International WG on Digital Education

Ministry for Foreign Affairs of Finland

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Data Governance for EdTech: Policy Recommendations



UNICEF INNOCENTI – GLOBAL OFFICE OF RESEARCH AND FORESIGHT

Why these policy recommendations are needed

As part of its broader work on data governance for children, UNICEF, in collaboration with the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Global Privacy Assembly (GPA) and a global expert advisory group, conducted a landscape review on data governance in educational technologies (EdTech). This document sets out policy recommendations that emerged from the review as well as from extensive consultations with data protection authorities (DPAs), civil society organizations, academics and EdTech companies across five regions. These recommendations should be read in conjunction with the landscape review.

Children's data, when processed through EdTech, can have profound impacts on their rights – including their rights to privacy, education, non-discrimination and autonomy. EdTech, like many other kinds of technology, is increasingly incorporating artificial intelligence (AI) into the newest products. The development and improvement of the underlying algorithms used in AI-driven EdTech relies heavily on processing ever more data from children. The governance of such data is currently fragmented, and regulation often lags behind technological advancements. These policy recommendations aim to address this gap by proposing multi-stakeholder governance solutions to uphold children's rights in digital learning environments.

Risks and opportunities in EdTech data governance

EdTech provides children with new opportunities through data-driven technology and the growing integration of AI and generative AI. However, as with any use of children's data, these advancements also introduce new risks that must be carefully managed to ensure the benefits are achieved in a rights-respecting manner. The global market for EdTech was estimated to be worth US$ 142.37 billion in 2023, and is expected to increase fourfold in the coming years, as investments shift towards AI. This is a sizeable market, underpinned by children's data, which requires robust government regulation and

oversight to ensure that commercial and public funds allocated to the education sector are used in children's best interests.

EdTech offers important opportunities to enhance access, personalize learning and promote inclusiveness in education. Digital tools can improve educational experiences, support learners with disabilities, and help maintain continuity during crises or school closures.

Data inform decisions by educators and policymakers, support research into effective teaching techniques, and help train algorithms for improved learning outcomes. Learning analytics can assist teachers, schools and education ministries by tracking student progress and predicting results.

EdTech offers an opportunity to collect reliable data at scale, which is essential to fully and equitably implement every child's right to education. Data inform decisions by educators and policymakers, support research into effective teaching techniques, and help train algorithms for improved learning outcomes. Learning analytics can assist teachers, schools and education ministries by tracking student progress and predicting results. At a broader level, data can reveal inequalities and guide strategies for improvement. However, proper interpretation of data analytics may require training in data literacy for educators and government officials, as research suggests expertise in this area is currently lacking in many countries and contexts.

AI-powered EdTech can support children with disabilities by offering diagnostic tools and learning aids, such as identifying learning difficulties, generating artificial voices for speech support, and providing real-time transcription for hearing-impaired students. Integrating EdTech data with other sources, such as civil registries and health services, could extend benefits beyond education, but only in contexts where privacy and surveillance risks can be mitigated, such as through federated learning models based on governance by design.

UNESCO's 'An Ed-Tech Tragedy?' reported that the rapid global roll-out of EdTech handed significant control of public education to for-profit companies, increased digital surveillance and caused environmental harm.

However, these benefits exist alongside significant risks for children. Many EdTech providers adopt business models that rely on extracting children's data, often without sufficient oversight or regulation. Human Rights Watch's analysis of 163 EdTech products used by 49 governments during the COVID-19 pandemic found most platforms risked or violated children's privacy and rights for non-educational purposes. UNESCO's 'An Ed-Tech

Tragedy?' reported that the rapid global roll-out of EdTech handed significant control of public education to for-profit companies, increased digital surveillance and caused environmental harm.

EdTech's promise of scalable personalized learning is based on the collection of large amounts of children's data. A UNICEF review of personalized learning tools in low- and middle-income countries found that EdTech products offer flexible use across multiple settings (home, class, after-school), purpose (core, supplemental) and use cases (individual, blended, group-based). EdTech is therefore easily adaptable to children who need extra support or a different pace of learning, and it can be deployed in crisis situations. However, EdTech requires large amounts of children's data, whose ownership typically lies with providers, risking the use of children's data for purposes other than personalized learning such as advertising or other commercial purposes.

OECD found in its 'Digital Education Outlook 2023', based on surveys of OECD governments, that no country had established any regulation or contract to access data collected by commercial providers within public schools

The absence of coordinated legal and technical frameworks has led to inconsistent protections for children across jurisdictions. The Organisation for Economic Co-operation and Development (OECD) found in its 'Digital Education Outlook 2023', based on surveys of OECD governments, that no country had established any regulation or contract to access data collected by commercial providers within public schools. There were also no reported regulations or guidelines about algorithms or automated decision-making systems used in schools. Without urgent reform, EdTech risks deepening inequalities and exposing children to harm.

EdTech-based learning analytics may bias educational priorities towards subjects with easily quantifiable outcomes, such as mathematics and languages. Learning analytics may drive education towards goals that fit big data analyses, rather than the realization of children's right to education. Many EdTech tools emphasize mathematics and language skills, which are more easily measured through data analysis, often to the detriment of the creative arts and non-academic pursuits. There is a danger that students will be reduced to data constructs, which could narrow their educational opportunities.

