

Background paper

Is there a right age for AI in education? Deciding whether AI is age-appropriate and why

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Abstract

Why age-appropriate AI in education matters

In schools around the world, AI is increasingly embedded in education technology to facilitate administration, teaching, learning and assessment. Curricula that promote the development of children's AI knowledge, skills and/or values may be taught in a number of ways: as a required or elective subject; as part of information and communication technology (ICT)/information technology (IT) teaching; or as a cross-curricular or extra-curricular activity (UNESCO, 2022). None of this is inevitable nor universal.

Ministries of education face urgent choices. Innovations such as personalized learning are often marketed as 'the solution' to complex problems. However, independent evidence is vital for identifying what really works, for whom and under which conditions. It is important to note that evidence on AI in education comes from the Global North, and little is specific to the process of child development over time.

So in a fast-moving field beset by tensions, inequalities and contestation, what do policy-makers need to know? It may seem easier for governments to invest in AI for uniform use across the education system, just as companies prefer to target children of all ages to optimize profitability. But this approach may not optimize AI opportunities nor mitigate its risks. AI that is deemed to be appropriate for adolescents may be inappropriate, useless or even harmful for younger children. Is it best then to introduce AI to children as early as possible to help them learn to use a technology that may be vital to their future? Or are the barriers and problems of AI too great for all ages?

The *AI competency framework for students* builds on a human-centred approach, proposing three levels of progression for AI learning: understand, apply and create (UNESCO, 2024). These levels aim to foster age-appropriate understandings, values and skills among learners across education stages. Achieving the framework's ambitions requires an understanding of what age-appropriate use of AI in education looks like. Yet the current state of evidence does not provide simple answers.

While governments deliberate over whether and how to introduce AI into school curricula, and what the 'right age' may be, digital companies are already embedding generative AI (GenAI) into educational technologies for all, often without notice and by default. Examples include AI-generated summaries in search engines and embedding GenAI chatbots into students' software suites and learning platforms, apps and devices. Children are also experimenting with GenAI before their parents, educators and school management are aware of it or able to give them any support (Stoilova et al., 2025). As a result, policy-makers find that they must rapidly introduce and budget for AI-related pedagogic, training, safeguarding, procurement and data protection measures.

Table of contents

Abstract	2
Table of contents	3
Evidence on whether AI benefits educational progression.....	4
Five priority risks of AI from early years through adolescence.....	6
Age-appropriate AI in education: law and regulation.....	7
Case studies of AI in education around the world.....	9
Conclusions and suggestions.....	11
Further exploration.....	14
References	15

Evidence on whether AI benefits educational progression

An age-appropriate approach to educational technology typically relies on the idea of ‘ages and stages’ of child development. However, developmental science no longer conceives of fixed developmental milestones. Instead, it emphasizes variability as the norm: children’s cognitive, emotional and social capacities unfold along non-linear pathways shaped by their diverse circumstances (Livingstone and Sylwander, 2025). In short, children learn different things in different ways across their years of education.

While education systems vary worldwide and can include younger or older children across the different education stages, this paper focuses on three broad age groupings (UIS, 2021):

- early childhood education (up to 5 years)
- primary education (typically 6–11 years)
- secondary education (typically 12–17 years).

UNESCO mapped the design, content and implementation of government-endorsed AI school curricula worldwide (UNESCO, 2022). It found that one in five of the AI curricula included in the study addressed early education (K-Grade 2). In primary education, the main purpose is to introduce children to AI and its applications in daily life. Most AI curricula are for secondary education, with integration increasing steadily from early primary to the highest grades. These government-endorsed curricula vary in status: they are required in some systems, and in others they are elective, cross-curricular or extracurricular. This shows that provision is not uniform and that there is a lack of cross-national data on teacher adoption and fidelity in curriculum delivery.

Findings on benefits and risks vary considerably, depending on what AI use is compared with, over how long, and in relation to which educational outcomes.

Early childhood education

Early childhood is a critical period for children’s development, when 90 per cent of brain growth occurs. Early childhood education encourages, supports and sustains the rapid development of children’s language and expression, symbolic play (using one thing to stand for another) and theory of mind (understanding that others hold thoughts, feelings and intentions different from one’s own) (Berson et al., 2025; Brooker, 2011). These skills form the cornerstones of exploration, imagination, storytelling, early literacy, social understanding, self-regulation and strong connections between home and school (International Commission on the Futures of Education, 2021).

