European Parliament

Artificial Intelligence in Classrooms: Cognitive Dimensions

KEY FINDINGS

- In 2025, 63.8 of young people among 16 to 24-year-olds across the EU used generative AI. Out of those, 39.3% were more likely to use AI tools for formal education. These statistics demonstrate that AI use is currently a norm in European schools, higher education and other learning contexts.

- The OECD Digital Education Outlook 2026 pointed out the "AI learning paradox": general-purpose AI tools can improve measured task performance while simultaneously reducing actual learning. Rising output quality and declining cognitive development are occurring together.

- The cognitive risks of AI use in compulsory education fall into four areas: over-reliance and dependency, where AI removes the effortful engagement on which durable learning depends; impairment of fundamental skills, where writing, reading, numeracy and problem-solving are performed by the system rather than practised by the learner; erosion of metacognition and autonomy, where self-monitoring and independent reasoning are progressively displaced; and disruption to attention and memory consolidation, where frictionless AI interaction undermines the sustained cognitive effort that deep learning requires.

- Children and adolescents are specifically vulnerable to these risks. Working memory, executive function and critical reasoning are still maturing through adolescence; capacities that are not exercised during these formative years may not develop fully. A student who delegates cognitive work to AI during the school years is not simply underperforming — they may be failing to acquire the cognitive architecture on which all subsequent learning and reasoning depends.

- Not all AI use in education carries the same risk. Purpose-built educational AI that scaffolds reasoning without replacing it — providing hints, prompting reflection, adapting to demonstrated knowledge — produces more durable learning outcomes than general-purpose AI that supplies complete answers. The conditions and sequencing of AI introduction matter as much as the tools themselves.

- The regulatory and institutional framework need to keep pace with adoption. No current requirement exists for educational AI tools to demonstrate positive cognitive outcomes, as distinct from task performance, before deployment in compulsory education settings.

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Introduction

Objectives

The objective of this briefing is to provide an overview of what is known about the main trends, risks and policy recommendations regarding the use of artificial intelligence (AI) in classrooms, with an emphasis on minors and compulsory education, and focusing on cognitive dimensions. Specifically, the briefing aims to provide CULT Members with insights on the cognitive risks, and opportunities, that AI use may entail for young learners and to support the preparation for the workshop on "AI in Classrooms: Ethical, Educational and Cognitive Dimensions".

This briefing differentiates between general purpose AI and AI-enhanced educational technologies. The AI Act defines a general-purpose AI model as "an AI model, including where such an AI model is trained with a large amount of data using self-supervision at scale, that displays significant generality and is capable of competently performing a wide range of distinct tasks regardless of the way the model is placed on the market and that can be integrated into a variety of downstream systems or applications" (AI Act, Article 3(63)). Thus, general-purpose AI tools are systems that include AI models and that are designed for broad use across domains and audiences (Future of Life Institute, 2022) but are not optimised for learning; they respond to input without regard for the cognitive state, developmental stage or learning trajectory of the user. On the other hand, AI-enhanced educational technologies are purpose-built systems enhanced with AI models and /or algorithms (Holmes, 2020), and designed within a learning science framework, incorporating pedagogical logic and features intended to support the learner's cognitive development rather than simply to produce a high-quality output.

This distinction is significant because the cognitive risks documented in this briefing are mostly associated with general-purpose AI used in educational contexts without pedagogical mediation, while the conditions for positive cognitive outcomes are consistently found in purpose-built educational AI deployed within a structured learning framework and under teacher guidance. Policy responses must reflect this distinction: these two categories carry different risk profiles, warrant different governance instruments and require different conditions for responsible use in compulsory education.

AI Use Among Young Learners in Europe

Based on statistics from the Eurostat's 2025 ICT Survey (Eurostat, 2026a), students are the top users of AI tools in all 25 EU countries (Eurostat, 2026b). Approximately, two thirds (63.8%) of young people aged 16–24 in the EU used generative AI (GenAI) tools in 2025 — almost double the rate for the adult population (32.7%). Among this age group, 39.3% stated they were likely to use AI tools for formal education. Country variation is substantial. Among 16–24-year-olds, adoption was highest in Greece (83.5%), Estonia (82.8%) and Czechia (78.5%), and lowest in Romania (44.1%), Italy (47.2%) and Poland (49.3%), potentially reflecting differences in terms of AI and digital literacy, infrastructure and institutional readiness.