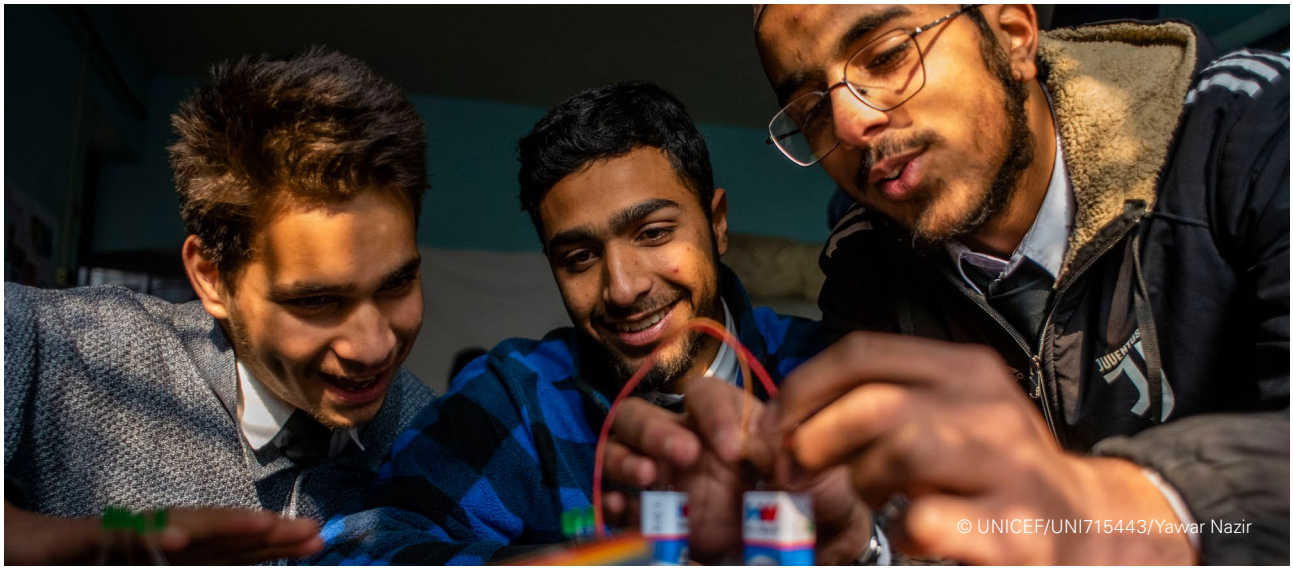
Both governments and private companies are using EdTech to survey students beyond educational contexts, sharing data with law enforcement or immigration agencies, or exploiting educational data for commercial profiling. Such practices can limit self-determination, and threaten children's safety and academic freedom.

Machine learning algorithms can replicate stereotypes and biases contained in their training data, leading to a perpetuation of social disadvantage.

Bias in training data for AI can reinforce existing inequalities, especially for marginalized children. Machine learning algorithms can replicate stereotypes and biases contained in their training data, leading to a perpetuation of social disadvantage. This is a particular concern where AI is used to predict learning trajectories, capacities and outcomes.

Cybersecurity risks are significant, with schools often targeted and many countries reporting breaches involving EdTech providers. As an example, in January 2025, 80 school boards in Canada were affected by a cyberattack targeting an EdTech company used by schools, compromising the personal information of millions of students and staff at schools in Canada, as well as in the United States and other countries.

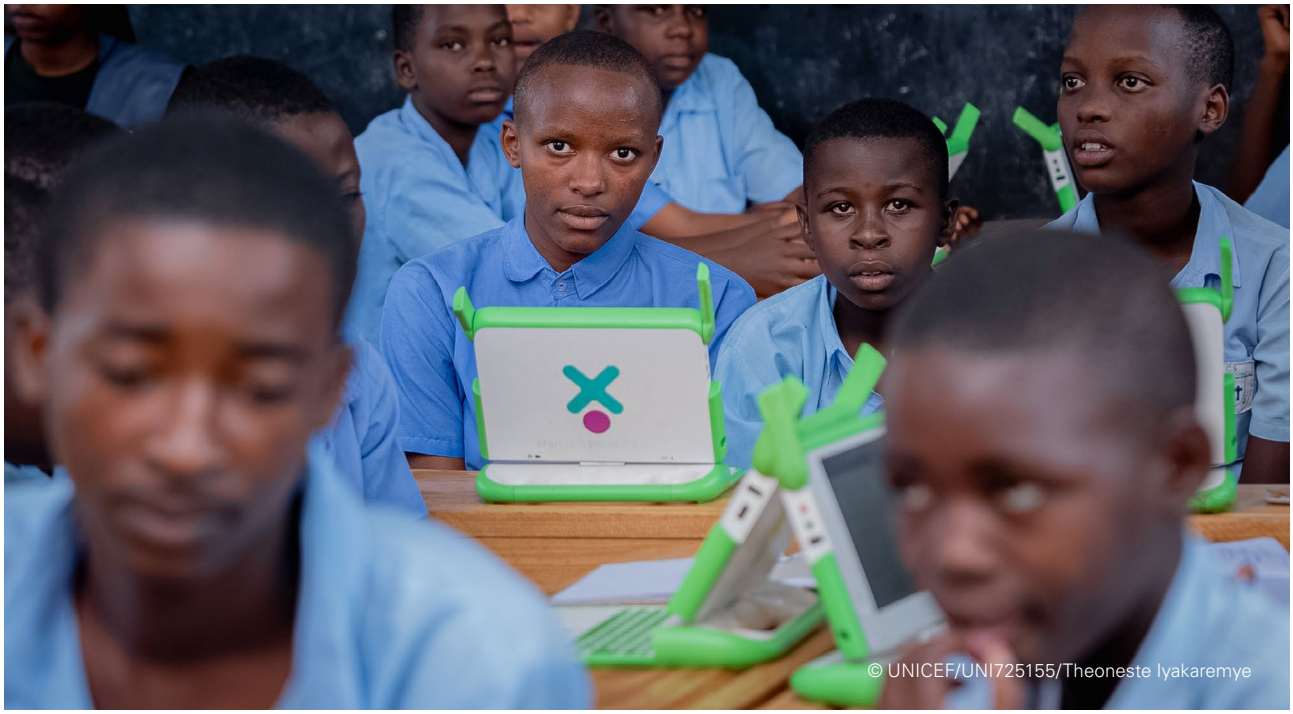
Lastly, large-scale data processing by EdTech demands vast environmental resources, posing long-term risks to children's rights and the planet. The data processing and storage needed for EdTech to function, as with other technologies, requires massive amounts of land, energy and water to power data centres and chip processing plants.



