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Framing a Human Rights-Based Approach to the Digitalisation of Education Systems: Reflections on Research Findings in Seven Regions

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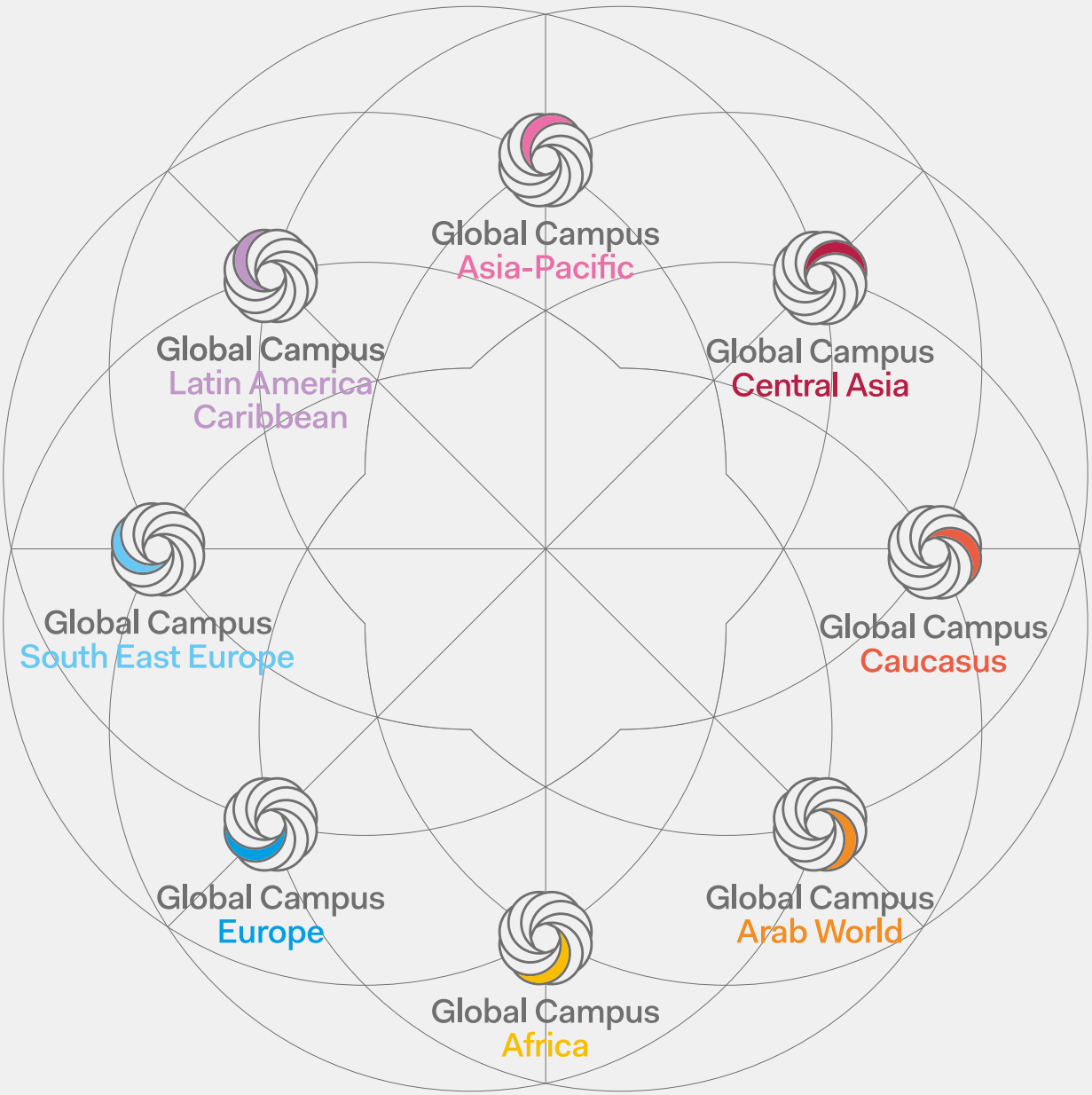
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This policy brief is part of the **6th edition of the Global Campus Policy Observatory**, which revolves around the research project on **'The digitalisation of education systems and its impact on human rights, with particular attention to the right to education'**, which was conceptualised and is led by GC Research Manager Dr. Chiara Altafin and which involves a team of seven policy analysts selected among alumni of GC regional programmes, namely Reda Benkhadra (GC Africa), Olga Lucía Camacho Gutierrez (GC Latin America and the Caribbean), Dr. Desara Dushi (GC Europe), Dr. Jean Linis-Dinco (GC Asia-Pacific), Goharik Tigranyan (GC Caucasus), Aida Traidi (GC Arab World), and Dr. Gergana Tzvetkova (GC South East Europe). Research outputs include workshop presentations, policy briefs, advocacy plans, and digital tools (infographics, webinars) developed in cooperation with the GC E-Learning Department.

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Framing a Human Rights-Based Approach to the Digitalisation of Education Systems: Reflections on Research Findings in Seven Regions

Chiara Altafin

Executive summary

This policy brief builds on the research findings of qualitative and quantitative analyses undertaken, with a multidisciplinary approach along with the application of a human rights-based approach (HRBA) as common denominator, in seven regions (Southeast Asia, South East Europe, Caucasus & Eastern Europe, Latin America, Africa, Middle East & North Africa and Europe) in relation to key issues and case studies selected to investigate the impact of the evolving digital transformation on education as a fundamental human right, an enabling right and a public good as well as on other rights at stake. After an overview of the selected issues, with emerging trends, practices and related recommendations, this policy brief elaborates further what a HRBA entails in relation to the digitalisation of education systems and unpacks the right to education in relation to digital technologies, highlighting several points of attention for integrated laws, policies and practices. The aim is to contribute supporting policymakers, civil society, education communities and other stakeholders in ensuring that a HRBA is explicitly placed at the heart of the debate and ongoing digitalisation efforts in education.