The widespread use of AI among young learners is supported by independent surveys across Europe (Vodafone Foundation,2025; Hüsch, M., 2025; Picton, I., & Clark, C.,2025) and globally (Walton Family Foundation, 2023; Microsoft, 2025; Kay, A., 2023; Center for Digital Thriving, Common Sense Media, & Hopelab., 2024). Regarding use patterns, AI is mainly used for answering questions (information retrieval and research assistance), helping with homework (text generation and drafting, writing and editing), but also for entertainment (Hüsch, M., 2025; Picton, I., & Clark, C., 2025).

Critically, the OECD (2026) finds that the main motivations of young learners for using AI are efficiency (e.g. to save time) and convenience (e.g. to make tasks easier) rather than learning. Only around 20% of student users employ AI to support self-regulation (for example, to plan or to track progress), while 31% report using it to obtain complete answers to tasks — a pattern associated with cognitive harm.

Defining the "Cognitive Dimension"

This briefing focuses on the cognitive dimensions of AI use in the classrooms. These dimensions concern the mental processes — reasoning, memory consolidation, metacognitive regulation, attention, epistemic judgement — that define learning as a neurological and psychological event. This means that a student can be digitally literate (for example, knows how to use AI tools effectively) but, at the same time, experience cognitive harm. This is an important distinction because it means that teaching an individual to use AI responsibly does not necessarily protect their cognitive architecture. Especially when referring to very young children, this is a critical aspect since their cognitive architecture is still under development.

According to Piaget's theory of cognitive development, children progress through four sequential, age-linked stages as they build their understanding of the world (Malik & Marwaha, 2023): a) the sensorimotor stage (from birth to 2 years) during which infants learn through direct sensory experience and physical interaction with their environment, b) the preoperational stage (from 2 to 7 years) during which children develop language and symbolic thinking but reasoning remains largely intuitive and egocentric (that is, they struggle to see things from perspectives other than their own), c) the concrete operational stage (from 7 to 11 years) during which children begin to think logically about concrete objects and events, they develop conservation and can classify objects and order them in series, and d) the formal operational stage (from 12 years and up) during which abstract, hypothetical, and systematic reasoning becomes possible. Adolescents can think about possibilities, not just actualities, and can reason about hypothetical scenarios. Two key mechanisms drive progression through these stages: *assimilation* is the process of incorporating new information into existing mental schemas, while *accommodation* is the process of revising those schemas when new information does not fit. Together they produce a stable, coherent understanding of the world. For AI in education, Piaget's theory is relevant as a reminder that cognitive development is an active, constructive process. If AI tools reduce the opportunities for students to struggle, explore, and build mental schemas through their own effort, there is a risk of interfering with the very processes that underpin deep learning and cognitive growth.

Learning, from the cognitive perspective, is defined as *"a change in long-term memory"* (Kirschner, Sweller & Clark, 2006). Cognitive science distinguishes between working memory (the temporary, limited-capacity workspace where conscious thinking occurs), long-term memory (almost limitless space where knowledge is stored and retrieved) and the transfer of information across contexts (Atkinson & Shiffrin, 1968). In this context, learning requires the effective processing of new information and its transfer from the working to the long-term memory through repetition, elaboration, or forming of meaningful connections (*encoding*). These changes in long-term memory that occur due to the assimilation of new information in, or manipulation of, the learner's "*schemata*" (the long-term mental structures that store information and organize knowledge) allow learners to categorize and interpret new information (Atkinson & Shiffrin, 1968). Working memory has a finite capacity, and tasks that exceed it produce cognitive overload rather than learning (Sweller, 2011). On the other hand, *some* cognitive load (what is called, *germane*) is also necessary for schema formation in long-term memory, thus facilitating deep learning. Therefore, learning is an active constructive process that requires consistent **effort** and **engagement**.

Core cognitive processes involved in learning include: a) Attention (that is, the ability to focus on relevant information while filtering out distractions); b) Perception (the ability to interpret sensory input to understand the environment); c) Encoding and Storage (the ability to process new information and connect it to existing knowledge); and, d) Retrieval (the ability to access stored information when needed).

The following sections elaborate on the interaction between AI tools and the mental processes through which young learners construct durable knowledge. Further, this briefing discusses how the AI use may impact the cognitive processes occurring within the learner irrespective of the learner's level of AI and digital competence.