LOOKING TO THE FUTURE: TAKING A FORESIGHT LENS TO DATA GOVERNANCE FOR EDTECH

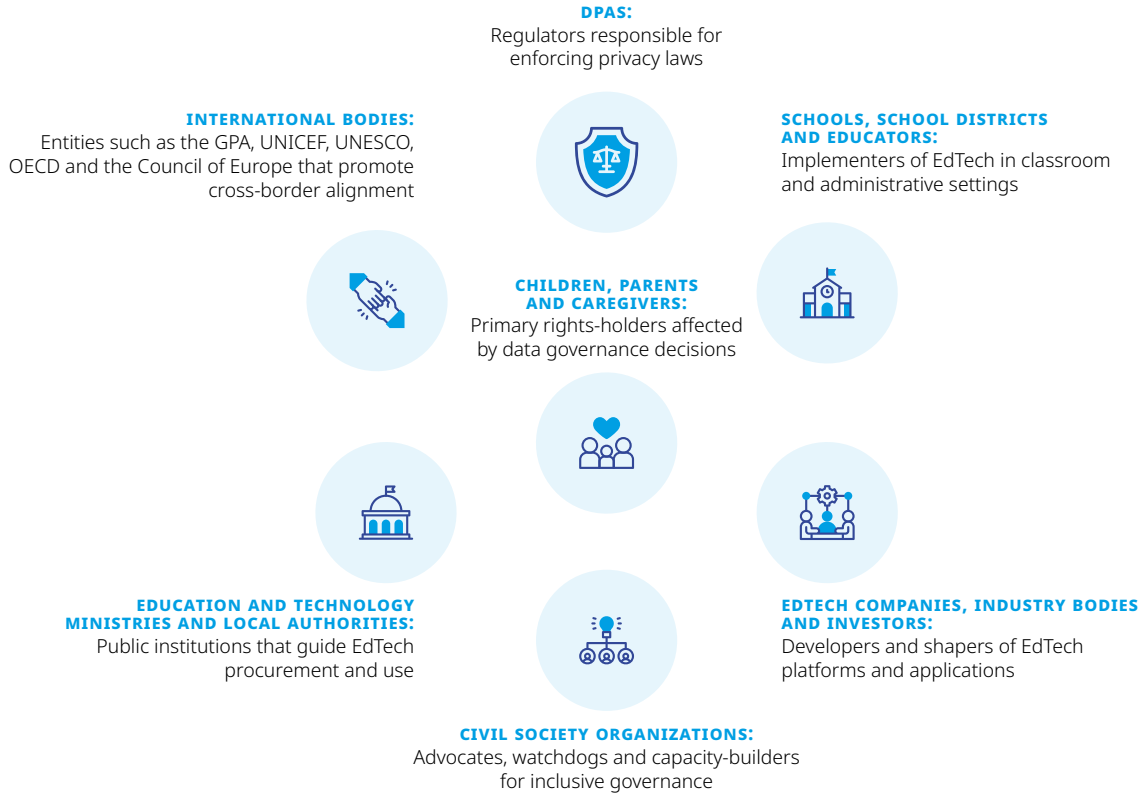
In developing these policy recommendations, UNICEF convened a meeting of an expert advisory group, led by a foresight expert, to envisage how data processed by EdTech might impact children's learning experiences in the future, and how governance models may need to adapt to new digital realities.

The experts shared predictions and observations that, following generative AI, the next wave of EdTech would include agentic AI, enabling systems to autonomously make decisions and complete tasks for users. EdTech was expected to integrate neurotechnology to enhance attention and memory, especially for students with learning challenges. However, concerns arose over big tech's role in creating standardized curricula, potentially undermining trust in traditional education, and over the erosion of consent, particularly for vulnerable children, prompting calls for socially responsible data governance. Virtual reality and augmented reality were anticipated to become more prevalent in education, blurring boundaries between learning, entertainment and personal data use. Broader societal risks included weakened trust in teachers and curricula due to misinformation, fragmented AI governance driven by geopolitical tensions, and environmental impacts from increased digital consumption, such as e-waste and energy demands.



