can and cannot do, and how to use it safely.
- AI Slop** - Low-quality or misleading synthetic content produced at scale.
- Algorithmic Bias** - Unfair patterns in AI outputs or decisions caused by biased data, design, or assumptions built into the system.
- Ambient AI** - AI that works quietly in the background of digital environments, shaping what people see or do without always being directly asked. Examples include smart glasses that listen and provide prompts, systems that summarize meetings automatically, or software that quietly recommends actions while someone is working.
- Anthropomorphic AI** - AI designed or perceived to act human-like using warmth, personality, emotion, memory, voice, or conversation patterns that make people feel they are interacting with something more caring, understanding, or human than it actually is.
- Authentic Assessment** - Assessment that asks students to apply, explain, defend, or use their learning in meaningful and realistic ways.
- Cognitive atrophy** - A weakening of mental capacity through underuse. In the context of AI, it refers to the risk that critical thinking, memory, reasoning, writing, or problem-solving become less strong when too much of that work is regularly handed over to a machine.
- Cognitive debt** - A loss that builds over time when a person relies on AI or another tool to do thinking they still need to develop for themselves. It may not be visible immediately, but it can appear later when the person has to work without the tool.
- Cognitive Offloading** - Handing mental work, such as remembering, reasoning, or writing, over to a tool instead of doing it oneself.
- Co-Intelligence** - A way of using AI as a collaborator while keeping human judgement, authorship, and responsibility at the centre.
- Delors' Four Pillars** - UNESCO's four-part vision of education: learning to know, learning to do, learning to live together, and learning to be.
- Epistemic Corruption** - Damage to the shared knowledge environment when false, misleading, or low-quality information spreads faster than people can check it.
- Formative Assessment** - Assessment used during the learning process to help teachers and students see what is understood and what needs support next.
- Generative AI** - AI systems that create new content, such as text, images, audio, video, or code such as Large Language Models.
- Hallucination** - When an AI system produces false or invented information in a way that sounds confident and convincing.
- Large Language Model (LLM)** - A type of AI trained on very large amounts of text to predict likely word sequences and generate fluent language.
- Surveillance Capitalism** - A business model in which personal data and behaviour are collected and used for prediction, influence, and profit.
- Sycophantic Design** - AI behaviour that flatters, agrees with, or reassures the user in ways that may feel good but weaken honesty, learning, or critical judgement.
- The Novice's Dilemma** - The problem that the people who most need help from AI are often the least able to judge when its output is wrong, weak, or misleading.
- Triangulation of Assessment** - A way of judging learning by looking at more than one kind of evidence, especially products (test, projects etc.), observations, and conversations.
- W.E.I.R.D.** - A term used to describe research or systems based mainly on Western, Educated, Industrialized, Rich, and Democratic societies.



Introduction

Education has not been waiting for AI. It has been absorbing it for years, often without naming it, governing it, or deciding clearly what it was for. Its first contact with education was less an arrival than an accumulation: spellcheck, automated marking, smartphones, one-to-one devices, recommendation systems embedded in gaming and social media, learning platforms, student information systems, digital gradebooks, and large-scale data systems (Williamson, Eynon, and Potter).

Many of these tools expanded access, improved communication, or supported accountability, but they also introduced trade-offs that were rarely governed with enough intention. Platforms designed to maximize engagement rather than support development have shaped student attention and behaviour, while large-scale data systems have normalized the assumption that what matters most in education is what can be captured, compared, and acted on at scale (Schüll; Haidt; Twenge; Williamson; Selwyn). Teachers have been left dealing with the downstream effects. What was too often framed as innovation was not always integrated in ways that were intentional, responsible, or aligned with what we know about learning and human development (West; Selwyn).

Covid-19 accelerated this dramatically. In the rush to preserve continuity of schooling, many education systems turned to learning management systems and platform infrastructures as the default means of delivering instruction, communication, assessment, and oversight (West). This rapid digital transformation did something the earlier wave of tools had not done at the same scale: it institutionalized platform dependence inside the operational architecture of schooling itself, making certain vendors, data systems, and infrastructure assumptions the default before any democratic or pedagogical decision had been made about whether they should be (West).

Generative AI then has entered a landscape already shaped by these algorithmic systems and their effects on concentration, belonging, motivation, and trust. What changes now is the depth of the intervention: from systems that captured attention to systems that can shape expression, production, and cognition itself (OECD, 2025). When large language models became publicly available in late 2022, teachers began seeing assignments that no longer matched what they knew their students could do on their own, and with that came growing uncertainty about what still counted as credible evidence of understanding.

What first looked like anomalies marked an inflection point. AI had not suddenly arrived; its effects had become impossible to ignore in the core work of teaching, learning, and assessment. But what became visible in the Age of AI was not only

a new assessment problem. It was a deeper developmental problem: students are now being asked to learn, relate, and grow inside environments shaped more by behavioural design, convenience, and commercial engagement rather than by developmental need.

Generative AI is reaching students, teachers, and families directly, at low friction and massive scale, before most education systems had time to build policy, pedagogy, or governance around it. The Stanford AI Index 2026 found that generative AI usage by students varies widely by country, with 95% of Indonesian students saying they have used it, compared to 67% in the United States and the United Kingdom (Sajadieh et al.). Yet only half of schools in the U.S. have AI policies, and just six percent of teachers say those policies are clear (Sajadieh et al.). Its effects may matter less through spectacular transformation than through the cumulative reshaping of everyday practices, expectations, and relationships as AI becomes absorbed into the background of education and across all sectors of society. Punya Mishra, Professor at Arizona State University and Director of Innovative Learning Futures at the Learning Engineering Institute, supports this point sharply: generative AI is not only an educational technology but a cultural technology, reshaping cognition, emotion, authenticity, trust, and social life beyond the classroom, especially in the private spaces where children already live with their devices (Mishra, 2026). Further, AI goes beyond previous cultural technologies because it can generate deepfakes, produce video, misinformation indistinguishable from reality, clone trusted voices, and create persuasive content at scale across modalities, making it qualitatively different from any media that has come before it (Mishra, 2026).

Treating AI as simply another technological innovation misreads the moment. The OECD's 2026 International Summit on the Teaching Profession report frames the same challenge clearly: the teaching profession is already changing (OECD, 2026). The real question is whether education systems are shaping

For teachers, their unions, and the policymakers who shape the conditions in which they work, the question is no longer whether AI will shape education, but how that shaping will be governed.

that change or merely reacting to it and whether they can strengthen the human core of education, including relationships, collaboration, and trust, as technological change accelerates (OECD, 2026). The difference now is both speed and depth. Systems that once supported isolated tasks can now shape expression, reasoning, feedback, decision-making, and even forms of social and emotional dependence. That shift is becoming sharper as generative AI is joined by ambient and agentic systems. Some operate quietly in the background of learning environments, while others take actions, navigate platforms, and manage tasks with growing autonomy, making AI less something students and teachers simply use and more something that increasingly structures the conditions in which they learn and work.



