Recognizing children's rights in relation to the digital environment: Challenges of voice and evidence, principle and practice

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1. **Children's rights and the digital environment**

    a. **Overview of an emerging problem**

In an era of rapid technological change characterized by the growth of online digital networks, the adoption of and increasing reliance on mobile and social media, and a host of associated technological opportunities and risks of harm, it is becoming clear that children's rights are both realized and infringed in new ways.[1] Crucially, digital media are no longer luxuries, but are rapidly becoming essentials of modern existence – and this applies increasingly in the global South as well as the global North. Children are at the forefront of trends in digital uptake globally, with an estimated one in three worldwide already using the internet. Much future growth in internet use will occur in the global South, where children constitute between one third and a half of the population; thus, the proportion of users under the age of 18 is set to grow significantly.[2] In tandem, challenges associated with the digital environment are now becoming acute in the global South in the wake of the rapid uptake of digital media, particularly via mobile platforms.[3]

The Convention on the Rights of the Child (UNCRC) – which was adopted by the UN General Assembly in 1989, and has since been supplemented by a series of Optional Protocols and General Comments – elaborates a comprehensive framework of children's civil, political, protection, social economic and cultural rights. It affirms

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[1] Children here and throughout are defined as everyone under the age of 18; see UNCRC (1989, Article 1).
[2] See Livingstone et al. (2015b), also ITU (2016).
[3] See Byrne et al. (2016); Livingstone and Bulger (2014); Livingstone et al. (2015b).

children as active agents in the exercise of their rights, delineates the particular rights of children to ensure they develop to their full potential, and sets out special mechanisms to deliver these. However, it was developed before the digital age.

In this chapter, we use the terms 'digital' and 'digital environment' to refer to 'information and communications technologies, including digital networks, content, services and applications, connected devices and environments, virtual and augmented reality, artificial intelligence, robotics, automated systems, algorithms and data analytics, biometrics and implant technology'.[4] Increasingly, almost every aspect of children's lives is becoming influenced by, even reliant on, the digital environment.[5] Yet, amidst burgeoning debates about human rights in relation to internet governance in particular and the digital environment more widely, children's rights are not given sufficient profile. Further, where they are given consideration, despite the centrality of Article 12 to the implementation of the UN Convention on the Rights of the Child (UNCRC), which codifies children's right to be heard in the decision-making processes that will impact their lives, their voices remain marginalized, as does the research and practice that directly engages them.

Today, many policy, legislative and regulatory mechanisms do not adequately support and protect children online.[6] Many young internet users around the world do not have the benefit of appropriate forms of adult guidance from parents, teachers and other caregivers on safe and appropriate online engagement.[7] The need for reliable, evidence-based mechanisms and guidance spans the full range of children's rights, but this is too often unrecognized or little understood in many countries.[8] Such difficulties themselves tend to result in anxiety, impeding the search for proportionate, evidence-based, sustainable strategies and initiatives that support children's agency and rights.

In this chapter, recognizing the global scope of the Handbook, we draw on geographically and culturally diverse examples of recent research to weigh the issues at stake, showing how the relevant child rights issues relate to the practical contexts of children's experiences with digital technologies around the world. The emergent knowledge base will be integrated with the insights of children generated through an innovative online consultation platform (rerights.org).[9] This allows us to pinpoint the

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[4] CRC General Comment No.25 Children's Rights in Relation to the Digital Environment, CRC/C/GC/25 para 2.

[5] The integral role of media was already recognized at the 10th anniversary of the UNCRC by the Oslo Challenge, which emphasizes that the media and communication environment is integral to many, if not all, of children's rights. See Sacino (2012); UNICEF (no date).

[6] Lievens et al. (2019); Byrne et al. (2016); Livingstone et al. (2011b).

[7] Livingstone and Byrne (2015).

[8] See Livingstone et al. (2015b; 2019).