Introduction

The growing digitalisation process of society has been changing education systems, including learning approaches, teaching models and assessments, with the COVID-19 pandemic accelerating such a process. In relation to the social, political and economic transformations brought about by digitalisation, both international human rights law – including its values of dignity, freedom, equality, fairness, welfare and wellbeing – and the wide-ranging human rights movement are profoundly challenged and become even more relevant. Based on these premises, it is worth delving into the impact the evolving digitalisation of/in education systems has on human rights.

This perspective of analysis raises research questions that are broad in scope, in particular: What challenges and opportunities for human rights respect, protection and fulfilment are encountered by such digitalisation? What risks, vulnerabilities and benefits does such digitalisation entail for the right to education? When (at which level), how and to what extent should digital technologies be introduced and/or strengthened in educational institutions? How to address, from a human rights perspective, the digital divides between geographic areas, generations, genders and levels of connectivity, within education systems? What legal and policy frameworks, plans and monitoring and evaluation mechanisms should be strengthened or adopted in relation to the developments of educational technology along with the safeguard of the human rights involved? Are there emerging practices in different regional contexts? What paths and areas of cooperation can be traced at regional and international levels? What policy recommendations can be made, and for which relevant stakeholders?

By adopting a **human rights-based approach** (HRBA) to explore these questions, it is possible to rely on a conceptual and proven framework that allows to integrate the legal standards and principles on which the international human rights normative system is based into the consideration of (existing or new) laws, policies, plans, and practices on the digitalisation of education. In particular, a HRBA can facilitate meaningful understanding and respect of a number of key principles.

This policy brief builds on the research findings of qualitative and quantitative research undertaken, with a multidisciplinary approach along with the application of a HRBA as common denominator, in **seven regions** (Southeast Asia, South East Europe, Caucasus & Eastern Europe, Latin America, Africa, Middle East & North Africa and Europe) in relation to key issues and case studies selected to investigate the impact of the digital transformation on **education** as a **fundamental human right**, an **enabling right** and a **public good** as well as on **other rights** at stake (GC News 2024). After an overview of the analysed issues, emerging practices, trends and related recommendations, this policy brief elaborates further what a HRBA entails in relation to the digitalisation of education systems and unpacks the right to education in relation to digital technologies, highlighting **points of attention** for integrated laws, policies and practices.

Problem description

Digitalisation in education is understood as the use of digital technologies and digitised information and data, thus leveraging their power, to enhance educational performance in the digital age. Two sectors generally considered as priority areas concern (1) the development of **digital education ecosystems** and (2) the **improvement of digital skills in education** for a digital transformation of education. Both areas raise challenges and opportunities for human rights respect, protection and fulfilment.

Digital education ecosystems are deemed to comprise 'digital tools for system and institutional management', 'digital tools for teaching, learning and assessing in the classroom' and 'human beings that make these tools alive and meaningful' (OECD 2023a). **Human rights-related challenges and opportunities** arise in relation to aspects such as: digital infrastructures, connectivity and digital equipment for education; digital capacity planning and development, including updated organisational capabilities; blended learning approaches for inclusive and high-quality education, including

combination of e-learning [1] and online learning [2] with in-person learning; teachers and education staff's familiarity with digital technologies and competence in the subject; quality learning content, easy-to-use tools and secure platforms respecting e-privacy rules and ethical standards.

Digital skills in education refer to the 'abilities to use digital devices, communication applications, and networks to access and manage information' (UNESCO Institute for Statistics 2009), but other definitions have evolved (UNESCO 2023: 88-90, 108). **Human rights-related challenges and opportunities** arise in relation to aspects such as: appropriate basic digital skills and competences since childhood; digital literacy [3] and combating disinformation through education and training; knowledge and understanding of data-intensive technologies, such as AI; computer science teaching; advanced digital skills for digital specialists; equal representation of girls and women in digital and STEM (science, technology, engineering and mathematics) study fields and careers.

Support to craft national policies that use information and communication technology (ICT) power to expand and improve education in line with Sustainable Development Goal (SDG) 4 has been provided by **UNESCO guidelines** (2022; 2021a; 2019) and its **strategy on technological innovation in education 2022-2025** with relevant priorities (2021b). In recognising two interrelated challenges (insufficient technical and material access to connectivity; capacity/digital skills gaps), **UNESCO RewirEd Global Declaration on Connectivity for Education** (2022) puts forward **three principles** (centring the most marginalised learners; expanding investments in free and high quality digital education/learning content; and catalysing pedagogical changes ensuring that connected technologies enhance human-centred education available to all), which are 'guided by commitments to human rights, inclusion, equity, environmental sustainability, and social justice'.

In this context, some **regional policy frameworks and plans** have shaped, to various degrees, the ongoing digitalisation efforts (eg ASEAN 2022 Declaration on the Digital Transformation of Education Systems & ASEAN Work Plan on Education 2021-2025; EU Digital Education Action Plan 2021-2027; CoE Education Strategy 2024-2030; AU Digital Education Strategy and Implementation Plan 2023-2028 & CESA - Continental Education Strategy for Africa 2016-2025; IAE - Inter-American Education Agenda 2022-2027), but it must be seen whether and how (present or possibly new) **national laws, policies and practices** in the education sector **fully comply with human rights standards and principles** and **take into account the impact of such digitalisation on them**.

Recent analyses of **key issues** addressed with relevant **case studies** in **seven regions** of the world (GC News 2024), although limited in scope, show the complexities surrounding such digitalisation, some similarities of the human rights-related challenges it poses for individuals and communities across different countries, as well as some positive impact it can have upon the realisation of their human rights. Overall, the role of educational technology (EdTech) [4] – which refers to the development and application of tools (including software, hardware and technological processes) intended to support learning and teaching – in schools and universities seems both promising and contentious in relation to human rights, particularly the right to education.