Cognitive Risks and Vulnerabilities in AI Use

Cognitive Processes and AI Use

For young learners to meaningfully learn, they need to **construct durable knowledge**, **develop reasoning**, **consolidate information in long-term memory** and **build the metacognitive and self-regulatory skills** that underpin autonomous learning. These attributes develop over time as learners engage with their environment to carry out a task or solve a problem.

Durable knowledge. As such, learning requires effortful engagement that involves core cognitive processes: retrieval practice, elaborative interrogation, spaced repetition, problem-solving under conditions of desirable difficulty (Bjork, 1994). Tasks that feel hard in the moment produce stronger long-term retention precisely because of the cognitive effort they demand. AI tools that supply finished outputs — summaries, essays, solutions — short-circuit this process. When the learner receives a product (for example, a written summary of a text) without putting the effort, the learner practically circumvents the cognitive process that would have encoded knowledge into long-term memory. In a neuroimaging study, Kosmyna et al (2025) (also cited the OECD Digital Education Outlook 2026), measured lower brain activation in learners who used AI for essay writing compared with those who wrote unaided. Thus, it is questionable whether learning, in the mechanistic cognitive sense, occurred.

Reasoning. Reasoning encompasses the capacity to evaluate evidence, identify logical structure, recognise bias, construct arguments and form independent judgements. In developmental terms, these are late-maturing capacities that depend heavily on sustained practice during the school years — they are not simply present at birth and uncovered by education, they are genuinely built through repeated effortful engagement with problems. AI poses two distinct risks to reasoning development. The first is *substitution*: when AI generates the argument, the evaluation or the synthesis, the student does not perform the reasoning act. The second is *epistemic delegation* — the gradual transfer of epistemic authority from the learner to the system. Research on automation bias (Parasuraman & Manzey, 2010; Romeo & Conti, 2025) showed that humans systematically over-trust automated outputs, including in conditions where the automation is wrong. In children, whose critical evaluation capacities are still forming, this tendency is likely amplified. A student who habitually accepts AI-generated judgements is not just failing to practise reasoning; they are actively learning to defer it. This poses the question whether, in that case, the student's reasoning capacities needed for evaluation are indeed built or atrophied.

Memory. Since working memory has a finite capacity, tasks that exceed its capacity produce cognitive overload rather than learning. AI can, in principle, reduce extraneous cognitive load and free working memory for deeper processing — this is the optimistic case for AI as a cognitive scaffold. But it can equally eliminate the germane cognitive load that is necessary for schema

formation in long-term memory. The critical issue is *the expertise reversal effect* (Kalyuga et al, 2003): for novice learners — which most primary and secondary students are, in most subjects — minimally guided instruction (letting the AI do the work) produces less learning than explicit, structured instruction that requires the learner to process and encode information themselves. The novice/expert distinction is crucial here: what works as cognitive offloading for an expert (freeing cognitive resources to focus on novel aspects of a problem) actively impairs learning for a novice (preventing the construction of the underlying knowledge base).

Memory and knowledge transfer — the ability to apply what has been learned in new contexts — depend on the quality of initial encoding. AI-produced outputs that a student has not actively processed are weakly encoded, if at all, and transfer poorly. That was demonstrated by the study of Bastani et al (2024) (cited by the OECD Outlook, 2026), who showed that students with access to GPT-4 improved their short-term performance; but one the access to CPT-4 was removed, the students' performance declined.

Self-regulation and metacognitive development. Learning *autonomy* refers to the learner's capacity to direct, monitor and regulate their own cognitive processes: to set goals, plan approaches, monitor comprehension, identify gaps and adjust strategies. This cluster of capacities is termed *metacognition* (Flavell, 1979) and was operationalised as *self-regulated learning* (Zimmerman, 2002). Metacognition is not a fixed trait but a developmental achievement, actively constructed through years of effortful learning practice. The progressive delegation of monitoring and regulation to AI systems (letting the tool evaluate quality, flag errors, suggest improvements) removes the practice that builds these capacities. Fan et al.'s (2024) concept of *metacognitive laziness* captures this risk: it is not that students lose metacognitive capacity overnight, but the regular exercise of self-monitoring and self-correction is progressively displaced.

This creates an interesting contrast: A student can be autonomous as a technology user while being deeply heteronomous as a cognitive agent — dependent on AI not just for tools but for the very judgements that constitute independent thinking.