[9] RErights.org invites children aged 10–18 targeting 14- to 16-year-olds to identify the key topics they wish to discuss; participate in a series of interactive tasks designed to elicit their views via surveys, creative writing, photography, interviews with peers etc.; generate child-centred definitions of key concepts; and contribute to the analysis of the growing data set. Content received by the research team in languages other than English is translated and the research team works from English transcripts. Photo and audio-visual contributions are analysed using visual and discourse analysis methods, and the results are shared with the community of children, youth-serving organizations and policy-makers via infographics, blogs, social media and periodic industry reports. This process began in 2014 to inform the deliberations at the Day of General Discussion and since then, has engaged over 710 children from

pressing issues, controversies and knowledge gaps relevant to children's experiences with digital technologies, as revealed by evidence gained from and by children, and thereby to inform vital efforts to promote and fulfil their provision, protection and participation rights in the digital age.

b. The challenge of fulfilling children's rights in the digital age

Crucially, the digital environment relies on a complicated, transnational value chain involving multiple companies with diverse interests and a complex web of legislative and other regulatory efforts.[10] Their contents enable creative or malicious re-editing, and leave easily searchable and permanent records of activity. The digital environment is no longer set apart from the realities of children's existence, being merely 'virtual' or somehow 'unreal' but, rather, is thoroughly embedded in the infrastructures of all our lives, and this is set to increase dramatically.[11] So, while attention is often centred on the online context, the wider potential of the digital environment matters for all dimensions of children's experiences.

The digital environment now poses new and broad-ranging challenges for states in meeting their responsibilities to secure children's rights. These challenges are already salient in the global North and are becoming so in the global South. They include privacy hacks, new forms of sexual exploitation 'at a distance', scalable networked solutions for education and participation, the disintermediation of both parents and the state, discriminatory algorithmic calculations harnessing the power of 'big data' and much more. Further, it is not yet fully understood how some newer trends, such as the rise of generative AI and immersive digital platforms, will impact the rights of children. Many countries are facing the problem that 'fast-paced, widespread growth often occurs far ahead of any understanding of what constitutes safe and positive use in digital contexts',[12] especially as the internet is generally designed for adults. No wonder the widespread hopes and fears, anxieties and confusion about the internet, as well as the flurry of state, regulatory and industry responses, often produced in haste and under pressure. One result is rising tensions between public and private sectors, between states, between families and the institutions of school, law enforcement and governments, and even between children and parents as societies struggle to manage technological change. Another is the rising call from organizations that work with children for a coherent, principled, evidence-based framework with which to recognize and address children's rights and best interests.

The digital environment poses particular challenges for children's rights. First, the internet is age-blind. In the digital environment, it is generally the case that a particular platform or online service is unable to determine whether a user is a child. The consequence is that children are often treated as adults online, and it is difficult to

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over 60 countries in sharing their views on their rights in the digital age; see, for example, Third et al. (2014b).

[10] See, for example, the resources available at the Global Commission on Internet Governance at www.ourinternet.org/research and Internet Society at www.internetsociety.org/publications

[11] See The World Bank (2016).

[12] Livingstone et al. (2015a, p. 3).

provide particular protections appropriate to children's needs or best interests.[13] Second, online operations are ever more opaque. The complex interdependencies among companies providing digital media and networked services are largely unaccountable. Businesses increasingly embed value decisions into their operations through use of automated algorithms, which infer user characteristics – and the consequences (in terms of bias, discrimination, inaccuracy or even legality) are difficult to assess or adjust in relation to the public interest in general or child rights in particular. Third, the internet is transnational. There is no doubt that this poses difficulties for states, especially given the transnational nature of key companies and, more subtly, the entire digital 'value chain', challenging jurisdiction, impeding regulation, introducing unintended consequences of interventions and risking cultural conflicts.[14] Finally, the opportunities and risks of harm associated with the digital environment are profoundly impacted by wider social, economic and political factors. For children, the possibilities of the digital environment for enacting their rights are highly dependent on their social development, socio-demographic resources[15] and cultural contexts. These circumstances easily become a source of deepening inequality rather than the means of realizing rights in the digital age.

c. Meeting the challenge

Interest in rights-based approaches to children's internet use crystallized in 2014, which marked the 25th anniversary of the UNCRC, as well as the 25th anniversary of the World Wide Web. In September 2014, the UN Committee on the Rights of the Child held a Day of General Discussion (DGD) on 'Digital media and children's rights'.[16] The resulting report recognized that 'what happens offline today will also be manifest online and what happens online has consequences offline'[17] and that 'ICT in itself is neither good nor bad from a human rights perspective – its benefits or harms depend on how it is used.'[18] While the report urged that 'a balance between empowerment and protection of children in the online world has to be found',[19] it is not clear that significant and constructive steps are now being taken or even that the importance of the digital environment is sufficiently high on the agenda of many states, given uncertainties and dilemmas about how to ensure that the digital environment promotes and protects, rather than undermines, children's rights.[20]