Young children can engage in abstract computational concepts through play-based and block-based digital media, provided they build on children’s prior experience and do not overload them (Long and Magerko, 2020; UNESCO, 2022). Research has found that:

- Playing with AI robot toys can foster young children’s creative, emotional and collaborative inquiry (Kewalramani et al., 2021).
- Through embodied, multimodal and culturally responsive pedagogy, young children can be taught that AI algorithms use large amounts of data to identify patterns, make predictions and recommend actions, even while having limitations (Yang, 2022).
- Young children’s understanding of AI is limited: they are only beginning to distinguish what is real or fictional and to identify the source of information and its reliability.

It is problematic that there are many evidence gaps on how this age group relates to or is impacted by AI (Su and Yang, 2022; Druga et al., 2021).

Primary education

Primary (or elementary) education enables children to develop vital foundations for learning and thinking (Wyse and Anders, 2019). Mathematics and reading are important in primary curricula, and children are expected to take comparative tests. During these years, children continue to develop their working memory, executive function (planning, sustaining attention, organizing, curbing impulses) and metacognition (transferable skills across tasks). They build self-efficacy, intrinsic motivation, creative confidence and the capacity for independent study (Diamond, 2013).

Research shows that AI may be integrated both as an object of structured learning, advancing children from basic awareness towards understanding how AI works and its wider implications, and also as a tool to support core subjects such as mathematics and literacy. Applications include:

- Intelligent tutoring systems that improve mathematics learning and motivation (Pai et al., 2021).
- AI-powered reading apps, virtual reading buddies and storytelling platforms aimed at younger children, as well as GenAI homework and learning assistants (Bushnell, 2025).

Some studies have found some benefits of AI for mathematics and literacy:

- Children are developing the skills to recognize patterns, use block-based programming and programmatically control robots, use algorithms to produce art or music, and save and sort simple databases (Yim and Su, 2025).
- A Chinese dialogue-based intelligent tutoring system (ITS) used to teach mathematics to fifth-grade pupils from Taiwan led to improvements in their learning and motivation compared with those who just received the curriculum materials (though it was not an improvement on teacher instruction) (Pai et al., 2021).
- In a meta-analysis of 46 studies, AI was effective in teaching English as a foreign language, especially for gaining vocabulary, and especially for primary rather than secondary students (Torres and Kahveci, 2025).
- Educational robotics showed a positive effect for language learning (Derakhshan et al., 2025) and computational thinking (Hong, 2024), particularly among younger children.

As with early childhood education, evidence on AI's causal impact on primary school children's learning is limited, as is the evidence on AI's impact on educational equity, and children's emotional and social development (Fesler et al., 2026).

Secondary education

Secondary education builds on and deepens students' subject knowledge, fostering collaboration, independent work, critical thinking and decision-making skills — with a view to preparing them for higher education or the workforce. This is an educational stage where children can develop their talents, healthy social interactions and peer relationships, citizenship, and sense of purpose (International Commission on the Futures of Education, 2021). At school, they sharpen executive control, epistemic judgement (weighing evidence, biases and competing claims) and long-term planning, while forming identity, relational autonomy and social capacities (for intimacy and boundary setting).

Crucially, children in secondary school are rapidly adopting AI, accessing these tools through both school-provided technologies as well as private devices. Emerging findings primarily from the Global North show:

- 72 per cent of European 9–17-year-olds use GenAI, with school-related AI use the most common (Staksrud et al., 2026).
- In the United States of America (US), 86 per cent of 9–17-year-olds use GenAI. Most commonly, they use it for fun or entertainment, followed by schoolwork, and then to create things (O’Neil et al., 2026).
- Children use AI to support their learning and do research for school, to create content, play games, and for emotional and health advice and support (McBain et al., 2025).

Curricula in secondary education differ across countries, with some prioritizing critical thinking and learner-centred pedagogies, while others foreground rote memorization and passive learning. This shapes the conditions under which AI is used and its likely effects (Reimers et al., 2026).