Key Cognitive Risks

Related research suggests a distinction between short-term task performance and genuine cognitive development. While short-term gains often reflect improved strategies or increased attention, they may not always equate to, or translate into, long-term, structural changes in cognition associated with deep learning (Jaeggi et al, 2011; Cubillo, 2023). At the same time, young learners are prone to using AI to achieve short-term gains mainly motivated by efficiency ("to save time") or convenience ("to make it easier") (OECD, 2026). Considering this distinction, this briefing identifies the following cognitive risks stemming from young learners' use of AI:

a) **Over-reliance and Dependency** (risks of "*offloading*" thinking to algorithms resulting in diminished cognitive load for the learner). When AI supplies finished outputs — drafted texts, solved problems, synthesised answers — the effortful cognitive engagement that produces durable learning does not occur. Deep, lasting learning depends on retrieval practice, elaboration and problem-solving under uncertainty; AI that removes this friction removes the learning mechanism itself. The OECD Digital Education Outlook (2026) terms this the 'AI learning paradox': in one large-scale field study, students using general-purpose AI improved short-term task scores by up to 48% but performed 17% worse in subsequent tests once AI access was removed (Bastani et al, 2024). Rising performance metrics coexisted with stagnating or declining actual skill acquisition. However, this is not surprising from a cognitive perspective: novice learners, unlike experts, cannot productively offload cognitive work because they lack foundational knowledge. Instead, when using AI, novice learners *cognitively outsource* the function that would typically be performed internally (that is, thinking) to the

AI system that performs it *for* them *instead* of them (Kirschner, 2026). Therefore, when AI generates the output instead of the learner, the cognitive process by which that knowledge is constructed is circumvented. An additional risk is automation bias — the tendency of humans to over-trust automated outputs. For children, whose critical evaluation capacities are still forming, habitual reliance on AI can create a strong dependency that extends beyond schoolwork.

b) **Impact on Cognitive Development and Fundamental Skills** (potential negative effects on attention, memory as well as reading, writing, numeracy, and problem-solving). AI use is characterised by instant response, frictionless interaction and continuous availability. This responsiveness creates conditions that are by design opposing the sustained, effortful attention required by deep reading and long-term memory consolidation, and instead, reinforce shallow processing. Children and adolescents are specifically vulnerable here. Working memory and executive function — the capacities that regulate attention and manage cognitive load — are still maturing through adolescence. AI tools that manage cognitive demands externally may delay or disrupt the development of these capacities rather than support them. The concern raised by Tuomi (2020) in the foundational EP Policy Department briefing, that AI in education risks shifting the locus of cognitive activity from the learner to the system, has been empirically substantiated in the years since, and its implications are sharpest for those at the earliest stages of cognitive development.

c) **Metacognition and Autonomy** (risks to self-regulation, critical thinking, and independent reasoning). Self-regulated learning, that is the ability to set goals, select strategies, monitor comprehension, detect errors and adjust accordingly, is a predictor of academic achievement (Zimmerman & Kitsantas, 2014). Research now identifies what Fan et al. (2024) termed *'metacognitive laziness'*: when AI performs cognitive tasks on behalf of the learner, the self-monitoring and self-regulatory behaviours that constitute metacognition are progressively displaced. The risk to autonomy extends beyond metacognition to epistemic agency, that is the capacity to form and defend independent judgements. If AI consistently provides ready-made evaluations and synthesised conclusions, children may not develop the underlying evaluative capacities that critical thinking requires. This is developmentally consequential in a way that acute task failure is not: a student who submits a poor essay can recover; a student who spends formative years delegating critical judgement to AI may never develop the capacity to exercise it independently. The Council of Europe's critical analysis of AI and education (Holmes et al, 2022; Havinga, Holmes & Persson, 2024) emphasises precisely this asymmetry of power between the learner and the system, an asymmetry that is most acute for minors, who lack both the cognitive maturity and the critical literacy to recognise the limitations of automated outputs.

Existing Frameworks and Guidelines

How can AI support learning?

While acknowledging the potential risks underlying the use of AI by young learners, it is important to point out that, under the right conditions, AI tools can genuinely support cognitive development. To that end, the European Commission's Ethical Guidelines on the Use of AI and Data in Teaching and Learning for Educators (2022) established a framework anchored in human agency and oversight, transparency, fairness and well-being. The OECD Outlook (2026) extends into operational design principles. Together, these sources converge on several evidence-based conditions for cognitively safe and productive AI use in schools:

- Pedagogy before technology. AI should be integrated to support clearly defined learning objectives, not deployed as a general-purpose convenience.