What schools and teachers are confronting is a general-purpose technology already reshaping nearly every sector and domain of social, economic and civic life arriving on top of the accumulated cost of years of poorly governed, pedagogically weak, fragmented, and under-theorized technology integration (Watters; West; UNESCO, 2025; OECD, 2026; Bengio et al). It is also a material technology, dependent on data centres, chips, cooling systems, energy grids, minerals, water, and global supply chains. For education, responsible use therefore cannot mean “use AI whenever it is available.” It means taking a needs-based approach to AI and asking when it is pedagogically justified and whether public education should normalize unlimited computational consumption without accounting for its climate, water, and infrastructure costs.

Much of education's current response has been focused on the most visible and urgent pressures. Debates about phones, social media, screen limits, and whether generative AI should be used in classrooms are necessary for protecting students and coordinating union strategy, especially as concerns grow about age-appropriateness, mental health, and AI-related dependence. Similar concerns are now appearing in public policy debates over youth access to social media and AI chatbots (Australian Government; Hobson) as well as raises the question of whether policy should limit students' access to social media or instead regulate and restrict companies' access to students. Important as these are, the deeper problem remains: most education systems have never built a coherent continuum for digital and AI integration developmentally across the learner journey, system-wide across the architecture of education, and outward into work, citizenship, and life.

For teachers, their unions, and the policymakers who shape the conditions in which they work, the question is no longer whether AI will shape education, but how that shaping will be governed.

The purpose of this report is to take stock of that reality: to identify what has changed, what remains essential, and what education systems must now do differently if AI is to be integrated responsibly, based on needs and governed in the public interest. Its central claim is straightforward. AI is not disrupting the purpose of education. It is disrupting the conditions under which that purpose can be realized. What follows therefore examines what has changed, what has not, and what must now be intentionally rebuilt, protected, and governed. At the centre of those conditions, and of the report's argument, is the student-teacher relationship, the human bond that gives education its meaning and legitimacy (Education International, 2025; UNESCO, 2025).

What teaching has already built

The teaching profession is not starting from zero. It is starting from decades of hard-won, evidence-informed understanding of how human beings learn, and that knowledge is more valuable now than ever (Shulman; Darling-Hammond et al.; National Academies).

The teacher who knows how to draw from this repertoire, and when to hold back, is the one most capable of using AI as an amplifier of human judgement rather than a substitute for it.
(OECD, 2026; Cukurova; Luckin)

The move from behaviourism to constructivism established that learning is active meaning-making, not the passive receipt of information (Dewey; Bruner). Vygotsky's Zone of Proximal Development made clear that learning is irreducibly relational: the space between what a learner can do alone and what they can do with guidance is where development takes shape, and that requires a responsive human who can read the learner in real time and get them just outside their comfort zone (Vygotsky). From there came successive waves of inquiry-based, project-based, competency-based, culturally responsive, and formative approaches to learning, each asking more of teachers, not less (Ladson-Billings; Freire; Fullan; Thomas). Together, these shifts expanded the pedagogical repertoire of the profession while making the work more complex. Teachers have had to reconcile competing approaches in practice: deciding when structure is needed, when inquiry is warranted, when direct instruction

matters, and when student agency should lead. AI now arrives on top of that already-complicated pedagogical terrain.

The profession has also learned that most pedagogies have a time, a place, and a purpose. The point is not loyalty to one philosophy. The point is professional judgement: knowing what is needed, for whom, when, and how (Shulman). Teaching is skilled judgement under conditions of uncertainty (Schön). The teacher who knows how to draw from this repertoire, and when to hold back, is the one most capable of using AI as an amplifier of human judgement rather than a substitute for it (OECD, 2026; Cukurova; Luckin).

At the centre of that professional pedagogical toolkit is a triangulated approach to classroom assessment, in which evidence of learning is drawn from products, observations, and conversations (Davies). While this exact language is not used everywhere, the broader principle that sound judgement depends on multiple sources of evidence, not a single score or artifact, is widely reflected across classroom assessment theory and practice. What generative AI has destabilized most directly is not the triangulation of assessment itself, but the student's demonstrable product dimension of that framework. If AI can now generate the essay, the report, the analysis, or the presentation, then the product on its own can no longer bear the evidentiary weight it once did (Dawson et al.; Lodge



et al.). That forces the profession to address, urgently, what counts as credible assessment in both open and closed conditions, what forms and ranges of AI use are pedagogically acceptable, and how AI reshapes the relationship among learning outcomes, competencies development, skills development, pedagogy, and evidence (Perkins et al.). Without that redesign, the credibility and validity of assessment are compromised (Dawson and Liu).

The evidence that matters most often emerges in the process of learning, while the teacher is observing, questioning, coaching, listening, redirecting, and giving formative feedback as understanding is being built (Black and Wiliam). That is why observation and conversation are not secondary forms of evidence. They are often the living site of assessment for learning itself, where teachers elicit evidence of student thinking, interpret it in context, and adapt instruction in real time. Black and Wiliam's account of formative assessment, along with Pellegrino's learning-sciences perspective on classroom assessment, points to the same conclusion: the most valid evidence of learning is often generated not after the fact in a finished product, but during the very process through which understanding is being developed, tested, and refined (Black and Wiliam; Pellegrino, Chudowsky, and Glaser).

That challenge lands at the worst possible moment. The UN Secretary-General's High-Level Panel on the Teaching Profession, convened in 2023 precisely to confront a worsening global teacher crisis, was unequivocal that teachers cannot exercise meaningful professional judgement without decent working conditions, autonomy, and a voice in the decisions that shape their work; on technology in particular, the Panel insisted it be deployed in ways "supportive of teacher inputs... [and] the integrity of the profession". Yet the conditions for that judgement are eroding in the opposite direction: the world faces a projected shortage of nearly 44 million primary and secondary teachers by 2030, concentrated in the very systems already stretched thinnest (UNESCO, 2024; *UN Secretary-General's High-Level Panel on the Teaching Profession, 2024*).

These are not only technical questions of assessment design or pedagogical adaptation. They point to something deeper: teaching has built not only a set of methods, but a professional and moral understanding of what education is for. Across fifty years, three UNESCO commissions have carried a remarkably consistent message: education is human, relational, and democratic, and no technological disruption justifies giving that up. Delors's *Learning: The Treasure Within* offered four enduring pillars, learning to know, learning to do, learning to live together, and learning to be, while the Faure Commission's *Learning to Be* and the International Commission on the Future of Education's *Reimagining Our Futures Together* framed education as central to human development, human rights, and public life (Delors et al.; Faure et al.; UNESCO, 2021).