Strengthened multi-stakeholder and multilateral collaboration for effective EdTech governance

Actors involved in governance of children's education data:



Effective data governance for EdTech is a multidisciplinary challenge that requires coordinated engagement among diverse stakeholders. Decisions about the educational purposes for which data are processed must be guided by educators and government authorities to ensure alignment with public interest goals. At the same time, all data processing must comply with relevant data protection laws and be overseen by DPAs, which are responsible for assessing risks and safeguarding rights. This means that DPAs need to balance their role as independent regulators that often have an oversight role in relation to their country's Ministry of Education, while at the same time collaborating with relevant stakeholders to ensure better data governance for children.

EdTech providers must meet legal obligations, while also contributing valuable insights into emerging technologies to help shape regulatory frameworks that support both innovation and child

protection. Again, there can be some tension where regulators seek the honest inputs of EdTech companies into the development of regulation, while ensuring they fulfil their mandate to oversee the EdTech sector.

Civil society plays a critical role by promoting transparency, conducting independent research and holding stakeholders accountable. However, as detailed in the landscape review, civil society is rarely invited to participate in multi-stakeholder governance initiatives alongside governments, regulators and the private sector. Notwithstanding this, civil society organizations have carried out research in several countries that has catalysed regulatory investigations into EdTech and enforcement actions.

Children – whose rights and experiences are directly impacted – must be meaningfully engaged in policymaking, regulation and design processes. Their perspectives offer essential insights into how EdTech affects learning, well-being and privacy. The regulatory sandbox model proposed by the Datasphere Initiative offers a model that could give children a seat at the table to participate in governance decision-making for the first time.

Given the global nature of the EdTech market, with many products operating across borders, multi-stakeholder collaboration must also be international and inclusive of diverse regional perspectives to help ensure equitable and effective governance. EdTech companies interviewed for the landscape review expressed frustration with having to demonstrate compliance with a wide range of regulations across multiple jurisdictions in different formats and at significant expense. They called for greater global alignment of audit frameworks and certification schemes to ease this burden.

How to use the policy recommendations

In response to the identified risks in relation to EdTech and children's privacy, and the gaps in the existing governance framework, the following policy recommendations are presented in two parts:

- The **over-arching policy recommendations**, which are set out by theme, may be led and implemented by different actors depending on the context. They represent the main themes identified that require attention to improve data governance for children.

- **More granular policy recommendations** are set out for key actors, including, where possible, examples of good practice. These can be used when considering how specific stakeholders can take targeted actions to contribute to improved governance for EdTech within their own sphere of influence.

- As there are huge disparities around the world in terms of both available resources and capacity of DPAs, and in terms of maturity of regulatory structures, it will be incumbent upon high-income countries to provide support and capacity building to lower resourced countries in realizing these policy recommendations.



Overarching policy recommendations

These overarching policy recommendations are divided by theme and represent the core requirements for an improved data governance framework for EdTech. Many of these recommendations call for a multi-stakeholder response, which is likely to look different across diverse legal, political, cultural and economic contexts. The key stakeholders targeted by each recommendation are indicated in brackets after each heading, though in certain contexts, others may be better positioned to take them forward.

1. Establish common definitions and standards (applicable to all stakeholders)

Developing a shared understanding of what constitutes EdTech and its various subsectors is crucial for consistent policy and regulatory responses. A common definition can aid in setting expectations for legal compliance, allowing for comparative data to be gathered regarding EdTech use, procurement and investment across districts, countries and regions.

Agreement should be reached on terminology, definitions and minimum standards among EdTech companies, investors, policymakers and regulators. As EdTech industry bodies emerge across different countries and regions, the need for consistent terminology and definitions is becoming even more important.

For more on technical and ethical standards, see the UNICEF case study on Industry Standards.

Technical and ethical standards for the EdTech industry should accompany key terms and definitions. Standards can translate high-level legal or regulatory requirements, principles and policy intent into practical technical guidance for engineers. They can guide innovation and product development and serve as the foundation for regulatory development. Their development can be led by the EdTech sector, or by civil society through standards-setting bodies. It may be valuable to align EdTech standards with ISO/IEC 42001 (AI Management Systems) and IEEE P7000 (Ethics in System Design) where relevant, as well as emerging child-rights specific standards. Technical standards should take a child rights-

by-design approach and can also embed requirements to consider and assess child rights impacts. They must be flexible to adapt to rapid technological change, and global cooperation is needed to ensure they are recognized across borders.

2. Strengthen legal and regulatory frameworks and embrace anticipatory governance (applicable to governments and legislators)

Governments are the primary duty-bearers responsible for ensuring that EdTech companies deploy their products responsibly in schools. As EdTech products develop and proliferate at speed, governments need to embrace foresight, scenario planning and anticipatory governance. By keeping up with innovation and experimentation, they can develop future-focused legal and regulatory frameworks.

For further information on Children's Codes, see the UNICEF case study on Children's Codes.

Where national data protection and AI regulations are lacking, they need to be prioritized, along with Children's Codes. It is often more effective for data protection, AI regulations and child rights laws to have horizontal applicability across sectors, rather than creating separate regulations specifically for EdTech. Legal frameworks applicable to EdTech should include pathways for legal redress for children and families, and support for small companies to comply with regulations.