AI literacy is increasingly taught at the secondary level, so that children learn: the concepts and challenges of artificial general intelligence; coding in one or more programming languages; and training, testing and deploying algorithms (UNESCO, 2022). Curricula do not always include how to ethically create and use AI while avoiding risks.

While findings are uneven, research shows some educational benefits:

- Virtual technology to create immersive learning experiences facilitated children’s learning across a range of school subjects — especially at upper-secondary level, where children have the maturity to engage with virtual experimentation (Cao and Hsu, 2023).
- A systematic review and meta-analysis on the effectiveness of AI for mathematics learning found that, compared with traditional instruction, AI and adaptive tutoring systems showed small benefits for lower- and upper-secondary students (Yi et al., 2025).

Five priority risks of AI from early years through adolescence

AI use in childhood presents significant risks (Berson et al., 2025):

- Educational risks: such as cognitive offloading, eroding independent judgment, disruption of critical thinking and epistemic distortion (Chalkidis and Søgaaard, 2026; Neugnot-Cerioli and Hipp, 2026). If AI is used in education, it is vital that it is accompanied by structured teacher-led critical engagement with and about AI, including to equip students to interrogate and resist AI-mediated harm (Fesler et al., 2026; Tanksley, 2024). Transparency and explainability are vital here: if children (and sometimes teachers) do not even know if they are using AI (for example, if they are using a reading application with AI-driven adaptive content), it is difficult to expect them to ask critical questions about it.
- Data risks, including privacy and surveillance, discrimination and algorithmic biases, and commercial exploitation. Age-appropriate AI requires privacy-by-design, technical safeguards for procurement and deployment, and legal regulation and enforcement.
- Amplifying inequalities: disabled or disadvantaged children may rely more on adaptive AI systems or be more exposed to AI risks (Neugnot-Cerioli and Hipp, 2026). Inclusive and

intersectional policies are vital if the provision of AI opportunities is not to exacerbate existing inequalities, but rather to reduce them.

- Cultural and linguistic exclusion: AI can be used to adapt curricula for local contexts, for children with special needs, and for minority languages (Ayere et al., 2024; DeWitts et al., 2025), but AI does not support most of the world's languages. AI algorithms trained on data that reflects societal biases can perpetuate and magnify these biases in educational content. The lack of cultural relevance, local languages or diverse needs embedded in AI curricula can exacerbate exclusion and marginalize learners (Choudhury, 2023; Reimers et al., 2026; White and Scott, 2024; Yang, 2022).
- Social and emotional risks: children treat non-human voices and characters as if they are humans with minds and feelings. They can be vulnerable to AI systems that are fluent, responsive, personalized or emotionally expressive. AI features may displace real-world interaction and blur fiction and reality, if not carefully mediated by an educator (Berson et al., 2025).

Risks are not uniform across childhood, nor are they universal across contexts. Some evidence suggests that younger children are more at risk – for example, they show higher AI dependence and weaker critical thinking skills (Gerlich, 2025). Use of AI may even prevent the development of skills and capacities (Ferdman, 2026).

AI companions (or conversational agents) designed to simulate friendship, intimacy and emotional support illustrate how AI in education may have differential consequences:

- For the youngest users, companion AI chatbots modelled on familiar pre-school media characters can appeal to children below a platform's minimum age and give a false sense of safety. The chatbots can be problematic as they may behave inconsistently or unsafely, they mostly employ weak age verification, and their data collection practices carry serious privacy and safety risks (Blake et al., 2025; UNICEF, 2026c).
- Typically optimized to sustain engagement, the sycophantic nature of AI companions poses a particular risk for adolescents. Companions tend to affirm and validate the user rather than challenge them. This is a pattern that can reinforce distorted thinking, deepen emotional dependency, and displace human relationships and professional support (Tweed, 2025). Recent litigation shows how anthropomorphic, affirming interactions may foster intense reliance among vulnerable children.¹

Age-appropriate AI in education: law and regulation

Relevant regulatory frameworks concern data protection, online safety and AI governance. Some but not all frameworks recognize children's vulnerability and evolving capacities. Some national frameworks treat children as a single under-18 years category; others use narrower or variable thresholds. The globally influential US and European Union frameworks converge around three age markers:

- 13 years: notably, this is the baseline for data processing consent in the US under the Children's Online Privacy Protection Act (COPPA).