The OECD's own 2025 framework on *Education for Human Flourishing* reaches a similar conclusion from a different direction: the narrow human-capital model that has shaped education policy for decades is no longer sufficient, and in the age of AI, education must strengthen human agency, meaning, and security

rather than optimize for measurable outputs alone (OECD, 2025). That fifty-year tradition gives the profession something no technology vendor can match: a principled, evidence-grounded, and democratically constituted understanding of what education is for. That is the foundation from which this response to AI must be built. If the student-teacher relationship belongs to a shared human heritage, then technology in education must remain in service of it and subject to clear public standards (Biesta).

Section one - What has changed?

The conditions of teaching and learning have changed. Education's deeper purpose has not.

Across all sectors of society, the same warning is becoming impossible to ignore - powerful AI systems are arriving faster than institutions know how to govern them.

In April 2026, an Anthropic model called Mythos, described as uncannily capable of finding and exploiting hidden flaws in software running the world's banks, power grids, and governments, triggered emergency responses from central banks and intelligence agencies globally, with the Bank of England warning it could "crack the whole cyber-risk world open" (Mozur and Satariano).

In medicine, a 2025 meta-analysis of 83 studies found that generative AI diagnostic performance is broadly comparable to non-specialist physicians, a finding that should give pause to anyone assuming these systems are not yet consequential in clinical settings (Takita et al.).

The issue, then, is not that these systems are too weak to matter. It is that they are becoming powerful enough to matter before institutions can fully explain, govern, or account for them. Even when they perform well, their inner workings remain opaque to their own creators. Leading interpretability researchers concede we may never have a full account of why a model produces one output over another (Pistillo). Deploying a diagnostic system that cannot fully explain its reasoning raises a question that is not only technical, but moral: what does it mean to tell someone something consequential about themselves without being able to say why?

Yoshua Bengio, whose work in deep learning helped make these systems possible, has spent recent years warning publicly that the concentration of AI capability in a small number of companies is not only an economic problem but a democratic one, and that governance must move at the speed of deployment, not after it (Bengio, 2024). Geoffrey Hinton's warning comes from the same inside edge of the field. One of the central figures in the development of modern neural



networks, Hinton resigned from Google in 2023 to speak more freely about AI's risks, arguing that the possibility of losing human control over AI is among the most serious dangers civilisation has faced and that the field may be moving faster than human institutions can govern (Heaven).

For education, the Brookings global study offers a warning the profession should not dismiss (Burns et al.). Based on consultations with more than 500 students, teachers, parents, and education leaders across 50 countries and a review of more than 400 research studies, it concludes that at this point in AI's trajectory, the risks in education outweigh the benefits (Burns et al.). The concern is that the risks are arriving quickly and striking at children's foundational cognitive, social, and emotional development, the very conditions through which any educational benefits would have to be realized. The benefits most often promised for AI in education including personalization, translation, accessibility, and more tailored support, still rest on a learner capable of judgement, trust calibration, and critical evaluation. Yet many of the risks cut directly against those foundations. Sycophantic design, fluency mistaken for accuracy, and solitary use without adult scaffolding do not merely introduce complications around the edges; they weaken the very human capacities the benefits depend on. The problem, then, is not simply that the risks may outweigh the benefits. It is that they may erode the conditions under which those benefits would have had any real educational value at all.

The concern is that the risks are arriving quickly and striking at children's foundational cognitive, social, and emotional development.

Education systems, governments, school leaders, and teachers should take that warning seriously.

1A - Assessment validity has been structurally compromised

The clearest assessment consequence is that the finished product can no longer stand on its own as credible evidence of learning. This goes beyond is bigger checking for cheating or plagiarism but represents a broader crisis of assessment validity and academic integrity (Eaton et al.).

The future therefore requires a more deliberate use of both open and closed assessment, shaped by age, development, expertise, and purpose. Some learning outcomes still need to be assessed under secure conditions, where students demonstrate knowledge and skill independently and without external aids. Others are better assessed through open, AI-aware tasks designed to let students use relevant tools while still making their thinking, judgement, and authorship visible. The University of Sydney's "two-lane" approach captures this distinction well: secure "closed" assessment for assurance of learning, and "open" assessment for learning and participation in an AI-integrated world ("University of Sydney's AI Assessment Policy", 2026).

That is why Davies's triangulation of evidence matters even more in the age of AI. If the product has been weakened as a stand-alone source of evidence, then observation and conversation become more central, not less. AI can generate a polished product. What it cannot replace is the teacher who notices the hesitation behind the correct answer, the misconception hidden inside polished language, the shame behind avoidance, the effort behind a partial response, or the moment understanding finally begins to form. Nor can it replace the conversation in which a teacher discovers how a student arrived at an answer, what they still misunderstand, and what question might unlock the next step (Davies).

In the age of AI, assessment validity will depend less on whether a product looks finished and more on whether the teacher can trust the evidence of learning behind it.

Dawson and colleagues argue that detection, policing, and integrity surveillance are insufficient because the deeper issue is whether the task was ever a valid measure of learning in the first place (Dawson et al., 2024). Lodge and colleagues push further, showing that AI should be understood less as a tool than as a new layer of digital infrastructure that changes the conditions under which

assessment can validly operate (Lodge et al.). Teachers now must think more deliberately about the full learning sequence: the outcomes being pursued, the skills being developed, the nature of the task, the acceptable range of AI use, and the forms of evidence that can still credibly support professional judgement.

This also requires something many systems had gradually moved away from: more authentic assessment that depends on the professional discretion of the teacher and the trust infrastructure around judgement. In many jurisdictions, governments leaned toward standardized, easily taught, and easily tested approaches partly to reduce human bias and make systems more legible. Ironically, AI now pushes the profession back toward the very human processes of validity verification those models often tried to minimize: observing, probing, questioning, contextualizing, and deciding whether the evidence in front of us still justifies trust.

In the age of AI, assessment validity will depend less on whether a product looks finished and more on whether the teacher can trust the evidence of learning behind it.

1B - The cognitive development pathway is being bypassed

Durable learning requires effort, friction, and time. Willingham's cognitive science research establishes why: the brain is not naturally designed for the sustained abstract thinking that deep learning requires, which is precisely why productive difficulty, not its removal, is the condition through which understanding develops. (Willingham; Dehaene; Bjork and Bjork).



In June 2025, MIT Media Lab researchers published a preprint study using EEG to monitor the brain activity of fifty-four participants writing essays with ChatGPT, with a search engine, or with no tools (Kosmyna et al.). The ChatGPT group wrote about sixty percent faster but showed markedly reduced cognitive engagement. Relevant cognitive load fell by thirty-two percent. Brain connectivity across thirty-two EEG regions was almost cut in half. Eighty-three percent of ChatGPT users struggled to recall passages they had just written. Most strikingly, when participants who had relied on AI were later asked to write without it, they performed worse than those who had never used AI at all, suggesting an accumulating cognitive debt also referred to as cognitive atrophy (Kosmyna et al.). The study should not be treated as a final verdict on all AI-supported writing. It also must be acknowledged that the study did not take place in a school context with a qualified teacher guiding students. However, it does raise a serious warning about what can happen when speed replaces cognitive engagement and that we need to be cautious about introducing new AI tools into an education setting without a solid evidence base. The study aligns with OECD analysis: gains achieved with AI support may diminish or reverse once the tool is removed (OECD, 2026). As Schleicher put it, people do not become fit by watching sports, and they do not become learners by passively consuming content (Schleicher).