— Educational AI vs. general-purpose AI. Tools specifically designed for learning, incorporating tutoring logic, adaptive scaffolding, metacognitive prompts and domain-specific knowledge, produce significantly more durable cognitive gains than general-purpose chatbots used without instructional context.

— Metacognitive scaffolding. When AI use is accompanied by explicit support for learners' self-monitoring (prompting students to plan, reflect and evaluate their own thinking) the risks of metacognitive laziness can be substantially mitigated (Xu et al., 2025). Teachers play a critical role as mediators of this process.

— Mastery orientation. Research (Pallant et al, 2025) finds that higher-order learning occurs when students use AI to construct and augment their own knowledge — exploring, questioning, connecting — rather than to obtain complete answers. The framing of tasks and the institutional culture around AI use shape which orientation students adopt.

— Age-differentiated approaches. Younger students in primary school require substantially more structured adult mediation of AI use than secondary-level learners. The cognitive and developmental differences between a 7-year-old and a 16-year-old demand genuinely differentiated governance frameworks, not a single age-neutral approach.

The teacher's role as cognitive mediator is emphasised across all major frameworks. The Commission's Ethical Guidelines (2022), the Council of Europe's preparatory study on regulation (Havinga, Person & Holmes, 2024) and the OECD Outlook (2026) all converge on the view that AI can only support learning when a teacher or educator is present to contextualise, question, scaffold and intervene. AI-supported learning without adequate teacher mediation is associated with negative cognitive outcomes.

The Need for Regulatory Frameworks

In Europe, regulatory frameworks, including the AI Act (Regulation (EU) 2024/1689), the General Data Protection Regulation (GDPR), and the Council of Europe Framework Convention on AI and Human Rights, Democracy and the Rule of Law (Council of Europe, 2024), aim to ensure appropriate AI adoption in education from multiple perspectives by setting requirements regarding transparency, human oversight, and risk management (Dietis, 2025). Despite their significance, operational implications for school settings, and particularly for primary-age students and for AI tools used informally outside school, require further specification through delegated acts and sector-specific guidance (European Commission, Shaping Europe's digital future, 2025).

The AI Act classifies AI systems used in educational and vocational training contexts as high-risk (Annex III, point 3), requiring (among others) conformity assessments and documentation obligations both before these systems are placed in service and throughout their operational lifecycle. In particular, AI Act identifies as high risk *"(a) AI systems intended to be used to determine access or admission or to assign natural persons to educational and vocational training institutions at all levels; (b) AI systems intended to be used to evaluate learning outcomes, including when those outcomes are used to steer the learning process of natural persons in educational and vocational training institutions at all levels; (c) AI systems intended to be used for the purpose of assessing the appropriate level of education that an individual will receive or will be able to access, in the context of or within educational and vocational training institutions at all levels; (d) AI systems intended to be used for monitoring and detecting prohibited behaviour of students during tests in the context of or within educational and vocational training institutions at all levels."* However, the boundaries of this category are ambiguous in relation to the systems most deployed in schools, and formal education overall. For example, do systems such as adaptive learning systems and intelligent tutoring systems (which generate personalised learning pathways and may implicitly steer students' learning process) constitute high-risk systems, given that they influence learning trajectories? Do automated systems for providing formative assessments with the purpose

to improve learning while its happening fall in the same risk category as systems for providing summative assessments with the aim to assign student grades? Are learning analytics dashboards that aim to inform decision-making (for example by constructing and maintaining longitudinal learner profiles, generating risk scores or flagging students as requiring intervention) high-risk systems? Article 9 references the need to consider vulnerable groups, including persons under the age of 18; however, no specific guidance is offered when it comes to establishing meaningful consent of minors, or transparency standards that should apply when AI systems interact directly with children. Considering operational implications for school settings, further specifications are needed regarding, for example, the role of the classroom teacher as the *responsible natural person* (AI Act, Article 26(2)) or, the potential burden that is set on schools (which typically lack dedicated legal, data protection, or AI compliance capacity), universities, and other educational institutions as *deployers* of high-risk AI systems when they procure and use AI systems developed by third parties, under Article 26.