¹ See *Garcia v. Character Technologies Inc*, Noam Shazeer, Daniel De Freitas Adiwersana, Google LLC, Alphabet LLC, Case No. 6:24-CV-01903 (M.D. Fla. filed 22 October 2024, and amended on 9 November 2024).

- 16 years: notably, this is Europe's General Data Protection Regulation (GDPR) Article 8 default for digital consent.
- 18 years: the universal ceiling for 'child' status, following the definition in the UN Convention on Rights of a Child (UNCRC) and incorporated into most legal frameworks around the world.

For policy-makers and educators, this need not mean a ban on AI below a certain age. A tiered, age-sensitive approach could include: robust safeguards for younger children; age-appropriate transparency; human oversight; protection against deceptive and harmful AI design; and child-friendly remedies for all learners under 18 years.

Judged against these standards, many current GenAI tools, including those widely used in education, are unlikely to be appropriate for children under 13, or even appropriate for any children. For example, the Digital Futures for Children centre conducted a child-rights audit of GenAI in educational technology (EdTech). This identified multiple problems, including biased or inappropriate outputs, British children being directed to helplines in the US, lack of reporting and remedy mechanisms, and opaque data practice (Atabey et al., 2025).

What matters is not only how the law defines the child, but what follows. In AI-facilitated education, age should not only be used to set a use threshold. More importantly, age should be applied to determine the level of explanation, protection, participation and accountability required across the system life cycle. Such regulation is now emerging:

- In Europe, the EU AI Act classifies several educational and vocational training AI systems as high-risk (European Commission, 2024). These include systems used for admissions, learning assessment, educational placement and exam monitoring. It requires life cycle risk management and attention to adverse age-related impacts on learners under 18 years and vulnerable groups. More broadly, the Digital Services Act (DSA)² requires digital platforms that are accessible to minors (including relevant education platforms) to be designed with the best interests of the child in mind (Livingstone et al., 2024). They are to be operationalized through age-assurance measures, privacy-by-default and prohibition of the use of dark patterns and persuasive design. The legislation also mandates systematic risk assessments for platforms used by children (Villar Onrubia et al., 2026).
- Brazil's new online safety regulation sets out age bands for age-appropriate safeguards for children (Presidency of the Republic, Brazil, 2025). The bands are children up to 12 years, and adolescents up to 18 years, and there are with context-specific rules on consent and parental involvement (for all children up to 16 years). These are significant for AI-enabled education, where systems may personalize learning, assess performance, monitor behaviour or influence educational opportunities.

Age-appropriateness is most clearly encoded in children's data protection and online safety rules. In AI governance and procurement, however, it is usually translated into procedural requirements, such as risk assessment or target-user specification. It excludes the detailed rules needed to determine which AI systems are appropriate for children of different ages in specific educational settings.

² See <https://eur-lex.europa.eu/eli/reg/2022/2065/oj/eng>

Case studies of AI in education around the world

There are many differences in how and why AI is being incorporated in education around the world. Evidence shows that children become better able to recognize and engage critically and safely with AI as they get older and gain AI experience. However, what counts as ‘age-appropriate’ has no settled meaning. There is currently considerable experimentation, with countries adopting varied approaches to how age or education level determines AI access, literacy and use. The following case studies illustrate distinct approaches and this diversity.

People’s Republic of China: Age-differentiated framework for GenAI in schools

Developed as part of the government’s AI+ initiative, China offers one example of an explicitly developmental framework with staged progression (UNESCO AIED, 2024; Colville and Bandurski, 2025), and an age-differentiated approach to AI in schools (Reimers et al., 2026). Its national guidance is designed to be age-appropriate and focuses on: igniting interest at the primary level; building technical understanding in junior high school; and progressing to systems thinking and innovation at senior high school.