Where national legal and regulatory frameworks are in place, Children's Codes can help governments, local authorities, schools and EdTech companies understand how they apply specifically to children. Children's Codes can be statutory enforceable guidance or non-binding guidance documents. Given the central role education plays in children's lives, Children's Codes may provide specific guidance on how laws and regulations apply to EdTech.

Where necessary, new implementing guidance for EdTech should be developed. Such guidance can help clarify how horizontal regulations apply specifically to EdTech used in schools, and how laws and regulations on data protection, AI ethics, children's rights and education align.

3. Promote rights-based business models (applicable to the EdTech sector, governments, civil society and investors)

Not all EdTech organizations are companies. The EdTech ecosystem also includes non-profits, as well as public–private partnerships. Where EdTech is managed by the public sector at a national level, this can lead to data being hosted by governments as well as the private sector.

The public sector is a key influencer over the EdTech market, and can drive responsible data governance practices. Where legal oversight for EdTech falls between different ministries, there is a need for interministerial collaboration, for example across ministries of education and innovation, as well as alignment with data protection authorities and AI regulators.

The collection and analysis of children's data is a common feature in the business models of many private EdTech providers. To prevent potential exploitation of children's data, there must be a systematic review of commercial practices and stronger promotion of alternative models that do not rely solely on data extraction. This includes encouraging 'data commons', B-Corp certification and digital public goods. Regulations should incentivize and reward companies that embed data protection and children's rights into their product design and business strategies.

Rights-based business models should be prioritized for EdTech deployed in the Global South in particular. Business practices that offer EdTech products at no cost to lower-resourced schools can raise important privacy considerations. In some cases, these free versions may come with less robust data protection, potentially placing a greater burden on children through the use of their personal data.

Investors are key drivers of improving EdTech business models and have a crucial role to play in promoting rights-based and ethical business models. Civil society organizations can provide expertise in rights-based business models and can contribute to making the case to investors for requiring better minimum standards for investment.

4. Implement robust risk and impact assessments (applicable to the EdTech sector, DPAs and education ministries)

To anticipate and mitigate harm, all EdTech actors should conduct data protection impact assessments, AI impact assessments and child rights impact assessments (CRIAs) before deployment and periodically as part of the product or AI lifecycle, as the underlying technology and usage evolves. These assessments should include both the educational benefits and the data-related risks, which are interrelated concerns.

Assessing data-related risks early on can minimize harm to children and prevent punitive enforcement actions to companies later. Particular attention must be given to high-risk technologies, such as those using AI or biometric data.

For a deep dive on risk and impact assessments related to children's data, see the UNICEF Case Study on Impact and Risk Assessments.

Templates and tools for such assessments should be standardized to allow for comparison between companies and products and include children's voices. Data protection impact assessments (DPIAs) and CRIAs could reference federated auditing protocols or differential privacy benchmarks to make the process technically enforceable and not just procedural. Finally, the assessments themselves should be published in a machine readable format to allow for regulatory and/or public oversight.

5. Enhance oversight and enforcement (applicable to DPAs, governments and civil society)

Effective data governance depends on the ability of regulators to monitor compliance and take enforcement action. This requires well-resourced DPAs with sufficient autonomy, technical capacity and legal mandates. Given the extremely broad scope of most DPAs, there is also a need for EdTech use in schools to be prioritized for audits, investigations and enforcement actions.

DPAs or governments (as applicable) should prioritize sector-wide audits and investigations of the use of EdTech in schools across local areas or nationally. Independent audits of EdTech practices should be regular and transparent.

Enforcement actions might be necessary, especially where big multinational companies providing EdTech to schools do not comply with data protection and child rights laws.

See further the UNICEF Innovation Hub's EdTech for Good Framework, which can be used to assess EdTech products across a range of competencies, including safety and data protection.

Countries should develop shared auditing frameworks, enable civil society to support oversight, and publicize enforcement to improve deterrence. Civil society can play an active role in overseeing the use of EdTech in schools, by carrying out research with parents and educators, and documenting breaches of data protection laws and children's rights. They can also bring complaints to DPAs where they consider enforcement action needs to be taken. For example, in the Kingdom of The Netherlands, the SURF cooperative of Dutch education and research institutions joined together with SIVON, a cooperative of school boards, to request the Dutch DPA to advise the education ministry to prevent a major EdTech platform from being used throughout the country, due to data protection concerns.

6. Improve transparency and accountability (applicable to the EdTech sector, schools and regulators)

Providing schools, educators, parents and children with sufficient information about data processing by EdTech companies can engender trust and allow all stakeholders to make informed decisions about which EdTech products to use, and how to use them.

EdTech companies must publish clear, accessible and machine readable privacy policies and be transparent about their data practices. This includes making data protection and CRIAs publicly available in a user-friendly format, and explaining data flows to educators, parents and children. In addition, EdTech privacy policies and terms and conditions, which are often highly complex and opaque, need to be written in clear language understandable by EdTech educators and users, in particular children.

For an example of a public repository, see the Learning Cabinet, which includes EdTech products that have been assessed against the UNICEF EdTech for Good Framework.

Public repositories of vetted EdTech tools, as well as transparency in relation to cybersecurity incidents, can support accountability and informed decision-making by schools and regulators. Whether vetting is carried out by local authorities, national governments or civil society organizations, public repositories can help schools focus on teaching and learning rather than each school having to navigate the complexity of data governance within the whole EdTech landscape themselves.