- A key issue explored in relation to **Southeast Asia** concerns how the adoption of EdTech relates to the right to education, particularly for bridging the digital divide, promoting equitable access to digital infrastructure and fostering the development of inclusive and culturally relevant EdTech content (Linis-Dinco 2024). The Philippines and Cambodia have been examined as case studies: they face major challenges in integrating EdTech into primary education level; the digital divide is a critical issue in both countries, with rural and underserved areas lacking necessary infrastructure such as broadband internet and digital devices; and the quality

1 It is generally self-paced and asyncronyous, based on access to prepared digital content (eg recorded lectures and digital readings), delivered through an app or a website. Ideal for individual learning and standardised training. E-learning practices use a learning management system (LMS) which is a software application or web-based technology to plan, implement and assess a certain learning process, delivering educational resources, with features such as progress tracking, learning assessments and performance reporting.

2 It is generally interactive and syncronyous, with the use of internet for live sessions and real-time interactions between teachers and students. Ideal for courses requiring peer-to-peer discussions and direct, collaborative engagement.

3 It 'involves the confident and critical use of a full range of digital technologies for information, communication and basic problem-solving in all aspects of life. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet' (UNESCO Glossary n.d.).

4 *EdTech* refers to the use of tools such as software, apps, online courses, and interactive platforms, in in-person, smart (integrating advanced technology – audio, video, animations, images, and other forms of multimedia – to enhance teaching and learning experiences, increase student engagement and facilitate a deeper understanding of the subject matter), hybrid or remote classrooms.

of educational materials, its relevance to local context and teachers' mastery of content are also problematic, exacerbating inequalities.

Linis-Dinco *inter alia* emphasises EdTech transformative potential by democratising access to resources and personalising learning experiences, but it entails multi-stakeholders' efforts to increase funding for digital infrastructure; safeguard public interest in the educational sector when involving private providers and businesses; provide professional development programmes for teachers; create and distribute inclusive, culturally and linguistically diverse educational content; ensure vulnerable communities' participation in EdTech policies, conduct impact assessment of EdTech programmes (especially on indigenous communities), enhance community involvement in EdTech decision-making to inform policy adjustments and align developments with their needs and expectations; facilitate education partnerships with civil society organisations; adopt legislation on digital inclusion, recognising access to the internet and digital content as a human right; and advocate international assistance in the development of local data management capabilities.

- Key issues explored in relation to **South East Europe** concern three needs arising at the intersection of children's pursuit of their right to education and the advancement of digital technologies: (1) bring up to date and improve education systems so that they integrate and maximise the positive aspects of the digital age; (2) foster, develop and improve the digital skills and competences of children and youth; and (3) ensure the digitalisation of education and the developing of digital skills do not exacerbate or create inequalities (Tzvetkova 2024). Bosnia and Herzegovina, Bulgaria, Croatia and Serbia have been examined as case studies, identifying achievements and areas for improvement, also considering potential good practices at the primary and secondary education levels.

  Tzvetkova *inter alia* emphasises governments' need to adopt policies that encourage the influx of more girls in STEM, support inclusive digital education, include a comprehensive definition of digital literacy, enhance children's digital competences, foster media literacy in educational curricula, provide guidelines for digital tools in education, including indicators for periodic monitoring and evaluation, ensure marginalised groups' access to digital education and follow the practice to have in place at least two of the approaches to teaching digital competence (whether as a compulsory/ optional separate subject, integrated into other compulsory subjects or cross-curricular) and ensure the coexistence of at least two of these teaching approaches. She stresses governments' need to pursue collaborations with and guidance from international actors with expertise in digitalisation of education and digital competences as well as national non-governmental organisations and businesses, with the aim to adopt timely, well-formulated and multi-faceted measures.

- A trifold key issue explored in relation to the **Caucasus and Eastern Europe** concerns (i) the exacerbation or mitigation of educational inequalities for low-income students by remote and online learning choices, and possible measures to make digital education more equitable; (ii) the primary barriers they face in accessing digital education resources, and possible policies to effectively mitigate them; and (iii) how digital literacy programmes can be leveraged to empower and enable them to take full advantage of digital education, and the role of governments and education institutions in promoting digital literacy (Tigranyan 2024). Armenia, Moldova and Ukraine have been considered as case studies: in the shift from offline to online learning triggered by the COVID-19 pandemic, they shared challenges stemming from the digital divide limit access to ICT for low-income and rural families, impeding effective transition to online education and worsening educational inequalities.

  Tigranyan *inter alia* emphasises governments' need to invest in digital infrastructures, form public-private partnerships to provide ICT devices and affordable internet access, establish community learning hubs, promote digital literacy from an early age, provide training for teachers and develop digital curricula with hybrid learning models combining online and offline teaching methods. Regional actors are recommended to facilitate regional funding for digital equity in education and to promote standardised digital literacy and teacher training. Other countries are recommended to establish partnerships with these states to develop digital education solutions, support training programmes for teachers and administrations, and organise a forum for policymakers and stakeholders to share best practices.

- A further key issue explored in relation to **Latin America** concerns the wide digital divide and related access to technologies in education as a possible new factor influencing school dropout, arguing that digital technologies should improve equity and inclusion as core values of the right to

education (Camacio 2024). Notwithstanding some countries' digital agendas to bridge the divide and digitalise education, gaps remain in the region; early warning systems help address dropout risks, yet policies often fail to integrate well, neglecting issues linked to the impact of digital divide on dropouts. The concept of 'meaningful internet access' is highlighted to address these concerns.

Camacio *inter alia* emphasises states' need of a 'pragmatic use of digital tools' that advance educational accessibility, affordability and adaptability, adopt the agenda 'My education, our future', develop digital divide-based impact indicators, focus on socio-economic determinants, prioritise internet access for schools and establish comprehensive evaluation mechanisms; education institutions' need to foster digital literacy with caregivers and teachers' collaborative efforts, address dropout risks and enhance early warning systems; civil society's need to monitor the implementation of policies to close the digital divide and reduce dropout rates, and research on the long-term effects on education systems; international institutions' need to promote data collection on digital inequality and such rates, and advocate for digital inclusion strategies within education policies; and foreign country institutions' need to support the regional agenda and offer technical assistance.