Since 2014, some significant initiatives have been set in motion, adding to the rising attention towards the digital environment among those concerned with child rights, as well as the growing concern with child rights among those at the forefront of internet governance. For instance, in its recent mapping of the global Sustainable Development Goals (SDGs) and the UNCRC, UNICEF asserted 'that all of the Global Goals are relevant for children, not only those which specifically refer to Children',[21]

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[13] Livingstone et al. (2015b).
[14] Global Commission on Internet Governance (2016).
[15] Livingstone et al. (2014b, 2019), Swist et al. (2015).
[16] See OHCHR (no date b).
[17] OHCHR (no date b, pp. 3–4).
[18] OHCHR (no date b, p. 4).
[19] OHCHR (no date b, p. 3).
[20] See Gasser et al. (2010).
[21] See Wernham (2016, p. 2).

urging in particular the importance of the digital environment for UNCRC Article 13 (freedom of expression), Article 17 (access to information and media), and Article 28 (education), among other articles.[22] Further initiatives include the UN Special Representative of the Secretary-General on Violence against Children's global initiative against cyberbullying;[23] the WeProtect Global Alliance 'to end child sexual exploitation online;'[24] the prominence of the digital environment in the 2016–21 Council of Europe Strategy for the Rights of the Child;[25] and the regional digital citizenship framework being developed by UNESCO Bangkok (Asia-Pacific Regional Bureau for Education) with Google Asia-Pacific. UNICEF's 2017 flagship report, *The State of the World's Children*, which addresses children in a digital world, both documents ongoing initiatives and draws attention to the challenges ahead.[26]

Recent years have also seen a growing body of research evidence examining children's experiences with the digital environment. Much of this is relevant to children's rights, although not all research is couched in those terms, and not all meets international standards of peer review. Although observers are often concerned that the digital environment evolves so fast that evidence quickly dates, social norms and practices change more slowly, and therefore much evidence remains informative and much behaviour remains predictable, even when particular incidences or percentages change over time. On the other hand, the evidence remains unbalanced in important ways:[27] most available evidence relates to children and young people's digital use in the global North rather than the global South; most, also, concerns young people rather than children, and little disaggregates them by gender, ethnicity, socioeconomic status or other demographic and vulnerability factors. Also problematically, more research examines the incidence of online risks of harm, outweighing attention to online opportunities, and rarely follows up to identify the later consequences of risks or opportunities. Last, more research examines how the digital environment poses a challenge to children's rights than evaluating whether and how digital or other initiatives could enhance the realization of rights.

2. **Weighing the evidence and listening to children's views on their rights in the digital age**

In what follows, we review the available evidence, along with the views of children, according to the seven categories of rights, clustered by the reporting guidelines established for states by the UN Committee on the Rights of the Child: general principles; civil rights, freedoms and privacy; violence against children; family environment and alternative care; disability, basic health and welfare; and education, leisure and cultural activities.[28]

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[22] See ITU (no date); Sachs et al. (2015).
[23] See UNSRSG (2016).
[24] See WeProtect (no date).
[25] See Council of Europe (2016).
[26] UNICEF (2017)
[27] See, among others, Banaji et al. (2018); Barbovschi et al. (2013); Gasser et al. (2010); Kleine et al. (2014); Livingstone (2019); Livingstone and Bulger (2013, 2014); Livingstone and O'Neill (2014); UNICEF (2012).
[28] See Committee on the Rights of the Child (2015).

We do not here address or advocate for the creation of new, so-called 'digital rights'. Rather, we urge recognition of the fact that 'the digital' is increasingly embedded in the infrastructure of society rather than something discrete and set apart; it is becoming a taken-for-granted environment for work, family, relationships, commerce, crime, government, and much more. Thus children's rights are increasingly at stake in new ways in the digital age. What is needed is greater clarification, interpretation and guidance on the measures needed, in the context of the digital environment, to guarantee that their existing rights are effectively respected, protected and fulfilled.

a. Applying the general principles of the Convention on the Rights of the Child to the digital environment

The general principles of the UNCRC – Articles 2 (non-discrimination), 3 (best interests), 6 (optimum development) and 12 (right to be heard) – relate to the digital environment in crucial ways.