7. Promote positive, rights-based uses of data and support data literacy (applicable to governments, DPAs, education authorities and civil society)

Children's data should be governed not only to prevent harm, but also to unlock the potential for good. To ensure that each child's right to education is fully and equitably implemented, there is a need for reliable data. Timely analysis of data derived from EdTech can also be used to anticipate and analyse possible future trends, and ensure that regulations keep up with the evolving uses of EdTech by and for children.

Stakeholders must first define educational goals and determine how data can be used in service of those goals – rather than collecting data without a clear purpose. Data are needed to inform decision-making by educators and policymakers, as well as to train computer algorithms that might offer accelerated learning benefits. Data can also be used by vetted researchers and innovators to document the benefits of different educational interventions, and to define and optimize algorithms that can improve children's outcomes.

All stakeholders need stronger data literacy to meaningfully engage in data governance. Educators and school leaders deploying EdTech must be able to interpret learning analytics and AI-driven insights. Resources should also be allocated to train designated data protection officers in schools and support educational leaders in understanding and managing data analytics and AI tools. There is also an urgent need for improved regulatory data science capacity within DPAs and, where resources allow, dedicated algorithmic audit units within DPAs could enhance enforcement capacity.

For more on the role of DPAs in promoting digital literacy, see this blog about the Information and Privacy Commissioner for Ontario's education initiative on privacy rights.

Children and caregivers need accessible tools to understand how their data are used and to manage permissions. Both DPAs and civil society can play a vital role in building public understanding and fostering critical thinking about digital technologies.

8. Enable multi-stakeholder and multilateral collaboration (applicable to all stakeholders)

The complexity of EdTech governance requires coordination between multiple actors – government ministries, regulators, EdTech providers, schools, academia and civil society. Governments often need to balance different objectives: (1) the need to ensure that schools and educators have access to the latest and best EdTech to support teaching and learning; (2) the need to ensure compliance with data protection and child rights laws; and (3) the desire to promote innovation and the adoption of 'home-grown' EdTech from national businesses.

At a national level, mechanisms for collaboration, such as inter-ministerial bodies, data governance councils and ombudsman roles, should be established with a focus on EdTech. In some countries, laws may need to be amended or norms challenged to allow for direct cross-sectoral or cross-regional collaboration. An ombudsman or designated data protection officer could be appointed to facilitate communication and collaboration between ministries. This role could also help ensure that education policies are future-proof and account for emerging technologies, including AI. Children and families must also be given structured opportunities to participate in decision-making processes related to EdTech.

For more on the potential use of multi-stakeholder and multilateral sandboxes for EdTech, see the UNICEF Case Study on Regulatory Sandboxes.

At a multinational level, there are tremendous opportunities for learning and collaboration, as well as the potential for joint sandboxes, investigations and enforcement actions, especially where EdTech companies deploy the same products across multiple countries. In an EdTech landscape where many of the most-used EdTech products are owned by multinational corporations, there is a need for multilateral, multi-stakeholder data governance models to

ensure that children's rights are respected to a consistently high standard throughout the world. This will also be necessary to promote regulatory certainty as the bedrock for innovative EdTech development.

9. Embed data governance requirements into public procurement rules for EdTech (applicable to governments, local authorities, schools and the EdTech sector)

Procurement rules can ensure that EdTech companies comply with minimum standards before their products are purchased with public money, for use in schools, or even where they are provided for free. National ministries, local authorities and schools can all be bound by procurement rules that help ensure minimum standards at the point of purchase and prohibit the acquisition of EdTech products that fall below these standards.

Where EdTech is procured for use in schools, governments should include data governance requirements in procurement rules as a prerequisite for entering into agreements with EdTech providers. As well as robust minimum standards in relation to data protection, AI governance and children's rights, procurement policies should also promote accessibility. Depending on the context, this may require accessibility features, offline capabilities and safeguards for vulnerable learners. 'Free' EdTech should be scrutinized for exploitative data practices, and companies must ensure consistent protections across markets.

For more on the importance of public procurement rules for EdTech, see A Blueprint for Education Data from the Digital Futures Commission and 5Rights Foundation.

Procurement rules should be underpinned by requirements to comply with standards or to be certified against specific certification schemes. This works particularly well where governments agree on which standards or certification schemes EdTech companies should comply with across multiple jurisdictions. Standard contract clauses could be provided to accompany the procurement rules, embedding minimum standards into contract terms with EdTech companies by default, and requiring the reasons to be documented where schools choose to deviate from them.

10. Mitigate environmental impacts of EdTech (applicable to investors, EdTech companies and governments)

Sustainability goals should be embedded into data governance for EdTech through energy-efficient infrastructure, renewable energy use and green software design. Data processing requires large amounts of energy and water, and EdTech increasingly uses AI, which relies heavily on rare earth elements and data centres. It is essential that EdTech is designed so that it does not contribute to environmental burdens, because children's rights are inextricably linked to climate change.

For more on ways that environmental sustainability can be integrated into the EdTech ecosystem, see this report from the International Center for EdTech Impact.