- At primary level, students are not expected to use open-ended content generation independently, though teachers may use AI as a classroom teaching aid. The primary focus is on building experience, interest and basic awareness of AI (Shuo, 2025).
- Junior-high school students may explore AI content, critically analyse how it is generated, use AI for data organization, and develop critical evaluation skills. Students are not permitted to use AI tools to produce their schoolwork.
- Senior-high school students are permitted to partake in inquiry-based learning that engages with underlying technical principles of how AI works, learning coding, and designing simple AI models and systems.

Local educational authorities are responsible for putting in place AI management policies, data protection rules and ethical review mechanisms. They are also responsible for establishing vetted product lists for AI procurement that align with children’s cognitive development. As with much emerging national guidance in this field, the instrument is advisory and non-binding and how it will be applied in practice remains to be seen (Colville and Bandurski, 2025).

India: a national curriculum framework for AI from Grade 3

India offers an example of a universal early-entry approach to AI in education. In October 2025, the Ministry of Education affirmed its commitment to embedding AI and computational thinking across all schools from Grade 3 (ages 8–9 years) (Government of India, 2025a), building on the earlier Skills for AI Readiness (SOAR) programme for Grades 6 to 12 (Government of India, 2025b). Framed as a universal foundational skill under the National Curriculum Framework for School Education 2023, the initiative aims to introduce AI and computational thinking from an early age through a cross-curricular approach rather than as a standalone subject.

An expert committee led by the Indian Institute of Technology Madras is developing the curriculum, with teacher training through the National Initiative for School Heads’ and Teachers’ Holistic Advancement (NISHTHA) platform as a core delivery mechanism. The framework emphasizes inclusivity, ethical use and alignment with India’s broader ‘AI for public good’ ambitions, aiming to equip students with digital literacy and future-ready skills from an early age:

- From Grade 6 (age 11) AI will be offered as a standalone ‘skill subject’ through a 15-hour module.
- From Grades 9–12 (ages 14–18 years) AI will be offered as an optional subject.

With the curriculum still under development, how content, pedagogy and safeguards will be differentiated across age groups is expected to be elaborated as the framework is finalized. As with the other national approaches described here, the design reflects a judgement about the appropriate age and form for early exposure to AI — a question on which there is limited developmental evidence.

Norway: an age-differentiated approach: restricting AI use in primary school?

Norway offers an example of an age-differentiated approach that restricts use most tightly at the primary level. In June 2026, the Norwegian government moved to limit the use of GenAI for learning among primary school children and to permit only guided use among older students. It framed this measure as protecting the foundational learning and skill development of the early school years.

The guidance is tiered by age:

- Grades 1–7 (ages 6–13): GenAI is not to be used.
- Lower-secondary (ages 14–16): pupils may use AI under teacher supervision.
- Upper-secondary (ages 17–19): students are taught to use AI ‘appropriately’, developing the skills needed for higher education and work.

United Arab Emirates: a mandatory AI curriculum from kindergarten to Grade 12

The United Arab Emirates (UAE) offers an example of a staged progression model, like China, applied across the full cycle of schooling. The Ministry of Education announced that, starting in the 2025/26 academic year, AI will become a mandatory subject at all school levels, from early childhood education to Grade 12 (Aletihad, 2025). It will be integrated into existing computing, creative design and innovation subjects. The curriculum covers: data and algorithms; software applications; ethical awareness; real-world applications; AI-driven innovation and project design; and AI policy and social engagement. There is extensive teacher training, which is guided by the Ministry of Education.

The programme is tiered by age:

- **In kindergarten (ages 4–5):** children participate in play-based, interactive, and visual activities to discover AI and other digital technologies.
- **For ages 6–10:** the focus is on comparing machines to humans, developing digital thinking skills, and exploring AI applications.
- **For ages 11–14:** pupils design and evaluate AI systems and learn about bias, algorithms and ethical AI use.
- **For ages 14–17/18:** pupils are taught command engineering and to simulate real-world scenarios, preparing them for higher education and their future careers.

United Kingdom of Great Britain and Northern Ireland: an age-appropriate design code

The United Kingdom of Great Britain and Northern Ireland (UK) offers an example of a rights-based approach. The UK Information Commissioner’s Office Age-Appropriate Design Code (AADC) is a statutory code of practice that provides a regulatory framework for designing online services, in line with the UK data protection law (Information Commissioner’s Office, 2020a). Drawing on both evidence and consultations with children (Stoilova et al., 2019), the Code uses age and developmental stages

while recognizing that children’s capacities vary within and across these age groupings (Information Commissioner’s Office, 2020b).