- A key issue explored in relation to **Africa** concerns the growing presence and influence of private entities in the education sector, which are supported by tech giants and offer technology-centric yet profit-driven education services, pushing for their commodification and commercialisation (Benkhadra 2024). Governments struggle to provide digital education solutions, but private companies offer costly tech-based education which can impede equitable access, and public-private partnerships often support private schooling, exacerbating inequality. Kenya, Uganda, Liberia and Ghana have been considered as case studies to address the need to adequately regulate the private sector involvement in EdTech, particularly low-cost schooling providers, safeguard the right to education and ensure its equitable access for all.

  Benkhadra *inter alia* emphasises African governments' need to regularly evaluate digital education programmes, enforce accountability measures for educational institutions and tech providers, and adopt various policy measures enhancing internet accessibility in education; EdTech companies' need to adhere to human rights principles, develop and promote low-bandwidth solutions and avoid data exploitation; the AU's need to harmonise regulations, facilitate collaborations and share best practices; and international agencies' need to provide expertise and training, collaborate with local governments and initiate joint research on EdTech across Africa's five sub-regions.

- A different key issue explored in relation to the **Middle East & North Africa** (MENA) region concerns the integration of Artificial Intelligence (AI) in education and its negative and positive impacts on various human rights, depending on the presence and enforcement of adequate governance and regulatory frameworks (Traidi 2024). It is stressed that most MENA countries are unprepared for AI integration, lacking adequate human rights protection and facing a significant urban-rural and gender digital divide. On the one hand, a rapid shift to AI in education without addressing existing inequalities could negatively impact the right to education and exacerbate inequalities for generations to come. On the other hand, AI tools could update MENA education systems, which are often outdated, by making learning more dynamic and interactive; and enhancing AI knowledge could reduce youth unemployment, by bridging the skills gap between education and market demand.

  Traidi *inter alia* emphasises governments' need to improve technological infrastructure in public educational institutions, especially rural and remote areas; integrate digital literacy into curricula from an early age and through an active learning approach; provide teacher training in digital literacy, AI integration and ethics; support low-bandwidth or offline EdTech tools to ensure access for those without regular connectivity and promote tools accessible on mobile devices; establish partnerships with startups and tech companies for user-centred and inclusive initiatives; develop or update privacy policies for adequate data protection mechanisms; develop national open data platforms to enable startups and researchers' use of reliable data for AI systems; create a platform for multi-stakeholder collaboration; engage young people and students in the design of educational materials meeting their needs; establish robust, human rights-based regulatory frameworks; and capitalise from lessons learned in other regions.

- A specific issue explored in relation to **Europe** concerns the potential benefits and legitimate concerns of Generative Artificial Intelligence (GenAI) in higher education, with a focus on ChatGPT (Dushi 2024). After considering advantages in the use of ChatGPT (instant

support, time savings on simple tasks, workload reduction, learning assistant and dynamic teaching content) and disadvantages (skill degradation, poor pedagogy, endangered academic integrity, undermined humanistic values and bias), Dushi stresses the importance of inquiring how to do so safely, effectively and appropriately, by mitigating limitations and maximising benefits.

Dushi *inter alia* emphasises providers' need to increase transparency over training methods and develop tools to detect AI-generated material; educators' need to train and involve students in using technology wisely, while embracing innovative assessment methods; education institutions' need to improve the skills of teaching staff, create clear AI usage guidelines in education management, teaching, learning and assessment, and involve students in policy development; governments' need to evaluate necessary changes to the learning system to keep pace with technology and ensure GenAI tool providers are held accountable for rights violations; and the need to enhance international/regional cooperation for effective solutions, ensuring service providers' compliance with European regulations (eg GDPR; EU AI Act) and supervisory authorities' decisions.

Rationale for action

The cited key issues with case studies illustrate the **urgency of a clear-cut application of a HRBA** to both the priority areas of developing digital education ecosystems and improving digital skills and competencies in education. It is argued that in education strategies and policies a HRBA represents a powerful means to set up equitable, inclusive, empowering and transparent (with disaggregated data) education environments for both teachers and students.

A HRBA to the digitalisation of education systems firstly entails five **key principles** being brought to bear on this context, namely **participation**, **accountability**, **non-discrimination**, **empowerment** and **legality** (so called PANEL principles). These provide clear concepts and useful parameters to inform laws and policies on such digitalisation. In practice, these principles involve:

- **accessible, active and meaningful participation of right-holders** in decision-making about digitalisation affecting their rights in the education sector, also with **transparency and access to information** in understandable form and language;
- access to effective and meaningful **accountability processes**, with **effective monitoring** of compliance with human rights, thus how right-holders are being impacted by digitalisation in education, as well as **effective remedies** in case of violations by duty-bearers, thus with appropriate laws, policies, institutions, administrative procedures and mechanisms of **redress** to secure the rights affected;
- **prohibition, prevention and elimination of all forms of discrimination** in the realisation of human rights in the context of digitalisation in education, **prioritising** rights-holders who face related barriers to enjoying their rights, or who have 'protected characteristics' and face major impact of digital technologies on their rights, or whose rights are most at risk in relation to factors such as poverty or geography, as well as **addressing intersectionality**, and **collecting disaggregated data** for monitoring and evaluation purposes;
- ensuring that rights-holders **know what they are entitled to** and **understand how to claim and exercise them** in this context, taking full part in the elaboration and development of education laws, policies and practices on digitalisation that affect them;
- **legal recognition** of human rights and freedoms as **legally enforceable entitlements** in this context, and also **legal consistency** with human rights principles, thus with approaches grounded in the legal rights set forth in international and national laws, identifying the relevant legal standards that need to be met.

Taking a HRBA here particularly involves considering whether the **objectives**, **processes** and **outcomes** of **education sector policies and plans on digitalisation** can advance the realisation of human rights, strengthening the duty-bearers' capabilities to meet related legal obligations and the rights-holders' capabilities to know, claim and enjoy their entitlements.