When AI is used without pedagogical purpose or proper intentional and responsible integration, it can eliminate the very struggle through which learning is built.

Viewed through Delors, the implication is clear. *Learning to know* still requires friction, effort, and time (Delors et al.). Johann Hari's synthesis of the attention research makes the baseline condition visible: before generative AI arrived, the cognitive capacities learning depends on, sustained attention, deep reading, and tolerance of difficulty, had already been eroded by the first wave of algorithmically governed platforms (Hari). When AI is used without pedagogical purpose or proper intentional and responsible integration, it can eliminate the very struggle through which learning is built. A student who consistently outsources thinking to AI is no longer Learning to know. Mishra names this the Novice's Dilemma: the learners who most need support are often least equipped to judge when AI output is useful, wrong, biased, shallow, or misleading. AI therefore makes expertise more important at the very moment it can make expertise harder to develop, because the novice may skip the struggle that builds judgement in the first place (Mishra, 2026).

Textbox 1 Learning: the treasure within; report to UNESCO of the International Commission on Education for the Twenty-first Century (Delors, 1996)

Delors' four pillars of education, developed for UNESCO, offer a holistic vision of learning that goes beyond academic knowledge. Delors argues that education is structured around four fundamental types of learning that together form a comprehensive, lifelong approach that goes beyond cognitive skills:

Learning to know: acquiring knowledge and mastering the tools of learning for cognitive skills

Learning to do: developing skills and the ability to act in diverse situations for practical competences

Learning to live together: fostering understanding, cooperation, and peaceful coexistence for personal development

Learning to be: supporting personal development and autonomy for social cohesion

Together, these pillars reflect a holistic and meaningful vision for education that prepares students to think, act, grow, and engage with others in an increasingly complex and interconnected world.

The problem runs deeper than novice judgement. Human beings rely on forms of epistemic vigilance to detect when communication should trigger doubt (Sperber). AI can slip past those defenses because its fluency, warmth, and responsiveness resemble the cues we have long associated with trustworthy human speakers. But in a language model, those cues are detached from the conditions that once made them reliable: expertise, effort, and accountability. That is why even informed users can default toward trust. The problem lies in the interaction between weakened critical habits and a form of human cognition shaped for a world in which anything speaking to us was another person (Maynard).

For the teaching profession and its unions, the question becomes, how is 'teaching to know' best supported and advanced?

The learning cycle requires more than access to correct answers. Deep processing including semantic engagement, elaboration, and meaning-making, is the mechanism through which durable understanding forms. Retrieval without that engagement produces the illusion of knowing, not knowledge itself (Brown, Roediger, and McDaniel; Sweller). It can reorganize the conditions of attention and perception through which thinking develops (Adams). Holmes, writing in the UNESCO Courier in April 2026, frames the same concern historically: every technology that appeared to make knowledge retrieval easier, from writing to books to search engines, has raised the question of whether learning itself remains necessary. With generative AI, the stakes are higher



because the tool does not merely retrieve knowledge; it simulates the production of it (Holmes).

For the teaching profession and its unions, the question becomes, how is 'teaching to know' best supported and advanced?

1C - The new conditions of childhood

The students arrive at generative AI already shaped by digital algorithms socially, and developmentally. Twenge's longitudinal work documented a steep deterioration in adolescent mental health beginning around 2012, a time when smartphones and more importantly social media became ubiquitous, with particularly sharp declines among girls (Twenge). Jonathan Haidt's synthesis, in his book *The Anxious Generation*, draws together a growing body of research suggesting that the shift to phone-based childhood has been associated with worsening youth mental health, chronic sleep disruption, increased loneliness and social withdrawal, and weakened attention and self-regulation, all of which matter directly for how children arrive at school ready to learn, relate, and cope (Haidt; Khalaf et al.; Yu et al.; Santos et al.). Anderson and Winthrop's five-year investigation adds that only one in three students is genuinely engaged in school, a crisis that predates Large Language Models (LLMs) (Anderson and Winthrop). Furthermore, students are now increasingly using it for companionship, advice, and emotional support.

Hopelab's 2024 national survey found that fifty-one percent of U.S. youth aged 14 to 22 had used generative AI, and forty-one percent believed AI would understand their feelings better than a human (Hopelab). UNICEF Innocenti further documents that adolescent AI use jumped in the UK from thirty-seven to seventy-seven percent in a single year, with a marked shift toward social-emotional uses (UNICEF, 2025). For some young people, AI may feel more available, less judgmental, or safer than the humans around them (Murthy). But, Common Sense Media reported in 2025 that thirty-three percent of teens used AI companions for social interaction and relationships, and widely reported litigation linked Character.AI to a Florida teen's suicide, underscoring what is at stake when emotionally persuasive systems operate in the lives of minors without adequate safeguards (Robb and Mann; Roose).

School-based AI fluency still matters, but young people also need a fluency that travels with them: the ability to notice when a system feels persuasive, overly flattering, or emotionally attuned, and to remember that its design is meant to keep them engaged.

The most consequential encounters young people are having with AI are not happening in classrooms. They are happening in private moments of boredom,

loneliness, and curiosity that adults rarely see. School-based AI fluency still matters, but young people also need a fluency that travels with them: the ability to notice when a system feels persuasive, overly flattering, or emotionally attuned, and to remember that its design is meant to keep them engaged.

A private conversation with a machine built to please is not just isolating. It can weaken the very conditions under which judgement, understanding, and human connection are formed.

They are a growing global recognition that the commercial logic of engagement platforms is fundamentally misaligned with child development.

Governments are finally beginning to acknowledge publicly what the evidence has been signaling for years, with Australia, France, Brazil, Manitoba, Norway, and others moving toward stronger protections for minors online (Australian Government; Reuters; Human Rights Watch; The Next Web; CEPA). The European Union has also moved in a stricter direction through new guidance on the protection of minors, signalling that children's data privacy and online safety can no longer be left to platform discretion alone (European Commission). These are not isolated national experiments. They are a growing global recognition that the commercial logic of engagement platforms is fundamentally

misaligned with child development. The Center for Humane Technology has described this dynamic as a business model increasingly organized around attachment, where design choices can make leaving feel like loss (Center for Humane Technology).

1D - Three structural risks the profession must name precisely

Three structural risks deserve to be named plainly, not hedged.