The regulatory framework applies to online services likely to be accessed by under-18-year-olds, requires children’s best interests to be a primary consideration (Livingstone et al., 2024), and translates this requirement into design duties — such as high privacy by default, and age-appropriate communication with children about their rights. Following the UK model, similar approaches have been adopted in other jurisdictions (UNICEF, 2025; 5Rights Foundation, 2026), including Indonesia (The Audit Board of the Republic of Indonesia, 2025), and the states of California (Legislative Counsel, 2023) and Maryland (Maryland General Assembly, 2024) in the US. However, their scope and implementation continue to develop.

Conclusions and suggestions

How should AI use be calibrated to children’s developmental capacities? Can AI in education embed rights-respecting processes, including children’s evolving capacities? Given the risks, is a precautionary approach advised? These and other urgent questions now face policy-makers worldwide.

AI implementation and AI literacy in early childhood, primary and secondary education can present important opportunities for learning, as well as provide important tools for learning, particularly for children with varying abilities. AI technologies should be child-centred in their design (Kurian, 2025). But AI in education can also introduce complex challenges and urgent problems related to data privacy and children’s safety, algorithmic bias and cultural biases. This puts pressure on the need for rights-respecting AI design, updated regulatory frameworks, compliance, standards, procurement and school budgets.

Age-appropriate AI in education requires more than asking whether a system is broadly ‘suitable for children’. It requires prior, context-sensitive assessment of whether the system is appropriate for children of a particular age, in a specific educational setting and purpose — including learners with diverse needs and abilities — and whether this is supported by evidence. Evidence that a system is beneficial for one age group does not necessarily transfer to another age group or sub-population, and therefore there is reason for caution to apply such findings across all age groups.

Although ‘age-appropriate AI in education’ has no settled meaning, this is not a reason for inaction. It is a call for policy-makers, researchers and educators to build shared, evidence-based criteria for what age-appropriate AI means in specific developmental and educational contexts. Independent research and evaluation are a priority. This applies particularly to where evidence is severely lacking in relation to AI tools for learners with diverse needs and abilities, AI deployment and use, and its impact in global majority settings analysed through a developmental lens.

These questions are increasingly reflected in data protection, online safety, AI governance and procurement frameworks. But this is still uneven. Legal definitions of the child should therefore be translated into concrete safeguards, including age-appropriate transparency, limits on profiling and monitoring, best-interest assessments and procurement criteria (Livingstone et al., 2024). There is also the need for independent evaluation and certification schemes to test whether a system is suitable for the children who will use it.

Decision-makers should assess what data the system processes and whether its effects differ across age groups, developmental stages and educational settings, including primary and secondary education.

This should include consideration of whether younger and older children may experience different risks or benefits; and whether children, parents, teachers and relevant experts have been consulted. They should also consider whether there is evidence that the system is necessary, proportionate and educationally beneficial for the relevant age and context.

Incorporating AI into education impacts multiple dimensions of policy in ways that differ for early childhood education, primary school and secondary school. A child rights framework sets out what good looks like. It recognizes that, although chronological age-based distinctions may be practical for policy-makers, age is also a social construct, meaningful according to the cultural context. Age-based policies may serve as a convenient proxy for decisions about children's evolving capacities (UNICEF, 2026a), but care is needed to ensure they do not unduly restrict, put at risk or even discriminate against children by age. This is especially important when adult judgements or motivations obscure children's lived realities (Breen, 2025).