i. Non-discrimination, children's best interests and optimum development

As the digital environment – especially forms of mobile internet connectivity – expands throughout high, medium and increasingly, low-income countries, considerable inequalities occur in who gains access to what, with what quality and cost of connection.[29] In addition to inequalities in access to hardware and connectivity, there are inequalities in the provision of content (especially in poorer countries, among small language communities, and for ethnic or other minorities) and crucially, inequalities in the skills and competencies to participate in and benefit from the digital environment.[30]

Irrespective of their country or region, the social, cultural and economic sources of inequality that differentiate children's life chances also shape their online opportunities and risks of harm. This has particular significance in relation to UNCRC Articles 22 (refugees), 30 (minority and indigenous groups), 34 (protection from sexual exploitation), 35 (protection from abduction, sale and trafficking), 36 (protection from other forms of exploitation) and 38 (protection from armed conflict). Research consistently shows that, for a variety of socio-structural reasons, some children (generally termed 'vulnerable' or 'disadvantaged'[31]) are less likely to access or to benefit from online opportunities and more likely to experience harm as a consequence of exposure to online risks. Such groups include children living with

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[29] ITU (2016); The World Bank (2016); UN ECOSOC (2015); WEF (2015).

[30] Kleine et al. (2014); Livingstone et al. (2012); The World Bank (2016); UNICEF (2013).

[31] In making this claim, we must recognize the fact that 'disadvantage', 'marginalization' or 'vulnerability' is not a straightforward predictor of vulnerability online. Indeed, there are some instances in which children who are classified as 'vulnerable' demonstrate exemplary levels of resilience in their use of digital applications, programs and services, and deploy the digital environment to benefit their wellbeing. The challenge is to better understand how such examples of resilience might be translated to larger numbers of children both within and beyond 'vulnerable' communities. Evidence and suggestions for policy and practice can be found in UNICEF (2017).

chronic illness or disability; gender-diverse young people; First Nations children; refugees; newly arrived migrants; children experiencing homelessness; and children whose primary language is other than English. In short, those who are more vulnerable offline tend to be more vulnerable online, and efforts need to focus precisely on supporting them and fostering their abilities to take advantage of opportunities online.[32]

Engaging online can help disadvantaged children to access information and build communities of interest and broader support networks, thus improving their wellbeing and capacity to enact their rights. Gender-diverse young people, children living with disabilities and children living in rural locations, among other marginalized or disadvantaged groups, all stand to benefit from the resources that online communities can provide, whether informal or enabled through targeted interventions.[33] As such resources are rolled out, this is a critical moment to ensure that disadvantage is not compounded by digital exclusion.

However, benefits are also anticipated for the wider population of children. A burgeoning literature has found evidence for the positive impacts of children's engagement with the digital environment on their wellbeing.[34] These benefits are expected to continue to extend to children in the global South, where young people outnumber the general population online by a factor of two or three, although figures for younger children are scarce.[35] It is commonly hoped that the deployment of ICTs can support children's best interests and optimum development, both through the growth of general access to the digital environment and through the targeted use of the digital in programme interventions and public policy initiatives – including, for instance, in relation to health provision, environmental issues or disaster relief.[36] But it is also increasingly recognized that the digital environment poses distinct risks of harm to children, through the contents and contacts they facilitate and the digital traces they create.[37] It is crucial that these hopes and fears, opportunities and risks of harm, are addressed together, so that interventions are neither naïve nor one-sided.

While children are often vocal in the subject of their rights in relation to the digital environment, they often lack knowledge of or capacity to enact their rights in the

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[32] UNHCR (2021); Barbovschi et al. (2013); Kleine et al. (2014); Livingstone and Bulger (2013); Livingstone and O'Neill (2014); Metcalf et al. (2013); Robinson et al. (2014)

[33] Collin et al. (2011); Mason and Buchmann (2016); Robinson et al. (2014); Swist et al. (2015, p. 7); Third and Richardson (2010); Third et al. (2014); Third et al. (2017); Third and Moody, 2021; UNHCR (2016).

[34] See, for example, Swist et al. (2015); Collin et al. (2011), Third (2016), Kardefelt-Winther et al. (2022) and the work of the Young and Well Cooperative Research Centre, which, from 2011-2016, investigated the impacts of technology on children's and young people's mental health and wellbeing: http://pandora.nla.gov.au/pan/141862/20160405-1343/www.yawcrc.org.au/index.html

[35] ITU (2016); ITU and UNESCO (2013); Livingstone et al. (2015b).