Labour. The IMF's 2024 analysis of 142 countries found that nearly forty percent of global employment is exposed to AI (Cazzaniga et al.). In advanced economies, the figure rises to sixty percent, with roughly half of those exposed jobs potentially negatively affected as AI executes tasks currently performed by humans (Cazzaniga et al.). This is not simply another automation wave aimed mainly at routine middle-skill work. AI is increasingly targeting cognitive and knowledge-intensive work, the very work education systems have long prepared students to do. As Acemoglu and Johnson argue that trajectory is not a neutral expression of technological progress, but the result of a dominant development model oriented more toward automation than augmentation (Acemoglu and Johnson). For the first time, the technology entering schools is also being built, in part, to automate the destination toward which schooling has historically pointed (Hao; Crawford). That reality sits at the centre of any serious discussion about curriculum, assessment, teaching, and the future of public education.

The accountability vacuum. When AI systems recommend special education pathways, disciplinary interventions, streaming decisions, or early-warning



flags and those recommendations are biased or wrong, who is accountable? The United Kingdom's 2020 A-level grading scandal showed how quickly accountability can become diffuse. Ofqual's grading algorithm downgraded nearly forty percent of teacher-assessed grades, with students from poorer backgrounds twice as likely to be penalized, while private-school students benefited from score inflation (Kelly). Yet legal and moral responsibility for the harm remained diffuse. Where AI informs professional judgement, accountability remains human. Where AI replaces professional judgement, accountability often evaporates.

Bias. Much of the dominant literature on AI and education still comes from WEIRD contexts (Western, Educated, Industrialized, Rich, and Democratic), and the systems being sold globally are largely trained on data, values, and assumptions that reflect those environments (Henrich, Heine, and Norenzayan). Victor R. Lee, a learning scientist at Stanford Graduate School of Education whose research examines how data practices shape institutional judgement about students, grounds this structurally: what counts as a data point, who has access to it, and how it shapes decisions about a student are rarely visible to the students or families those decisions affect and the students least likely to contest those judgements are those already most marginalised by the systems recording them (Lee). AI writing detection tools have already shown disproportionate false-positive rates for non-native English speakers and neurodivergent students, two groups already vulnerable to being misunderstood or unfairly accused (Liang et al.) As Benjamin and Noble have shown, algorithmic bias is rarely an accidental glitch, it is the predictable output of systems trained on inequitable realities and scaled as if those realities were neutral (Benjamin; Noble). Cristobal Cobo's work through the World Bank on digital learning in lower- and middle-income countries documents, with his other authors, shows how imported AI frameworks consistently underserve the contexts they are meant to help, failing to account for local languages, pedagogical traditions, and infrastructure realities, and leaving under-resourced systems most exposed to tools built without them in mind (Molina et al.).

1E - Platform power in education

AI arrives in education as infrastructure: procurement contracts, data architectures, and vendor dependencies that reshape governance (Williamson and Hogan; UNESCO, 2025). As the Center for Humane Technology argues, AI is not emerging from a vacuum but from an ecosystem shaped by incentives, norms, competitive dynamics, and power structures that reward speed, scale, and dominance over safety, accountability, and social benefit (Center for Humane Technology).

In that context, overly agreeable AI is not an accident. It is part of the business model. The more the system feels helpful, affirming, and easy to trust, the more

likely people are to stay with it, return to it, and give more of themselves to it. What feels good to the user is often what is most valuable to the platform. That is what makes this kind of anthropomorphism so misleading: the system may sound thoughtful or caring, but it is operating inside incentives shaped less by truth than by engagement, retention and dependence. Thus, the real pedagogical choice is often made before a single lesson begins. When a ministry or school board signs a Google, Microsoft, PowerSchool, or OpenAI contract, the vendor's logic enters the institution with it: what counts as data, what kinds of activity are visible, what forms of risk are prioritized, and what kinds of optimization are treated as progress (Van Dijck, Poell, and De Waal). Zuboff's account of surveillance capitalism helps explain why educational data is so readily treated as a commercial asset rather than a public trust (Zuboff). Procurement is now one of the places where educational values are defended or quietly surrendered. The European Commission's 2025 guidelines for high-quality digital education content attempt to name what those values look like in practice with educational value, reliability, safety, and accessibility, establishing criteria that put pedagogical purpose before platform logic (European Commission).

The geopolitics of AI cannot be treated as distant background noise. The United States and China are approaching AI as a matter of national strategy, not simply innovation (Bengio et al.) Hao's empire framework sharpens the point: the civilizing stories told about AI often obscure the extraction, concentration of power, and asymmetrical dependencies that make its expansion possible (Hao). It also pushes the argument beyond geopolitics alone: the deeper struggle may not be only between nations, but over whether a handful of technology firms are being allowed to set the terms of public life while bypassing the democratic processes meant to govern such power (Crawford).

In education, that problem becomes especially clear, because many of the tools now being adopted were not built with child development, civic life, or teacher professionalism at their centre, but inside larger struggles over power, markets, and influence.

1F - Epistemic corruption

AI can produce falsehoods with the structural confidence of fact at scale, instantly, and in ways that are increasingly difficult to detect (UNESCO, 2025). UNESCO documents this clearly, including the now well-known Alaska case in which AI-generated references in a policy document on phone bans either did not exist or were irrelevant to the claims being made (Stremple). In another example, South Africa's government was forced to withdraw its national AI policy in April 2026 after investigators discovered that at least six of its sixty-seven academic citations were fabricated journals, authors, and studies that simply do not exist, a document produced, apparently, by the very technology it was meant to govern (CNBC Africa).



UNICEF Innocenti has begun to name a related problem through the language of “AI slop”: synthetic content that may be inaccurate, low quality, and corrosive to the information environment in which children and young people learn (UNICEF, 2025). Learning to Know assumed there was something stable to be known, even if contested. In a synthetic-content environment, that condition is under pressure. The question is whether students can distinguish grounded knowledge from algorithmic fabrication and whether institutions still protect the conditions that make that distinction possible. The teacher who models epistemic discipline (ergo ‘teaching to know’) including source checking, verification, intellectual humility, the refusal to outsource certainty to a machine becomes more important than ever. That role only survives if systems continue to value it, resource it, and defend it.

1G - Teacher Work reconfigured

The cognitive risks of AI do not stop with students. They extend to teachers. The Alberta Teachers' Association's Pulse research, led by Phil McRae, provides empirical grounding: teachers report AI not as straightforward workload relief but as a shift in the character of their labour, less original professional design at the front end, more reviewing, repairing, and reworking of machine-generated output at the back end (ATA). What gets saved may not always be administrative busywork. In some cases, it may be the thinking time through which professional judgement is built and maintained.

Mishra describes a similar shift as the hidden cost of AI: work moves from creation to management. AI may reduce the cost of producing first drafts, plans, summaries, or materials, but it increases the burden of reviewing, verifying, editing, correcting, and directing machine-generated output. For teachers, the promise of efficiency must therefore be weighed against the risk of AI fatigue and the erosion of the original design work through which professional judgement is developed (Mishra, 2026).