Considering the international human rights normative framework, it is worth highlighting states' **obligations to respect**, **protect and fulfil** them also in this context, meaning that they must refrain from interfering with or inhibit the enjoyment of human rights, protect individuals and groups against violations by third parties (such as education institutions, EdTech companies, etc) and take positive action to facilitate the realisation of these rights. In case of **violations** of human rights, states must ensure **effective remedies** that must be known, available, with prompt, thorough and impartial investigation, and able of ending enduring harm.

It is on this basis that deep and **wide intersections**, **reciprocal implications**, and **pertinent interventions** are to be explored, with a view to inform/integrate human rights standards and principles into (existing or new) strategies, policy and regulatory frameworks, plans and programmes, and monitoring and evaluation mechanisms about the digitalisation of education systems, in compliance with international human rights law and in respect of the political commitments made to the SDGs 2030 agenda (particularly SDGs 4, 5, 9, 10, 16 and 17).

Human rights especially relevant include:

- the **right to education** (Article 26 UDHR; Articles 13 and 14 ICESCR; Articles 28 and 29 UNCRC; Article 24 CRPD; Article 5 CERD; Article 10 CEDAW; Article 11 ACRWC; Article 17 ACHPR; Article 13 AP-ACHR; Article 2 of Protocol 1 ECHR; Articles 10, 15 and 17 ESC; Article 14 CFR; Articles 40 and 41 of the Arab Charter; Article 31 non-binding ASEAN Human Rights Declaration)

- the **right to equality and non-discrimination** (Article 2 UDHR; Articles 2 and 26 ICCPR; Articles 2(2) and 13(2)(c) ICESCR; Article 2 UNCRC; Article 7 ICRMW; Article 5 CRPD, Articles 2 and 7 CERD; Article 2 CEDAW; Article 2 ACHPR; Articles 1(1) and 24 ACHR; Article 3 AP-ACHR; Article 14 and to Protocol No. 12 ECHR; Article E ESC; Article 3 Arab Charter; Article 2 non-binding ASEAN Human Rights Declaration)

- the **right to privacy** (Article 12 UDHR; Article 17 ICCPR; Article 16 UNCRC; Article 14 ICRMW; Article 22 CRPD; Article 10 ACRWC; Article 11(2) ACHR; Article 8 ECHR; Articles 7 and 8 CFR; Article 21 Arab Charter; Article 21 non-binding ASEAN Human Rights Declaration)

- **freedom of opinion and expression** (Article 19 UDHR; Article 19 ICCPR; Article 15(3) ICESCR; Articles 12 and 13 UNCRC; Article 5 CERD; Article 13 ACHR; Article 9 ACHPR; Article 10 ECHR; Article 11 CFR; Article 32 Arab Charter; Article 23 non-binding ASEAN Human Rights Declaration)

- the **right to take part in cultural life, to enjoy the benefits of scientific progress and its applications, and to the freedom indispensable for scientific research and creative activity** (Article 27 UDHR; Article 15 ICESCR; Article 5 CERD; Article 17 ACHPR; Article 14 AP-ACHR; Articles 15(3) and 30 ESC; Article 42 Arab Charter; Article 32 non-binding ASEAN Human Rights Declaration)

- **academic freedom** as legally grounded in several of the cited provisions (Articles 13 and 15 ICESCR; Article 19(2) ICCPR; Articles 28-29 UNCRC; Article 13 CFR) and also subject of an emerging call to be considered as a self-standing human right (UNGA 2024)

- the **right to health** (Article 12 ICESCR; Article 24 UNCRC; Article 25 CRPD; Article 14 ACRWC; Article 16 ACHPR; Article 10 AP-ACHR; Article 11 ESC; Article 35 CFR; Article 39 Arab Charter; Article 29 non-binding ASEAN Human Rights Declaration)

- the **right to a safe, clean, healthy and sustainable environment** as recognised in human rights and environmental treaties (eg Article 24 ACHPR; Article 11 AP-ACHR; Article 38 Arab Charter)

In relation to primary and secondary education systems, the UNCRC provides the most important international framework to consider, also in light of the CRC-Committee's interpretation of relevant provisions, particularly in its General Comment No 25 (2021) setting out how the UNCRC applies in the digital environment. Precisely, additionally to the **general principles** on **non-discrimination** (Article 2) (CRC-Committee 2021: paras 9-11), the **best interests of the child** (Article 3) (CRC-Committee 2021: paras 12-13), the **right to life, survival and development** (Article 6) (CRC-Committee 2021: paras 14-15) and the **right to be heard** (Article 12) (CRC-Committee 2021: paras 16-18), as well as the **enabling principle of the evolving capacities of the child in the framework of parental guidance** (Article 5) (CRC-Committee 2021: paras 19-21), other children's rights especially relevant include the **right to education** (Articles 28-29) (CRC-Committee 2021: paras 99-105), the **right to privacy** (Article 16) (CRC-Committee 2021: paras 67-78) and **access to justice** (CRC-Committee 2021: paras 43-49).

Each of these rights deserve inquiry in framing a HRBA to the ongoing digitalisation of education

systems, particularly concerning risks and benefits associated to the development of digital capabilities of schools and universities as well as to the improvement of teachers' training and students' digital skills. Such inquiries are especially important for designing, implementing and evaluating **laws, policies and plans** that enable the **protection of rights-holders in the context of digitalisation of education** and do not lead to violations of none of the indivisible and interdependent human rights at stake.

The next section focuses on the application of the right to education in relation to digital technologies, highlighting several points of attention for the content of integrated laws, policies and practices, towards a better realisation of this right through digitalisation only when bringing meaningful added value. In doing so, the interrelation with other rights like the right to privacy and academic freedom is also addressed.

Unpacking the right to education in relation to digital technologies: points of attention for integrated laws, policies and practices

The **normative content** of the right to education has a central role in considering the implications of digital technologies in education systems. In particular, it is important to **critically employ the '4As' analytical framework** — originally developed by Tomaševski since 1999 and used by the CESCR in General Comment No 13 (1999) in relation to Article 13 of the ICESCR to explain four interrelated and essential features of all levels and types of education— when evaluating the **capacity of (and need for) digital technologies to safeguard the right to education** by promoting and improving the availability, accessibility, acceptability and adaptability of education.