[36] For example, children have contributed to positive social change in their communities by using digital technology to map hazards – such as excessive garbage, landslides, lack of drainage, and inadequate sanitation facilities – and mobilise their communities to address them (See https://www.unicef.org/cbsc/index_65175.html). Real time mapping via digital platforms such as ushahidi.com enable data to be gathered and visualised during crisis situations, enabling better coordinated responses.

[37] Banaji et al. (2018); Burton and Mutongwizo (2009); Gasser et al. (2010); UNICEF (2012).

digital environments available to them.[38] However, they are generally clear about the challenges they face regarding poor infrastructure and low quality connectivity:[39]

> "I lack access most of the time." (boy aged 14, Kenya)

> "There is not enough power so the computer is not working." (boy, Nigeria)

Yet however limited their access or outdated their technologies, children often display a high degree of inventiveness and creative workarounds, revealing their strong motivation and sense of 'a right' to the internet. Third et al. report video footage submitted by a boy in Nigeria that shows him powering up a diesel generator in order to charge his computer and mobile phone.[40] Children also report use of wind-up mobile phone chargers and similar workarounds to provide even the most basic access. No wonder, as Bob Hofman of the Global Teenager Project,[41] states:

> [Many children] think that having access to the internet is a basic right – food, water, health care and connectivity… And whether it is students from Ghana or from Canada, they express [this] very clearly.[42]

Yet while income and geography are key determinants of people's access to the digital environment in general,[43] gender – among other factors – is already a key source of discrimination, even within populations that do have access. The growth of digital resources now threatens to compound and deepen gender discrimination. Girls have much to gain from engaging with the digital environment – and are keen to optimize this[44] – but most research and programme evaluations show that their access and opportunities are far more restricted than those of boys.[45] Hence the value of targeted initiatives such as Regina Agyare's Soronko Solutions and Tech Needs Girls:

> The girls are learning to code, and once they are done they will get paid internships at a software company where they can start to economically empower themselves and be able to help pay for their own education. We have also engaged with the community such that the parents see the value in educating their girl child.[46]

Less research is available regarding other forms of inequality (such as ethnicity, religion, caste or language), although in the global North, children are shown to

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[38] Livingstone and Bulger (2014); Third et al. (2014).

[39] See Kleine et al. (2014); Livingstone and O'Neill (2014); Third et al. (2014).

[40] Third et al. (2014).

[41] The Global Teenager Project engages more than 20,000 students in over 42 countries in collaborative learning experiences. See www.ict-edu.nl/gtp/wat-is-gtp/

[42] Cited in Third et al. (2014, p. 65).

[43] See, for example, Banaji (2015); Walton and Pallitt (2012).

[44] See de Pauw (2011); Raftree and Bachan (2013).

[45] Girls are less likely to be given expensive devices; they have more domestic chores and so less disposable time; they are more vulnerable to sexual risks and gender-based violence; they are subject to gender discrimination and therefore have less access to education and employment; they have less freedom to seek information or opportunities for expression, and so forth (Banaji et al., 2018). See also Cortesi et al. (2015); de Pauw (2011); GSMA (2015); UN (2011); UNCTAD (2014); UNICEF (2013); WEF (2015).

[46] Cited in Third et al. (2014, p. 53).

experience discriminatory behaviour or outright hostility based on their gender, ethnicity, sexuality or other factors.[47] There is also evidence that online spaces can – under the right circumstances – provide support and opportunities to explore identity and gain needed resources, and that this can be of particular benefit to those who are vulnerable or discriminated against offline.[48]

ii. Children's right to be heard

The challenge for policy-makers and professionals and organizations supporting children is to maximize the benefits without exacerbating existing vulnerabilities or exposing children to harm. Children have a right to be heard as well as a right to protection. Article 12 establishes the right of children to express their views and to have them taken seriously in accordance with their age and maturity. This provision applies both to children as individuals and as a constituency, and has been interpreted very broadly by the Committee on the Rights of the Child, the international body charged with monitoring States' compliance with the Convention on the Rights of the Child.[49] It has argued that most matters of public policy from the local to the international are relevant for children's lives and, accordingly, are legitimate issues on which their voices should be heard.