The risk is curriculum-shaped objects: AI outputs with all the surface features of teaching materials including headings, standards, time estimates, but none of the reasoning behind real curriculum, no read of these students, this week, this context. And the equity inversion is sharp: teachers in well-resourced schools have the cognitive room to scrutinize and revise; in underfunded ones, curriculum-shaped objects accumulate fastest and get accepted most uncritically which is exactly where professional judgement is most needed.

Teacher expertise is pedagogical, contextual, cumulative, and irreducibly relational, developing through repeated acts of interpretation: reading the learner, adjusting in real time, designing with purpose, and deciding what this student, in this moment, most needs (Schön; Shulman). The OECD's new Teacher

The cognitive risks of AI do not stop with students. They extend to teachers.

Knowledge Survey reinforces this forcefully. Across systems, stronger general pedagogical knowledge is associated with better student outcomes, less time spent managing chaos, and more time spent on actual teaching and learning (OECD, 2026). If those habits atrophy through chronic delegation to automated systems, the profession may become faster while becoming thinner.

AI may reduce the cost of producing first drafts, plans, summaries, or materials, but it increases the burden of reviewing, verifying, editing, correcting, and directing machine-generated output.



Section two - What has not changed?

The deepest work of teaching has not disappeared, even if the conditions around it have changed.

The student-teacher relationship is the living medium through which teachers notice misunderstanding, interpret emotion, regulate pace, preserve dignity, challenge false confidence, and adapt instruction in real time for a specific person. This is not emotional decoration around learning. It is part of how learning becomes visible, trustworthy, and possible.

Teaching is relational not in the abstract but in the daily work of noticing how students engage, where understanding breaks down, and what a particular learner needs next. It also depends on building the trust and connection that allow students to take risks, persist through difficulty, and accept guidance. That work is inseparable from human presence and cannot be delegated to a system that does not know the person and has not invested in the relationship-building, trust, and emotional support that underpin learning in a holistic way (Lampert).

One of the clearest reminders comes from an unexpected place. Ben Gomes, Google's Chief Technologist for Learning, spent twenty-one years building Google Search (Fitzpatrick). Reflecting on education in April 2026, he made a point the profession should not overlook he does not know anyone who was truly unlocked by a book alone (Fitzpatrick). They were almost always unlocked by a person, usually a teacher, who treated them differently, made them feel differently about learning, and helped them believe they mattered. Only then could they move forward. Tools matter. Their value is secondary to the human relationship that gives them direction (Fitzpatrick). Gomes names this the relationship gap which is the gap between students who have a human being who has made them feel they matter, and those who do not. No algorithm has ever closed it.

2A - The relational core of learning

Neuroscience has now confirmed what teachers have always known: the relationship is not merely the context for learning. It is part of the mechanism. Drawing on research on neural synchrony, the way brain activity between people in real relational exchange can align over time, Isabelle Hau, Executive Director of the Stanford Accelerator for Learning, argues that learning is not simply an individual cognitive act but a deeply social one (Hau).

Biesta helps carry that insight into the larger purpose of education (Biesta). Education always serves three intertwined purposes: qualification, the development of knowledge, skills, and dispositions; socialization, learning how to live within social and political worlds; and subjectification, becoming a person

capable of independent thought, judgement, and responsibility (Biesta). Most AI tools marketed to education still engage education through a narrow slice of qualification. They may affect socialization and subjectification, but they do not carry the relational, civic, and moral responsibilities those purposes require. A system optimized around what can be measured efficiently risks narrowing the human and holistic purposes of education.

2B - What education is still for

Stuart Russell, co-author of the foundational textbook on artificial intelligence, is direct: teachers will still be needed, even if their work changes (Russell).

Delors's four pillars make the governance case clear. *Learning to know* is threatened by cognitive offloading (Delors et al.). *Learning to do* is threatened by the labour displacement the IMF has documented (Cazzaniga et al.). *Learning to live together* was already weakened by the first algorithmic wave that fragmented shared reality, intensified social isolation, and disrupted democratic discourse (Haidt). *Learning to be* is endangered whenever a child's development is increasingly mediated by systems governed more by commercial logic than developmental logic (Delors et al.). All four pillars are now under pressure at once. Their value has not changed. Their urgency has.

That is why the question is not whether AI can explain, tutor, translate, summarize, or personalize. Increasingly, it can. The deeper question is whether those supports help students become more capable, more curious, more independent, more connected, and more able to exercise judgement beyond the tool. A tutoring system cannot simply provide answers efficiently; it has to support the pedagogical task of helping students find answers for themselves.

Even the most credible pro-AI scenario still requires teachers. Rose Luckin, one of the most important voices in the global conversation on AI and education, has long argued for a vision of intelligent partnership rather than technological replacement. That distinction matters here: AI may support parts of the learning process, but the work of activating inquiry, sustaining motivation, interpreting confusion, preserving dignity, and helping a student care enough to push through difficulty remains irreducibly human (Luckin).

While the pillars are under pressure, perhaps the urgency for response on behalf of the teaching profession becomes even more crucial. How do we organize and advance an agenda that teaches to know, do, be and live together?



2C - Education's public function

Democratic life cannot be reduced to a competency. Particularly, public education is one of the places where democracy is constructed, deliberated, and maintained. It is necessarily complex, because it brings together students and teachers from diverse backgrounds, identities, histories, traditions, perspectives, and ways of understanding in a shared and collective effort to learn how to live together with mutual respect and understanding. As Joel Westheimer's work on democratic education and citizenship has long argued, that work exceeds any isolated bundle of skills, knowledge, or dispositions (Westheimer and Kahne). It cannot be simulated or algorithmically fabricated. It grows through encounters with difference, the experience of legitimate authority, the practice of disagreement, and the slow formation of a self that can stand in relation to others rather than merely respond to prompts (Westheimer and Kahne). AI systems are poorly suited to this kind of civic work. They can simulate dialogue and generate fluent agreement, but they do not model public accountability, civic courage, or what it means to hold a position under pressure from a community of peers (Biesta). UNESCO's 2021 social contract is clear that education is a public good and a common endeavour, not a private transaction in cognitive efficiency (UNESCO, 2021). In a world saturated with synthetic content, the public and civic function of schooling becomes harder to protect and more important to defend.

2D - The evidentiary standard still holds

Speed is not evidence. The profession's evidentiary standard does not change because vendors, governments, or institutions are moving quickly. If anything, it rises. Words-per-minute are a poor measure of reading fluency and even worse of comprehension. Yet, it was pushed as a reform because of the ease of the measurement. Teachers are entitled to ask the same questions of AI they would ask of any reform: Does it improve learning? For whom? Under what conditions? At what cost?