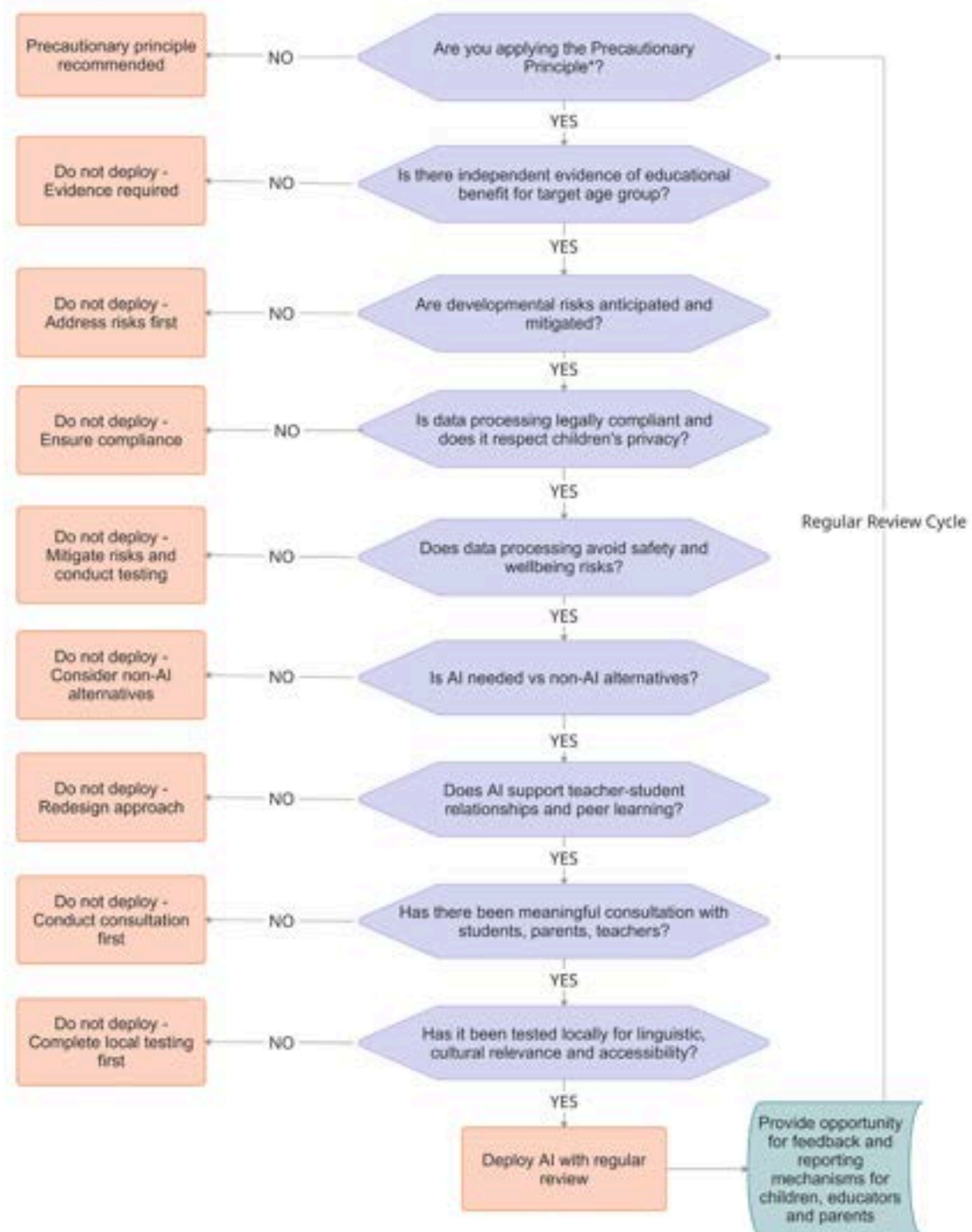
AI in education should scaffold children's learning, strengthen rather than displace child-educator relationships, and ensure that EdTech designs work for all, especially disadvantaged and vulnerable students (Long and Magerko, 2020; Jia et al., 2025). But most AI curricula have not been evaluated against independent measures of student learning, and most prioritize technical knowledge over the critical and ethical dimensions children really need to navigate AI (Jia et al., 2025; Atias and Mawasi, 2025; Long and Magerko, 2020). UNESCO's *AI competency framework for students* expands on its mapping of AI curricula and calls for a human- and rights-centred approach to incorporating AI learning into school curricula that moves beyond a narrow focus on teaching technical skills (UNESCO, 2024). UNICEF's EdTech for Good Framework Version 2.0 offers a structured model to assess EdTech tools against standards of transparency, safety, educational value, and contextual appropriateness and accessibility, including AI-integrated EdTech (UNICEF, 2026b).