Precisely, this approach allows to consider the positive or negative impacts of digital technologies on the **components of the right to education** and the **state's corresponding obligations** as structured into the '**4-A scheme**', and then to highlight **points of attention for integrated laws and policies**, particularly in light of several experts' considerations and authoritative guidance (CESCR 1999: para 6; Tomaševski 2001; Tomaševski 2006: 13-15; UNESCO 2021; UNGA 2016: paras 31-54, 66-68, 119-122; CRPD-Committee 2016, paras 21-38; CRC-Committee 2021: paras 99-105; UNGA 2022: paras 22-34, 96-100; UNGA 2024: paras 67-71) as well as the aforementioned research findings in seven regions of the world (GC News 2024):

• **Availability** component: digital technologies should be considered in respect to the state's international legal obligations to establish functioning educational institutions and programmes or fund them and to permit the establishment of them by non-state actors, or combine these and other means, to guarantee that **education is available in sufficient quantity in a state**.

Points of attention for integrated laws, policies and practices:

a. the numbers of computer facilities and IT services, of teaching and other staff with digital skills, qualifications and training to engage in digital education;

b. the timely maintenance of EdTech;

c. the adequate funding to EdTech;

d. the lack of available digital infrastructures in educational institutions;

e. the broad availability of educational places including through digital technologies for students with disabilities;

f. the use of digital technologies as a 'means of education' without replacing schools or campuses-based face-to-face teaching and learning;

g. the quantity of teaching relating to digital technologies;

h. the regulation of the evolving privatisation of education, along with the adequate funding for public education, also in abidance to the 2019 Abidjan Principles.

• **Accessibility** component: digital technologies should be considered in respect to the state's international legal obligation to secure **access to educational institutions and programmes** for all children in the compulsory education age-range, **without discrimination**, also including **physical, economic and information access**, as well as in respect to the state international legal obligation to **make tertiary education equally accessible to all**, based on capacity, by every appropriate means, particularly by the progressive introduction of free education, while post-compulsory education may entail tuition fees and other charges.

Points of attention for integrated laws, policies and practices:

a. the provision of high-quality and high-speed broadband and a stable source of electricity, while refraining from disruptions of internet-based communications;

b. the development of offline-accessible AI tools in the education sector;

c. the use of digital technologies to enhance accessible education to all, especially the most vulnerable groups, in law and fact, without discrimination in all aspects of education and on all internationally prohibited grounds;

d. the use of digital technologies for students and teachers with limited physical access for any reason;

e. the impediment stemming from digital technologies for students and teachers without sufficient financial means or residing in geographical areas not or badly connected to the internet;

f. the costs to introduce EdTech, when securing adequate funding to access free primary and secondary education as well as progressively free higher education;

g. the provision of free or low-cost internet-enabled devices to low-tech communities;

h. the use of digital technologies to make education systems accessible to students with disabilities, including buildings, information and communications tools, curricula, learning materials, teaching methods, assessments, and language and support services, with periodic regulatory and technical adjustments;

i. the use of EdTech and the strengthening of digital competencies to ensure inclusive and equitable access to education, with enhanced accessibility of educational content, without excluding vulnerable persons with special needs (eg girls and women, persons with disabilities);

j. the funding of programmes aimed at tackling cultural issues that hinder equal access of girls and women to EdTech;

k. the impact of EdTech lobbyists and companies' profit-driven agenda, at a high cost, which can impede equitable access;

l. the bridging of the digital divides in relation to (i) inequalities in access to learning and educational resources through internet, digital technologies and infrastructure, (ii) the affordability of digital education devices and services, and (iii) disparities in access and skills of marginalised groups with intersecting factors of disadvantage, with application of disaggregated indicators about whether investments improve education outcomes or create unintended negative outcomes requiring remedies;

m. the interrelation of 'accessible' education with the **right to privacy**, with digitalisation-based requirements such as states' adequate investments in free and public digital education platforms and infrastructure,[5] developing free digital solutions that do not involve the private personal data market and supporting the development of non-proprietary data tools, platforms and services, with priority for open-access educational resources and professional guiding services to users.

5 For example, the initiative 'Gateways' is run by UNESCO and UNICEF to help states establish and improve public digital learning platforms.

• **Acceptability** component: digital technologies should be considered in respect to the state's international legal obligation to ensure that (available and accessible) **education is of good quality, relevant and culturally appropriate to students,** also in relation to professional requirements for teachers.

Points of attention for integrated laws, policies and practices:

a. the UNESCO-recognised principle that quality basic education as well as media and information literacy are prerequisites to access and benefit from ICT, including AI and others;

b. the acceptability of forms and substances of digital education, including digital curricula and teaching methods, for respecting cultural relevance and diversity (eg contextualising topics around gender, class, ethnic, languages and customs);

c. the establishment of safeguards against algorithmic discrimination;

d. the avoidance of top-down approaches to digital tools, in favour of local contexts;

e. the design and implementation of (inclusive) digital education-related facilities, products and services taking into account and respecting the requirements, cultures, views and languages of persons with disabilities;

f. the design of quality standards for EdTech methodologies and products;

g. the securing of adequate funding to quality educational technology;

h. the introduction and use of digital technologies in schools in an age-appropriate way, taking into account the prerequisites concerning children's capacities and skills before developing digital competencies;

i. the funding of independent and interdisciplinary research on the impact of digital technologies in terms of students' physical, cognitive, social and emotional wellbeing, health and development;

j. the impact of digital tools and methodologies on students' ability to critical analysis, problem solving and reasoning skills;

k. the interrelation of 'acceptable' education with **academic freedom** and digitalisation-based potentials and threats such as:

- the use of GenAI enhancing access to information by providing tools for data analysis, literature review and knowledge discovery, which can empower teachers and researchers to look at different sources and perspectives;

- the use of GenAI questioning academic integrity and academic pluralism, for example with ChatGPT rising issues of authorship attribution and intellectual property infringement, making plagiarism detection difficult, hampering critical thinking and creativity, or with algorithms encouraging word associations that reflect societal biases with perpetuation of stereotypes, or algorithms amplifying quotes of the most quoted with minimised chances to consider minority points of view;