The Digital Education Council's 2024 Global AI Student Survey reinforces why those questions matter. Drawing on responses from 3,839 students across 16 countries, found that while 86% of students already use AI in their studies and 54% use it weekly, only 5% feel fully aware of their institution's AI guidelines, 58% believe they lack sufficient AI knowledge and skills, and 80% say their university's integration of AI does not meet their expectations (Digital Education Council).

UNESCO repeatedly notes that the language of AI's "potential" runs ahead of substantiated findings (UNESCO, 2023). OECD's own reviews describe the evidence on generative AI in education as emerging and mixed (OECD, 2026). The profession's insistence on evidence, equitable impact, developmental appropriateness, and intentionality is one of the few serious safeguards this moment has.

Section three - What must now be done differently?

Build differently. Govern early. Protect what must not be surrendered.

What follows is not a technical implementation plan. It is a set of professional and public commitments: what must be protected, what must be governed, and what the profession must now be prepared to demand if education is to remain human, developmental, civic, and public. Education systems can no longer respond through fragmented pilots, piecemeal prohibitions, or professional learning shaped by whatever the market releases next. What is required is earlier governance, stronger protections for teacher work, and a clearer defence of the student-teacher relationship and the integrity of childhood itself. That is also why teacher unions matter so centrally here. They are among the few institutions with the democratic reach, professional legitimacy, and daily presence in schools needed to understand how AI enters public education, not simply react to it after the fact.

Further to what is outlined above, the Delors pillars then provide the professional and public framework for deciding what education must protect, rebuild, and govern in response. It does not replace the profession's deeper educational purposes, it clarifies what teachers, students, and systems now need to understand if those purposes are to be protected in practice. That is why the response that follows is organized around the same four educational purposes that have long anchored the profession.

Pillar One: Learning (and Teaching) to Know

Protect cognitive sovereignty

Learning to know still requires friction, attention, memory, and time. The challenge is not simply whether AI is used, but when: in many cases, those conditions have to be built first, before AI is brought in as support rather than substitution. The profession therefore must demand a genuine curriculum reckoning: a developmental architecture that aligns child and adolescent development, pedagogy, curriculum, assessment, well-being, citizenship, and critical AI fluency across the learner journey (OECD, 2026). It also means naming what must be deliberately protected: deep reading, sustained attention, extended writing as a form of thinking, mathematical reasoning without constant computational crutches, oral argumentation, memorization sufficient to support intuition and analogy, and collaborative problem-solving with other human beings (Wolf; Dehaene).

The task is to move quickly enough to avoid drift, but carefully enough to avoid locking in weak assumptions.



Rather than just scaling AI as quickly as possible, education must choose a different model, one that is more needs-based, more strategic, more developmentally grounded, more evidence-based and more accountable to human flourishing than to speed, scale, or market momentum (Hao).

Increasingly, pedagogical decisions have to be made with AI in the room. The core question is simple, even if the answer is not: what does a student still have to do here that AI cannot do for them? Ethan Mollick, Associate Professor at Wharton and Co-Director of the Generative AI Labs, gives that design principle a practical face. His work on co-intelligence argues that AI can act as a collaborator, but only if the human remains responsible for the thinking that matters most, including judgement, authorship, and the final decision about what counts as worth keeping (Mollick). Dawson and Liu are right that much current policy language around AI remains focused on rules and guidelines that say what is allowed or not when using AI, not on rethinking the mechanics of pedagogy and assessment themselves (Dawson and Liu). Learning activities have to make student thinking visible to prove learning. Teaching and assessment focus on seeing the student's think, not just the final answer. Either AI cannot replace that thinking without it becoming obvious, or it is used in ways that still require students to show their own human judgement, reflection, and authorship.

The AI Assessment Scale, the TEQSA work, and Davies's triangulation of assessment all point in this direction (Perkins et al.; Lodge et al.; Davies). If AI has destabilized the demonstrable student product, the profession has to strengthen the forms of evidence and interaction that still make thinking visible. Molenaar's broader framework helps explain why initiatives such as NOLAI¹ matter: AI in education should be built through hybrid human-AI arrangements and coordinated dialogue among researchers, educators, entrepreneurs, and policymakers, not simply inherited from commercial logic after the architecture is already set (Molenaar). Teachers, curriculum leaders, and interdisciplinary experts need to be at the centre of that work, not invited in after the architecture is already built. That capacity is also unevenly distributed: Digital Promise documents how cost barriers, uneven professional learning, and a widening gap between learner adoption and institutional readiness leave teachers in under-resourced settings with the least support for exactly the judgement the moment requires (Ruiz et al.).

Attuned, relational assessment requires time, manageable class sizes, and working conditions that make real professional judgement possible. That makes this a labour and governance question as much as a pedagogical one (Hargreaves and Fullan).

1 NOLAI is the National Education Lab AI. Financed by the government, from 2022 to 2032 academics and businesses are working with primary, secondary and special needs education on using smart technology in the classroom: <https://www.ru.nl/en/nolai/about-nolai>

Pillar two: Learning (and Teaching) to Do

Keep learning embodied, visible, and purposeful

Learning by doing cannot be outsourced. That applies intellectually as much as physically. Watching, receiving, or being guided step by step through someone else's output is not the same as making, building, arguing, performing, revising, or struggling toward understanding. The residue of someone else's learning process is not learning. If AI becomes a substitute for the work of doing, the system may preserve the appearance of competence while hollowing out its substance.

Mishra's critique of Khanmigo, Khan Academy's AI tutoring assistant, names the failure sharply (Mishra, 2026). Sal Khan learned by reading widely, scaffolding his own understanding, drawing maps, questioning assumptions, and calling experts when the answers ran out, and then built a system that too often reduced learning to watching a video and then turning to a chatbot. Khan's own later conclusion points back to the same truth: "the biggest lever," he told Chalkbeat in April 2026, "is really investing in the human systems" (Barnum). This aligns with John Dewey's views that core learning impulses such as inquire, construct, express, and communicate are not skills to be delivered, but capacities already present in the learner that purposeful human-designed experience must activate.

This matters even more because AI is now being built not only to assist students with thinking and cognitive work, but increasingly to perform parts of the knowledge, analytical, and communication tasks that schooling has long prepared students to do in work and adult life (Cazzaniga et al.; Acemoglu and Johnson; Hao; Crawford). That raises a sharper urgency for curriculum, career preparation, and assessment. The profession must insist that learning activities still require students to demonstrate, construct, test, defend, and apply in ways that no AI can complete on their behalf without that absence becoming visible. In one sense, this flips the logic that shaped much of the standardization and high-stakes testing era, where systems often privileged easily scored tasks and selected-response formats partly to minimize the role of teacher judgement in determining outcomes. AI changes that equation. The question matters more. Visible learning matters more. Teacher judgement matters more. Student agency matters more. The struggle is not incidental to learning. In many cases, it is the mechanism. Remove it, and what remains may be fluent, but it is thin (Dehaene; Bjork and Bjork).