Thus, the digital environment can, and indeed, does serve as a platform for individual children speak out, inform public debate, influence policy, and as well as for children collectively to collaborate, organise and share views. Several organizations have sought to harness the potential of the digital environment to amplify children's voices. Best known is UNICEF's U-Report mobile text messaging platform for children – first in Uganda, and then also in other parts of Africa – to enable children to contribute information and suggestions to decision-making processes (on, for instance, sanitation, HIV/AIDS, youth unemployment and disaster management) that affect their communities.[50] Relatedly, using UNICEF's 'Voices of Youth' platform, a community of youth bloggers and commentators from all over the world offer their insights on a range of topics affecting them.[51]

Governments have a responsibility for promoting implementation of Article 12, including in the online environment, and in so doing to ensure an appropriate balance between protection and the right to be heard. But generally, the greater availability of the digital environment is not being used to include or amplify children's voices in the design of interventions and decision-making processes, with considerable digital and cultural barriers to children being heard and responded to. UNICEF frames child participation as a right in itself and as a crucial path to other rights.[52] While a host of

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[47] See Alper and Goggin (2017); Campos and Simões (2014); Dahya and Jenson (2015); Tynes (2015); among others.

[48] See Banaji and Buckingham (2013); Coleman and Hagell (2007); ITU (2012, 2022); Robinson et al. (2014); UNICEF (2013); WEF (2015); Third et al. (2017); Third and Moody (2021).

[49] CRC General Comment No.12 The Right of the Child to be Heard, CRC/C/GC/12 paras 22-25.

[50] Kleine et al. (2014).

[51] See www.voicesofyouth.org/en/page-1

[52] See www.unicef.org/crc/files/Right-to-Participation.pdf; for the 'ladder of participation' and a critique of token inclusion, see www.unicef-irc.org/publications/pdf/childrens_participation.pdf; and for a resource guide for practitioners, see www.unicef.org/adolescence/cypguide/. Finally, see the

initiatives scattered around the world are experimenting with use of the digital environment to enable child participation, these tend to remain small-scale, unsustainable and too rarely evaluated for good practice to be shared.

Child participation, even in an age of digital connectivity, is still more promise than reality, and both determination and guidance from states are sorely needed, especially given the considerable attention to risk-focused and protectionist – sometimes overly protectionist – approaches to the digital environment.[53] Indeed, the evidence suggests that, as digital media are adopted in more parts of the world, and as society increasingly relies on the digital environment for many functions pertinent to child wellbeing, children's rights are being infringed. The adverse and discriminatory implications for the child's best interests and optimum development of both gaining and lacking access to the digital environment will increase unless efforts specifically target children's rights.

Children themselves have high aspirations for a world facilitated by the digital environment, believing the internet enhances connection between individuals, communities and cultures, across national and international borders, and positioning technology as key to promoting a spirit of understanding, peace, tolerance, equality and friendship among all peoples, supporting their rights to non-discrimination (Article 2):

> "[If everyone had equal access to digital media] this would help various people in various parts of the world to learn about different cultures, about the people. This would help with the advancement of people and society." (girl aged 16, Trinidad and Tobago)

> "For me, it unites the world." (boy aged 14, Argentina)

In short, children see accessing information as crucial to 'becoming responsible citizens who are able to form their own opinions and participate in their community and they explicitly connect the idea that the digital environment enables their right to information with their right to participation.'[54]

> "I don't know what I would do without it because I was born in the internet era. I cannot imagine a life without the internet because I use it every day, for my studies, I use it for all my needs. And … I need it very much." (boy aged 16, Malaysia)

Council of Europe's framework and tool for assessing the effectiveness of child participation strategies at www.coe.int/en/web/children/child-participation-assessment-tool

[53] For instance, Internews Europe's study of media reporting of child rights issues in Kenya found that a patronizing attitude to children by journalists, news agencies and civil society organizations means their voices are routinely excluded (Angle et al., 2014).

[54] Third et al. (2014, p. 38).

b. Children's civil rights and freedoms in the digital environment

The digital environment significantly impacts children's civil rights and freedoms. Access to the internet affords wide-ranging opportunities for the realisation of the UNCRC right to freedom of expression (Article 13), freedom of thought (Article 14), freedom of association and assembly (Article 15) and the right to information (Article 17). On the other hand, it also raises challenges in respect of ensuring the right to privacy (Article 16).

i. Information and participation

Research[55] and policy[56] has begun to document the benefits for children of participating online, in ways that are particularly relevant to these civil and political rights. As the former UN Special Rapporteur on Freedom of Expression, Frank La Rue, put it, the internet is:

> An important vehicle for children to exercise their right to freedom of expression and can serve as a tool to help children claim their other rights, including the right to education, freedom of association and full participation in social, cultural and political life. It is also essential for the evolution of an open and democratic society, which requires the engagement of all citizens, including children.[57]

Children, too, believe that the digital environment broadens their horizons and enables them to know about and connect with other cultures and people, and they value this enormously.