Critically, none of the existing regulatory instruments requires the systematic assessment of AI systems for their cognitive impact on child users before deployment in school settings. An AI system that increases short-term task performance while undermining long-term skill development would, under current frameworks, likely pass regulatory review (Chounta et al, 2025). The Council of Europe's survey of Member States on AI and education (Chounta et al, 2024) found that most responding states lack dedicated budgets for AI education policy and have not developed monitoring frameworks capable of tracking cognitive outcomes. Addressing this gap, through cognitive impact assessment requirements, evidence standards for educational AI claims, or mandatory pedagogical evaluation before school procurement, represents a concrete area for EU legislative action (Chounta et al, 2025). To achieve this, further measures that could be taken include:

a) mandating a cognitive impact assessment as an education-specific layer, within or alongside the fundamental rights impact assessment (FRIA) of AI Act (Article 27) for high-risk AI systems, to be conducted before any AI system is deployed in compulsory school settings; this cognitive impact assessment could require assessment of cognitive load and attention effects (that is, whether the system risks overloading or under-stimulating students in ways that undermine learning), autonomy and metacognitive development (whether the system risks creating dependence rather than fostering self-regulation, critical thinking, and student agency), developmental appropriateness (whether the system is calibrated to the cognitive developmental stage of its target age group, with specific thresholds for primary-age (under 11) and early secondary learners), and equity impact (whether the system's cognitive affordances are equitable across learners with different learning needs, linguistic backgrounds, or prior digital experience).

b) establishing minimum evidence standards for pedagogical efficacy claims as a condition for AI systems used in education. Operationally, this could be implemented through a disclosure register, analogous to the EU database for high-risk AI systems (Article 71), in which providers must publish the evidence base for their pedagogical claims; in combination, an awarded quality label that will certify that a system meets these minimum evidence standards can provide legible signal to procuring deployers.

c) introducing a mandatory pedagogical evaluation (including cognitive dimensions of learning) for AI systems acquired by public educational institutions before procurement as a condition of award, analogous to accessibility requirements embedded in public procurement for digital tools. Further post-deployment evaluation, that providers are obliged or encouraged conduct and report on in-situ pedagogical effectiveness studies with results submitted to a publicly accessible EU database, could strengthen the systematic assessment of AI systems for education.

The EPRS briefing by Binder (2023) on the Digital Education Action Plan (DEAP) 2021–2027 referenced the European Parliament's acknowledgement of the DEAP's extended scope and

ambition, and the importance of facilitating access to innovation and technologies while modernizing curricula and learning and teaching methods. As AI becomes increasingly integrated into educational settings, regulation alone is not enough: curricula and teaching practices must also adapt, so that students continue to develop critical thinking, problem-solving, and other cognitive skills that risk being undermined by uncritical use of AI.

Conclusion

The information and sources reviewed in this briefing point to a clear and actionable finding: the widespread adoption of AI systems among young learners in schools in the EU potentially exposes them to cognitive risks that existing regulatory, curricular and professional frameworks are not yet equipped to address. The core problem is structural: AI systems that are not intentionally and mindfully designed for learning are adopted at scale, driven by student motivations of efficiency and convenience, in educational environments that largely lack the pedagogical scaffolding, teacher preparation and monitoring infrastructure needed to distinguish productive from harmful use. The result is a growing divergence between visible performance (task outputs, short-term scores) and genuine cognitive development.

At the same time, this is not an argument against AI in education. Decades of rigorous research in the field of Artificial Intelligence in Education (AIED) demonstrate that under the right conditions (purpose-built educational tools, explicit metacognitive scaffolding, strong teacher mediation and age-differentiated approaches) AI can support learning in cognitively sound ways. The policy challenge is therefore not prohibition but design: ensuring that the conditions for beneficial AI use are systematically built into how tools are developed, procured, deployed and overseen in school settings.

The EU has the capacity, instruments, institutional frameworks and cross-border coordination mechanisms to act on this. What is currently missing is the cognitive dimension in regulatory requirements: there is no obligation to assess whether an AI system supports or undermines the learning processes it is deployed to serve. Now, with the AI Act and educational policies still evolving, closing this gap through cognitive impact assessment requirements, evidence standards for educational AI, and investment in teacher capacity as cognitive mediators represents a proportionate, evidence-based and genuinely human-centred response.

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