In deciding whether and how to invest in AI resources for early childhood education, primary and secondary education, three priorities are recommended for Ministries of Education and schools:

1. **Consider applying the Precautionary Principle (UNESCO, 2005).** Evidence is lacking for most age groups in most countries regarding the benefits and harms of AI to children. Nonetheless, the current evidence on AI's impact on children indicates that action may be required to actively avoid or diminish plausible harms. This applies especially to GenAI (including chatbots, AI tutors, mental health bots, companion AI), emotional AI, and biometric and neural-data AI technologies.
2. **Conduct a Child Rights Impact Assessment (Livingstone and Pothong, 2025).** Deploy AI in education only when: (i) independent evidence shows it benefits learning among the relevant age group; (ii) data is processed in ways that are legally compliant, respect children's privacy, and do not introduce learner safety risks; and (iii) it supports the human teacher and their interaction with their students, or it supports students' learning in ways that do not displace either the teacher or peer collaborative learning. Answers to these questions should be reviewed regularly. In low-income settings, open-source evaluations and regional collaborations could be particularly useful.
3. **Ensure key questions are asked and answered before deployment.**
 - a) Is there prior independent evidence of educational benefit for the target age group? Have developmental risks been evaluated, anticipated and mitigated?
 - b) Is AI needed for the target age group, compared with non-AI alternatives? Does the tool support or displace the teacher-student relationship and peer learning?
 - c) How has the proposed AI been meaningfully consulted on with students and teachers? During AI deployment, will children have supported opportunities to question it?
 - d) Has the AI product been tested independently and locally for children who will use it, ensuring its linguistic and cultural relevance, availability of help, and adaptation for multilingual learners and children with disabilities?

The decision tree (**Figure 1**) provides useful guidance and suggestions for formulating age-appropriate AI policies.

Figure 1: Decision tree outlining steps to take when deciding whether and how to invest in AI resources used by children for education across ages



For further exploration, see these resources:

- *Children and AI Design Code* (5Rights Foundation, 2025): <https://5rightsfoundation.com/resource/children-ai-design-code/>
- *AI in Education: What the Research Says* (Children and Screens, 2026): <https://www.childrenandscreens.org/learn-explore/research/ai-in-education-what-the-research-says/>
- Child Rights by Design toolkit (Digital Futures Commission): <https://childrightsbydesign.5rightsfoundation.com/>
- Your rights online (Digital Futures for Children centre): <https://www.digital-futures-for-children.net/your-rights-online>
- *Standard for an Age Appropriate Digital Services Framework Based on the 5Rights Principles for Children* (IEEE, 2021): <https://ieeexplore.ieee.org/document/9627644>
- Age appropriate design: A code of practice for online services (Information Commissioner's Office): <https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/childrens-information/childrens-code-guidance-and-resources/age-appropriate-design-a-code-of-practice-for-online-services/>
- *Joint statement on artificial intelligence and the rights of the child* (ITU/CRC/UNICEF, 2025): https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-CYB_JOINT-2025-PDF-E.pdf
- Stanford AI Hub for Education: <https://scale.stanford.edu/ai/repository>
- *K-12 AI curricula: a mapping of government-endorsed AI curricula* (UNESCO, 2022): <https://unesdoc.unesco.org/ark:/48223/pf0000380602>
- *AI competency framework for students* (UNESCO, 2024): <https://www.unesco.org/en/articles/ai-competency-framework-students>
- Data Governance for EdTech (UNICEF): <https://www.unicef.org/innocenti/reports/data-governance-edtech>
- *Guidance on AI and Children (v3): Checklist 10 requirements and 48 recommendations* (UNICEF, 2025): <https://www.unicef.org/innocenti/media/11996/file/UNICEF-Innocenti-Guidance-on-AI-and-Children-3-Checklist-2025.pdf>
- *EdTech for Good Framework 2.0* (UNICEF, 2026): <https://www.unicef.org/digitaleducation/media/3241/file/EdTech%20For%20Good%20Framework%20Version%202.0.pdf.pdf>
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