> "The internet gives the access to children to explore new things." (girl aged 17, Malaysia)

They report that 'digital media enable them to be informed citizens of the world who are better prepared to participate meaningfully in the lives of their communities.'[58] Children also note that the digital environment provides new ways for them to exercise their rights to freedom of expression. They demonstrated an eagerness to join the conversation about matters that concern them, to participate as fully engaged citizens and to access information:[59]

> "Many blogs or sites ask for people's stands and opinion on all sorts of matter and there are ways to raise awareness about some things and create movements and target groups." (girl aged 16, Serbia)

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[55] See UNDP (2021); Cortesi et al. (2021); Swist et al. (2015); Collin et al. (2011).
[56] O'Neill et al. (2013).
[57] La Rue (2014, p. 16).
[58] Third et al. (2014, p. 30).
[59] RErights.org (2016a).

> "Nowadays it is possible to express oneself on the internet and social media…
> Our words can reach much further, sometimes worldwide." (girl aged 14,
> France)

When asked to rank which of their rights is most positively impacted by technology,
children judge the right to access information as most important.[60] For example,
'researching what's happening in other parts of the world' was one of the main
benefits cited by children in Ghana; they talked about how they had learned about the
Ebola virus, and conflicts in the Gaza Strip and Mali via online sources. Information
is vital for many reasons, and children have the right both to receive and to contribute
it. Children also believe that access to information underpins a wide range of other
rights. For example, by engaging with the digital environment, they "have access to
politicians who can play a significant role in the community" (girl aged 16, Trinidad
and Tobago), thus supporting their right to contribute to discussions about matters that
concern them, and to participate as fully engaged citizens.[61]

However, children face challenges of 'information overload', 'fake news' and the
need for critical information literacy, resulting in growing calls for education on the
digital environment to support children in their civil rights and freedoms, along with
guidance on how public and private sector organizations might best provide it. Such
education is also important insofar as access to current affairs via the digital
environment has its downsides. Experts on children's right to civic and political
information consider that the risks of exposure to distressing news, for example, can
be managed and do not outweigh the value of such access.[62] Children often concur,
although they recognize the difficulties of the conflict between the right to
information and protection:

> "You're going to learn about more gruesome things and the harsh realities of
> the world younger… I've had to learn about things I wouldn't have wanted to
> know by going on BBC and CNN." (boy aged 15, USA)

This highlights the importance of working to develop balanced and child-centred
approaches to information provision and protection from potentially harmful media.
Ensuring that news corporations and other commercial entities prioritize children's
rights would be greatly improved by child rights guidance for commercial entities that
provide public and civic resources for 'the general population'. This could both

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[60] When asked, in the RErights.org consultation, to tell researchers of the rights that are important
overall in the digital age, children named (1) freedom of expression; (2) privacy; and (3)
protection/safety from cyberbullying, cyber-crime and exploitation. Access to information was the
right seen as most positively impacted by the digital environment, followed by freedom of expression,
while privacy followed by protection from violence were the rights most negatively impacted by the
digital environment.

[61] For those who have no or less frequent access to the digital environment, the inability to access
information and current affairs, whether for reasons of finance, connectivity or censorship, is seen as a
major disadvantage. Indeed, some children expressed a sense of access to the internet as key to
'information justice': "If the internet disappeared, we would not be able to do research on the internet
for school projects; we would have to go to the library and that is a problem because some people don't
have a library in their village so it is a lot more difficult, especially since there are libraries that do not
have a lot of books on specific topics or don't have the money to buy more" (girl aged 10, France).

[62] Angle et al. (2014); Council of Europe (2016).

encourage provision specifically for children and also for the many children who are, and have the right to be, present in spaces for the general population.

ii. Privacy

Civil rights and freedoms include the right to privacy. It is noteworthy that most children identify privacy as one of the three most important rights in the digital age.[63] Privacy can be infringed by known others in the child's social environment (parents, teachers, others – whether well-meaning or potentially abusive); the state (via surveillance mechanisms blind to age, via law enforcement or censors); and commercial players providing digital services that exploit children's data.