Pillar three: Learning (and Teaching) to Be

Defend developmental integrity

The students now in front of teachers did not arrive at this moment untouched. Many arrived already shaped socially, emotionally, cognitively, and developmentally by platform environments such as social media and gaming designed to maximise engagement rather than support growth (Schüll; Haidt;



Twenge). Generative AI is not entering a neutral developmental landscape. It is arriving on top of an earlier algorithmic wave that has already altered attention, belonging, self-regulation, and the conditions of childhood itself.

As Dr. Michael Rich has argued in his work on children's media environments, the central question is not simply how much technology young people are using, but what kinds of developmental conditions those technologies create for attention, social-emotional development, and identity formation (Rich and Barker). The profession therefore has to demand age-appropriate design standards, transparent criteria, independent scrutiny, and safeguards against forms of emotional manipulation and attachment that place commercial engagement above child development and safety.

Scotland's 2026 Guidelines and Guardrails for the Use of AI in Schools offer one of the clearest emerging public examples of what that can look like in practice and it was developed in collaboration with the teacher unions. Developed jointly by the Scottish Government and the Educational Institute of Scotland, the guidance states that AI must support and enhance, rather than replace, human-centred teaching and learning; must not make decisions on behalf of teachers or schools; and must be used in ways that prioritise children's rights, teacher judgement, ethical standards, and data protection (Scottish Government).

That kind of framework only has meaning if it is translated into firmer lines about what should and should not enter schools including clear prohibitions on biometric surveillance, emotion recognition, attention monitoring, and other systems that alter the relational conditions of teaching while claiming to support it (EU AI Act, art. 5; Council of Europe). Common Sense Media's 2025 AI Companion Safety Standards offer a useful template for what pre-deployment expectations should look like for systems that interact emotionally with minors: mandatory safeguards against manipulation, clear disclosure that the user is interacting with AI, and pathways that direct vulnerable users toward human support (Common Sense Media).

It also includes clear lines against anthropomorphic or deceptive chatbot design for children, and against systems companies know can intensify dependence or simulated attachment. Mishra identifies the design logic clearly: systems engineered to flatter, validate, and sustain engagement can become supernormal stimuli for children rather than supports for development (Mishra). UNICEF Innocenti and youth mental health work are already warning that young people are turning to AI systems for emotional support in ways that should be setting off alarm bells (UNICEF, 2025; Hopelab).

Governance that protects only students is incomplete. Teacher work and professional knowledge must also be protected. Publicly funded lesson plans, materials, feedback, and assessment prompts are not free raw material for commercial ingestion (Hao; Williamson and Hogan). Wasson, who leads the Centre for the Science of Learning and Technology at the University of Bergen and served on the Norwegian Ministry of Education's expert task force on

learning analytics, has argued that the protection of student and teacher data must be built into governance frameworks rather than left to individual consent, particularly given the complexity of how learner data is generated, analyzed, and shared across systems (Wasson et al.).

For the Global South, the line should be firmer still. AI may supplement professional teachers, but it should never become an excuse to deny children their right to one. Bridge International Academies remains a warning here: a scripted, technology-delivered model that displaced professional teachers with tablet-reading paraprofessionals before governments concluded it violated children's right to qualified educators (Riep and Machacek).

Pillar four: Learning (and Teaching) to Live Together

Protect democratic and civic conditions

UNESCO's 2021 social contract makes the same point in institutional language: education is a public good and a common endeavour, not a private transaction in cognitive efficiency (UNESCO, 2021).

AI systems can simulate dialogue, produce fluent agreement, and mimic explanation. They do not model public accountability, civic courage, or what it means to hold a position under pressure from a community of peers (Biesta). For many EI member organizations, especially across the Global South, this is also a sovereignty issue. Translation is not enough. Imported systems that ignore local language, culture, pedagogy, and public purpose reproduce dependence rather than democratic capacity (Molina et al.).

The profession therefore must demand systems that serve civic, social, and public life rather than fragment it further. Living together also has to mean designing together. And, in practice, that includes social and policy dialogue, collective bargaining, and the professional learning circles through which teachers exchange, deliberate, and help shape the conditions under which AI enters education.

That is already visible in union practice across Europe, for instance. ETUCE's May 2026 workshop in Dublin brought unions together specifically around AI, collective bargaining, and professional rights in education, reinforcing that these are not future issues but live questions of governance, workload, autonomy, and data protection. In France, unions have taken a precautionary approach, building their own positions, training, and internal capacity before engaging government. In Iceland, teachers have linked AI to autonomy, workload, training, language and culture, consultation, and equity, showing that implementation can remain teacher-led when supported by paid time and structured collaboration. In Sweden, unions have insisted that AI be treated not only as a pedagogical issue but as a work environment and organisational change issue, one that requires early union involvement, social dialogue, and clear attention to workload, health,



and algorithmic management (“ETUCE Workshop in Dublin”).

The future worth defending

Generative AI remains firmly present, but it is increasingly being joined by ambient and agentic systems: some operating quietly in the background of learning environments, others taking actions, navigating platforms, and managing workflows with growing autonomy (Center for Humane Technology). Generative AI forced schools to ask who wrote the essay. Ambient AI raises a subtler question: how much invisible support shaped the process? Agentic AI raises a more pointed one still: was the student meaningfully involved at all?

The teacher who models epistemic discipline, care for truth, verification, source judgement, and the willingness to sit with uncertainty rather than outsource certainty to a machine, becomes more important, not less. So does the teacher who can read the learner holistically, notice the moment, and decide when support is serving learning, care, and emotional development, and when it is beginning to replace the very growth, it is meant to support.

The future worth defending is not AI for efficiency, standardization, or novelty alone. It is AI used in ways that strengthen the human work, relations and holistic development at the centre of education: helping teachers be more present, more responsive, and more inventive with the students in front of them. The breakthrough begins not with the tool, but with professional care, contextual knowledge, and a teacher and education support personnel who understands which human barrier to cognitive as well as social-emotional learning needs to be removed and which conditions still need to be held in place.

That is why the response must be both sharp and adaptable. Education cannot afford drift, delay, or naive adoption. But neither can we pretend the field is settled or that every answer should already be fixed in advance. What is required is strategic readiness: moving early, governing clearly and collectively, building professional capacity quickly, and refining the response as the technology changes.

Public education cannot outsource its judgement about children, learning, evidence, and democratic life to systems built somewhere else, for purpose never publicly agreed upon. Teachers must remain in the lead in deciding what enters schools and in pushing back against external commercial and political interests.

As AI permeates education more deeply, the fundamentals of teaching become more important, not less. Judgement matters more. Relationships matter more. The student-teacher relationship remains the irreplaceable core around which any human-centred future of education must now be built.



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Armand Doucet
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