Standards, procurement and investment frameworks, and certification schemes applicable to EdTech should include environmental performance as a criterion. Standards-setting bodies and certification scheme developers will need to find ways to measure and monitor environmental impact connected to the data processing impacts of EdTech, including those related to the use of AI or generative AI. This could include incorporating Life-Cycle Assessment methodologies for AI models, including energy, water and material usage metrics.



Targeted recommendations by audience

While all stakeholders have a role in advancing the overarching recommendations, the following targeted actions are particularly applicable to the stakeholder groups outlined below. It is important to note that there may be a need for phased implementation of these recommendations depending on national contexts and differing institutional and technical capacity.

Governments and policymakers

Governments must ensure coherence across data protection, education, AI and children's rights laws and regulations. This includes harmonizing regulations and developing implementing guidance tailored to EdTech contexts. Policymakers should also foster cross-sectoral collaboration through inter-agency working groups.

Governments should provide additional financial and human resources to DPAs, so that they are equipped to carry out their oversight role over EdTech and schools. They must also ensure that DPAs have sufficient autonomy from government to play an independent oversight role over government, schools and the EdTech sector. In many countries, EdTech is deployed by schools that remain ultimately accountable for its use. As regulators, DPAs can provide checks and balances for data processing by the public sector, including schools, as well as by the private sector.

For more on federated learning, see UNESCO's blog on federated learning for children's data.

Investment in federated data systems that enhance privacy-by-design must be a key priority for governments. Unlike traditional AI methods, where all data are collected in a central location, federated learning works by sending algorithms to where the data are already stored – such as school servers or ministry databases.

Governments must ensure that national digital identification (ID) systems, if used in schools, are appropriately governed. As more countries adopt national digital ID schemes, it is important to plan for how these schemes should

be governed with regard to children's data. This could involve establishing identity layers for minors that include data controls, along with recommendations on if, or how, to use digital IDs in educational settings to prioritize the best interests of the child.

It is important that policymakers consider the needs of small and medium-sized EdTech companies, taking into account the challenges they face compared to large multinational companies, while ensuring that all companies – regardless of their size – still comply with regulations and do not breach children's rights.

Data protection authorities

DPAs should lead efforts to produce EdTech-specific regulatory guidance, impact assessment templates and compliance toolkits. DPAs can play a collaborative role with the EdTech sector and schools, especially by helping smaller and medium-sized EdTech companies to understand how to comply with regulations, and assisting them with the compliance process.

For more on DPA enforcement actions, see the Digital Futures for Children Centre's review of international regulatory decisions concerning EdTech companies' data practices in 2024.

DPAs also have a responsibility to enforce data protection standards through regular audits and sanctions, when necessary. DPAs should not shy away from taking enforcement action where needed and imposing fines in the case of serious breaches.

Where resources allow, DPAs should set up regulatory or operational sandboxes, which are safe spaces for experimentation by EdTech companies with the benefit of regulatory oversight. Regulatory sandboxes can support responsible innovation by companies that wish to try out new features or product designs. Operational sandboxes can be used to pilot innovative data processing practices within real-world educational settings. It is considered best practice for DPAs to publish the sandbox outcomes to promote transparency and enable shared learning across the sector.

DPAs should support each other to create consistent regulations and guidance, exchange best practices, and

coordinate joint investigations or enforcement actions where necessary. Well-resourced DPAs can support DPAs with fewer resources by engaging in joint enforcement actions, sharing information (such as insights into the interplay between data protection and AI regulations) and providing policy models and guidance documents that can be adapted for other contexts. In particular, DPAs in the Global North could offer support to their counterparts in the Global South.

DPAs should continue to engage with the public, including directly with children and parents on their rights related to EdTech in particular. DPAs play an important role in educating the public on their data protection and privacy rights. Given the important role that schools play in the lives of children and families, EdTech is an area that should be prioritized for public education.

Education ministries and local authorities

Education ministries and local authorities should coordinate multi-stakeholder engagement in decision-making related to EdTech by convening technical experts, DPAs, civil society, parents and children. As the duty-bearers in relation to education, education authorities play an important convening role and must ensure that the necessary expertise is included, and that the views and impacts on all rights-holders are considered.

For more on the importance of multi-stakeholder engagement, see this blog about lessons from the United States, where EdTech was adopted in schools from an early stage.

Education ministries should explore technological solutions to improve data privacy at the school level. An expanding ecosystem of technological solutions is emerging that can strengthen privacy and security, and these solutions can be integrated with EdTech within the school system. Examples include specialized digital IDs for education, or the development of technical interoperability layers at the school level, which limit the amount of data EdTech companies can share with third parties.

Ministries must also provide schools with training and support in data analytics, privacy and generative AI tools. It is important that school leaders understand how to produce and interpret learning analytics reports from EdTech products deployed in their schools. Generative AI can be used to create

user-friendly interfaces for interacting with complex education data sets and help turn unstructured education information into meaningful, policy-relevant findings.

To improve the management and potential use of EdTech data, education ministries should work with technical experts to define data interoperability standards, including technical standards for how data are exchanged, structured and read – especially across municipal, state and national education systems.

EdTech sector

For more on privacy-by-design as a legal standard, see this blog by CNIL.

EdTech companies should design their products around the principles of child rights and data protection by default and by design. This may involve complying with relevant technical standards, as well as appointing internal data stewards, providing user dashboards for children and parents, and committing to transparent business models.