- students' training about AI challenges and how to use EdTech tools in line with human rights;

l. the interrelation of 'acceptable' education with the **right to privacy** and digitalisation-based requirements such as:

- children and adults' privacy and data protection laws in any educational setting;

- child rights impact assessments and data privacy audits before adopting digital technologies in education, with the definition of categories of sensitive data not to be collected in educational settings and with safe services procured to deliver online education;

- states' due diligence to ensure that the digital education technology protects children's privacy and data protection rights, guiding educational institutions to include 'data privacy clauses' in contracts signed with private providers;

- the ban of commercial advertising to students in private or public educational settings, including through digital content and programmes, prohibiting the use of data collected within education systems for marketing purposes and considering commercial interests as illegitimate grounds for data processing that disregards human rights;

- the ban of the surveillance through digital programmes in educational settings;

m. the adaptation of quality assurance frameworks (eg external or self- evaluation tools) to include aspects of digital education;

n. the challenges to quality in higher education through online courses with issues on degrees and diplomas recognition, to prevent unqualified or fraudulent providers from trading as universities, also considering the UNESCO Global Convention on the Recognition of Qualifications concerning Higher Education (2019) which includes 'non-traditional learning modes' and facilitates the recognition of qualifications, prior learning and study periods earned remotely;

o. the limited pedagogical value of technology-based and distance education, along with the beneficial face-to-face learning and human interactions in higher education, with the need to make more interactive, social and personalised online courses;

p. the impact of digital technologies on public investments in quality education to safeguard education as a public good (UNESCO 2015) and to foster its 'humanistic mission' (as its primary objective remains the full development of the human personality) against the trend towards a merely instrumental role for education under the privatisation and commercialisation of the public education sector.

• **Adaptability** component: digital technologies should be considered in respect to the state's international legal obligation to ensure that **education is flexible and adaptable** to the changing needs of societies and communities as well as the needs of students with different learning requirements within their cultural and social settings, suiting locally specific contexts.

Points of attention for integrated laws, policies and practices:

a. the role of pedagogy in decisions about when and how to use or not digital technologies (timing, methods, material) to serve flexible and adaptable education, also with teacher training on pedagogical practices for online teaching;

b. the adequacy of both funding and training to use digital technologies for creating adaptable education environments (eg multiple forms of assessments);

c. the introduction of digital technologies in schools in a learner-focused way, with their use to facilitate individualisation in education, making teachers able to tailor the content of the subject matter and how it is presented to suit students' diverse backgrounds and needs, without leading to any forms of isolation within classrooms;

d. the utilisation of surveys to understand students' perceptions of EdTech and how they would like to see digital transformation in education;

e. the educational institutions' autonomy and teachers' flexibility to configure and use digital technologies depending on local contexts and emergency situations, and to rearrange online teaching materials and methodologies to serve national education requirements, without interferences;

f. the possibility to teach certain digital literacy and media literacy skills without access to the internet (eg understanding phishing or developing critical thinking) when designing curricula and training programmes;

g. the interrelation of 'adaptable' education with **academic freedom and its interdependent pillars** (ie the right to teach, to engage in discussions with persons and groups inside and outside the academic community, to conduct research and to disseminate opinions and research results) and possible digitalisation-based threats such as:

- the risks of digital control of teachers and students by prescribing what has to be taught and monitoring the classrooms, and educational technology platforms to micromanage curricula, pedagogy and assessments, leading to 'curricular discipline of teachers', with implications such as suppressing their curricular flexibility and favouring uniformised pedagogical models that affect the agency of teachers and students and their ability to develop sensitivity to local contexts;

- the risks of digital surveillance technologies used by universities to monitor how and what academics teach and conduct research, as well as for performance management and data gathering on students' satisfaction without teachers' involvement or consent, with implications such as lower

academic freedom, greater institutional oversight of academic activities and greater power for students' voices as consumers;

h. the non-exclusive reliance on digital technology as substitute for the direct involvement of students with disabilities and interaction with teachers and role models within the educational environment;

i. the positive use of digital assistive and information technologies to provide reasonable accommodations and support to enable individual students with disabilities to access education on an equal basis with others (eg under individualised education plans).

j. the positive use of digital technologies to make appropriate provision for students with disabilities (eg with autism, communication impairments, sensory disabilities) to acquire the language and social skills essential for participation in education.

Further points of attention for integrated laws and policies are traceable in the state's international legal obligations that have been clarified in relation to **children's right to education in the digital environment** (CRC-Committee 2021):

a. To support educational and cultural institutions in enabling **access to diverse digital and interactive learning resources** in languages that children understand, so enhancing their lifelong learning opportunities (para 100).

b. To invest equitably in **technological infrastructure in learning settings**, to support the creation and dissemination of **digital educational resources of good quality** in languages understandable by children, without exacerbating inequalities, and to ensure their use is **justified for educational purposes** without undermining **in-person education** (para 101).

c. To ensure proper **infrastructure enabling all children's access to the basic utilities necessary for distance learning** (eg access to devices, electricity, connectivity, educational materials and professional support), and guarantee schools' sufficient resources to provide parents and caregivers with **guidance on remote learning** at home, with digital education products and services not creating or exacerbating inequities in children's access to in-person education services (para 102).

d. To 'develop **evidence-based policies, standards and guidelines** for schools and other relevant bodies responsible **for procuring and using educational technologies and materials** to enhance the provision of valuable educational benefits', requiring digital standards that ensure their ethical and appropriate use for educational purposes, without exposing 'children to violence, discrimination, misuse of their personal data, commercial exploitation or other infringements of their rights', for instance highlighting the need of child's knowledge or consent in the use of digital technologies to document a child's activity and share it with parents or caregivers (para 103).