EdTech companies should undergo regular independent audits against recognized standards or relevant certification schemes, and carry out risk and impact assessments. Different options could be explored, including audits by governments or DPAs, private auditors and/or civil society. This would require data processing and analysis by EdTech to be transparent, visible and traceable. Risk and impact assessments can be carried out by EdTech companies internally and should be ongoing throughout the product life cycle.

EdTech industry bodies should develop EdTech industry codes of conduct related to data protection and AI ethics, as a prerequisite for membership. EdTech companies can work together to raise the standard across the market in relation to data governance for children. Adherence by EdTech companies to industry codes of conduct (where they exist) will further help demonstrate compliance and gain trust among users and procurers.

Civil society

Civil society should lead public education efforts on data rights, develop data literacy materials, and push for legal reforms aligned with children's rights. Civil society plays a critical watchdog role and can aggregate complaints to put pressure on regulators and companies. In contexts where DPAs are under-resourced, civil society can step in with strategic litigation and consumer campaigns to demand change.

Civil society is also uniquely positioned to bring the voices of children, families and educators into policy design processes, helping ensure that EdTech governance is participatory, inclusive and context-sensitive.

Civil society organizations should take the lead in setting up rights-based sandboxes for EdTech, alongside regulators and EdTech companies. While sandboxes have traditionally been led by governments and used by private companies to ensure compliance, a new generation of responsible, community-centred sandboxes is emerging, bringing in civil society to co-create and govern technology. For example, the Datasphere Initiative is designing and testing responsible sandboxes – collaborative spaces for stakeholders to safely explore data practices and technology in real-world contexts. In education, this shift opens up powerful opportunities to ensure EdTech is inclusive, rights-respecting and aligned with learning needs from the start.

For more on how sandboxes can be used as collaborative spaces for stakeholders, including civil society organisations, see this blog from the Datasphere Initiative.

Civil society should empower children and families with meaningful data agency. This can be operationalized through the formation of mechanisms such as youth councils or targeted capacity-building initiatives that help children critically understand and engage with how their data are collected and used.

Where civil society organizations have the expertise and resources, they can establish data trusts as a technical solution for managing children's education data. A data trust, led by trustees dedicated to acting in children's best interests, could serve as an intermediary between schools, students and parents, and EdTech companies.

Investors, incubators and industry bodies

For more on certification schemes for EdTech, see the UNICEF case study on Certification Schemes.

Investors in EdTech must integrate child rights, cybersecurity, data protection and AI ethics requirements into their due diligence and reporting frameworks. They should prioritize EdTech companies that adopt responsible business models and commit to privacy and child rights-by-design. One way for investors to ensure EdTech companies adhere to best practices related to data governance and algorithmic fairness is to require them to be certified against a recognized certification scheme for EdTech as a prerequisite for investment.

Incubators and accelerators can help shape the early development of EdTech by embedding legal and ethical training, supporting small and medium-sized companies with technical assistance, and advocating for interoperable, values-driven systems. Incubators can work with national innovation funds to ensure EdTech business grants and funds are prioritized for companies implementing data protection and child rights-by-design.

Global Privacy Assembly and international organizations

For more about the GPA and how to become a DPA member or an observer as a public entity or international organization, see the GPA website.

The GPA should integrate EdTech data governance into its strategic plan and workstreams, including those related to AI and digital education. Collaborating with United Nations bodies such as the Committee on the Rights of the Child and regional organizations such as the African Union would help harmonize standards globally.

The GPA should update its 2018 Resolution on e-learning platforms to reflect the current data governance landscape and recent technological developments. This will send a strong signal to governments and industry alike and help foster a coherent global framework.

About the UNICEF Data Governance for Children project

These policy recommendations are part of the **UNICEF Innocenti – Global Office of Research and Foresight** Good Governance of Children's Data project, which aims to work with policymakers, industry, civil society and children to inform better data governance for children. The project was led by Jasmina Byrne and Melanie Penagos (UNICEF), with Emma Day (Tech Legality) developing the recommendations and coordinating stakeholder input. We are grateful to the following organizations and individuals for their invaluable contributions: the Global Privacy Assembly (GPA) Digital Education Working Group, UNESCO, our data governance expert advisory group, the Paradigm Initiative in Zimbabwe, the Digital Futures Lab in India, the Alana Institute in Brazil, the European EdTech Alliance in Germany, and the Public Interest Privacy Center in the United States, as well as the data protection authorities and experts who participated in our global consultation process. This project is made possible by generous funding and support from the Ministry for Foreign Affairs of Finland. We are grateful for their continued partnership and commitment to child rights.

In 2021, UNICEF published 'The Case for Better Governance of Children's Data: A Manifesto', which contains recommendations and principles for governments and industry to create laws, policies and practices regarding child-centred data. The policy recommendations on data governance for EdTech build on the recommendations from the Manifesto, focusing specifically on how good data governance principles can be applied within the EdTech sector. They sit alongside an EdTech landscape review, a series of case studies on innovations in data governance for children, and guest articles on EdTech and data governance. You can view these project outputs on the UNICEF website.

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UNICEF Innocenti – Global Office of Research and Foresight

Via degli Alfani, 58

50121, Florence, Italy

Tel: (+39) 055 20 330

Email: innocenti@unicef.org

Social media: @UNICEFInnocenti on Facebook, Instagram, LinkedIn and YouTube

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