e. To 'ensure that **digital literacy is taught in schools as part of basic education curricula**' (from preschool to all school years) and that 'such pedagogies are assessed on the basis of their results', with curricula including 'the knowledge and skills to safely handle a wide range of digital tools and resources' (eg relating to content, creation, collaboration, participation, socialisation and civic engagement) and the 'critical understanding, guidance on how to find trusted sources of information and to identify misinformation and other forms of biased or false content' (eg on sexual and reproductive health issues, human rights) 'and available forms of support and remedy'; as well as to 'promote awareness among children of the possible adverse consequences of exposure to risks relating to content, contact, conduct and contract' (eg cyberaggression, trafficking, sexual exploitation and other forms of violence) and 'coping strategies to reduce harm and strategies to protect their personal data and those of others and to build children's social and emotional skills and resilience' (para 104).

f. To promote **teachers' training on safeguards regarding the digital environment**, especially those who undertake digital literacy education and sexual and reproductive health education, given the increasing importance that children gain an understanding of such environment (eg infrastructure, business practices, persuasive strategies, uses of automated processing and personal data, and surveillance) and possible negative effects of digitalisation (para 105).

Notably, **inclusion** and **equity** are two core values to uphold in laws and policies aimed at generating suitable conditions for safeguarding the right of education in relation to digital technologies. Attention must be paid to Article 24 of the CRPD as the first international legally binding instrument explicitly referring to quality inclusive education, which is clarified in CRPD-Committee's General Comment No 4 (2016). 'Inclusive and equitable quality education' is then affirmed in SDG 4 and the Incheon Declaration for Education 2030. Nonetheless, greater prominence in law and policy to principles related to inclusivity such as multiculturalism and intersectionality has been recommended (UNESCO 2022: 11-12). Although not under an explicit HRBA, a recent study significantly conceptualises **equity and inclusion regarding digital education technologies** and maps some policies and practices in OECD countries for the equitable and inclusive use of digital tools in education (Gottschalk & Weise 2023). These values are also advocated along with **fairness** and **safety** for the development of educational technologies (UNESCO 2023).

Focusing on the interrelation between the **right to education** and the **right to privacy**, additional points of attention for integrated laws and policies are traceable in the state's international legal obligations that have been clarified in relation to **children's right to privacy in the digital environment** (CRC-Committee 2021: paras 67-78), elaborating on the principles of data protection and data minimisation, by requiring that:

a. If information is provided in one setting and could legitimately benefit the child through its use in another setting such as schools and tertiary education, 'the **use** of such data should be **transparent, accountable and subject to the consent** of the child, parent or caregiver, as appropriate' (para 73).

b. States 'should ensure that **data protection legislation** respects **children's privacy and personal data** in relation to the digital environment', also guaranteeing 'that the products and services that contribute to such environments are subject to robust data protection and other privacy regulations and standards' in schools, libraries, sports, and the home (para 74).

c. Any **digital surveillance of children**, along with any associated automated processing of personal data, 'should respect the child's right to privacy' and 'should not be conducted routinely, indiscriminately or without the child's knowledge or, in the case of very young children, that of their parent or caregiver'; nor should it take place without the right to object to such surveillance in educational settings (para 75).

d. In educational settings 'consideration should always be given to the **least privacy-intrusive means** available to fulfil the desired purpose' (para 75).

e. In the case of **tracking devices** and monitoring a child's digital activities, such measures should take into account the evolving capacities of the child, serve the best interest of the child and be proportionate (para 76).

f. States 'should ensure **access to affordable assistive technologies**' for children with disabilities and to 'provide awareness-raising campaigns, training and resources' for them, their families and education staff for sufficient knowledge and skills to use digital technologies effectively (para 90).

Conclusion

A HRBA boosts both people's ability to challenge the introduction and use of EdTech when it can put their human rights at risk and people's ability to constructively embrace EdTech when it can advance the realisation of the human rights at stake.

As digital education technologies continue to advance, to have policymakers, academia, and society as a whole, including private tech providers, engaged in systemic discussions to elaborate comprehensive legal and policy frameworks that uphold human rights while harnessing the potential benefits of EdTech is crucial. Greater international cooperation in and for the education sector is important in this regard.

The PANEL principles in the context of the digitalisation of education systems must play a key role in the design, implementation and evaluation of legal and public policy interventions, particularly by **checking interconnected questions** such as:

- whether the intervention fosters accessible, active and meaningful participation of rights holders (eg students, teachers) in decision-making about EdTech, to identify priorities and engage all stakeholders for sustainable solutions (especially for those living in most vulnerable situations, such as girls and young women, persons with disabilities, LGBTIQ persons, indigenous peoples, minority ethnic groups or other minorities), also contributing to strengthen duty-bearers' transparency;

- whether the intervention contributes to reinforce duty-bearers' accountability processes (eg states, ensuring also that education institutions and private tech companies are held accountable), with indicators to measure how rights-holders are affected by EdTech contexts and what remedies are available to secure redress in case of abuses;

- whether the intervention responds to the interests, needs and capacity gaps of rights-holders (especially vulnerable and disadvantaged groups) and duty-bearers, in particular including indicators to address 'multiple digital divides' in the education sector, such as in access to technology, in skills acquisition, and in usage outcomes (eg consumption, production, programming) as well as how these amplify and reproduce structural social disparities;

- whether the measures envisaged to mitigate risks are in line with the equality and non-discrimination principle, also adopting an intersectional approach to data (eg considering gender, ethnicity, language, disability, rural or urban location, economic status, global North-South dynamics, and other factors which may affect students and teachers' experiences of digitalisation and lead technology to widen inequalities) for better promoting the values of inclusion and equity;

- whether indicators are disaggregated by sex, age, disability, and any other category if relevant and possible in the education sector, with related data collected for monitoring and evaluation purposes;

- whether the intervention supports rights-holders' empowerment to have a voice in EdTech contexts, ensuring that they understand, claim and enjoy their human rights;

- whether the intervention supports the upholding of human rights as legally enforceable entitlements in EdTech contexts, and also guides desirable efforts towards a clear definition of digital rights in the education sector;

- whether indicators are included to measure progress in applying all PANEL principles and towards objectives related to specific human rights.

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