In the case of commercial data protection, research is beginning to suggest that children (like adults) are increasingly concerned about commercial uses of their data, increasingly aware that this is the only 'deal' on offer if they are to gain 'free' services.[64] Child rights and privacy experts concur – witness Europe's present efforts to update its data protection regime to protect the digital data of its citizens, with special protections for children (for instance, by regulating the 'profiling' and targeting of children by commerce and marketing).[65] Arguably privacy and data protection regimes are bedding down globally, and we have a limited window of opportunity to centre children's rights before systems, processes and industry practices sediment. Here, crucially, it is timely and important to assert states' obligations to ensure that businesses bear their responsibilities regarding children's rights.

In the case of the state, there are growing concerns that schools, health providers and other public bodies increasingly collect and use personal and transactional data from children in ways that are little understood by the public or parents, and that do not always observe robust standards of privacy, transparency, security or redress. The use by public bodies of commercial systems for data collection and information management compounds the problem of determining whether children's privacy and identity rights are protected. In facing these challenges, there is insufficient guidance about the legalities, complexities and unintended consequences of uses of children's digital data records.[66] Teenagers are increasingly aware that their privacy can be infringed by uses of digital technology:

> "[The] internet collects private data that can expose people's personal information that they want to keep private." (girl aged 16, Serbia)

> "Some of the websites that [ask for] my name and identity card numbers don't really make sure that my info is secured." (girl aged 17, Malaysia)

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[63] Children in the RErights.org consultation identified privacy, freedom of expression and protection/safety as the three most important rights in the digital age. See also Third et al. (2017); Third and Moody (2021).

64 See, for example, Third and Moody (2021).

[65] EU Regulation 016/679, 2016; Macenaite (2017); Madden et al. (2013); Lievens (2017); WEF (2017).

[66] See Lwin et al. (2008); Shapiro (2014); see also Goh et al. (2015); Singer (2014), Stoilova et al. (2021); Cannataci (2021).

"You can post a photo on the internet but then everybody can see it and it is difficult to remove it. It can go anywhere in the world and this can be an issue for some people... There is the issue of photos or documents that cannot be deleted." (girl aged 10, France)

Privacy from parents and other known adults is also a challenge with which many children, families and schools are currently struggling. For example, children in Kenya singled out "nosy parents", "overprotective parents", and "parents who spy" as challenges to their capacity to realise their rights in the digital age, signalling that they value the idea of privacy, but often interpret it to mean having a space of their own that is beyond surveillance by adults.[67] Parental surveillance particularly affects children's right to information (Article 17) they wish or need to keep private from parents – consider children living in abusive families who need access to helplines, children exploring their sexuality or sexual identity in families or communities that endorse hostile religious or discriminatory views, or children's rights as they grow older to take responsibility for their own maturation and experimentation.[68]

We might add that it is also unclear at present whether those minors who engage in civil or political protest – and often it is the young who engage most vigorously in the world's struggles – have their rights protected in subsequent legal proceedings. At present the specific rights of young activists or protesters are rarely heard in relation to controversies over the rapid increase in digital surveillance or state demands for commercial digital records of communication and assembly.[69]

c. Violence against children

The UNCRC addresses violence against children through Articles 17 (protection from harmful media), 19 (protection from violence, abuse and neglect) and 34 (all forms of sexual exploitation and sexual abuse including child pornography). (See also Articles 35, 36, 37 and the UNCRC Optional Protocol on the Sale of Children, Child Prostitution and Child Pornography).

i. Opportunities also bring risks of harm

The more children gain access to the internet and mobile technologies, seeking opportunities to benefit, the more they also tend to encounter risk of harm of various kinds. This has been found in research from Europe, Chile and Bahrain, among many other countries.[70] This is primarily because more use increases online exposure to a range of online experiences, although in some country contexts the effort to gain access can itself put children at risk of harm.[71] As a 2012 UNICEF literature review concluded,

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[67] Third et al. (2014, p. 47).
[68] Albury (2017); Aroldi and Vittadini (2017); Dinh et al. (2016); Ybarra and Mitchell (2004).
[69] Banaji and Buckingham (2013); Khalil (2017).
[70] See Berríos et al. (2015); Davidson and Martellozzo (2010, 2012); Livingstone et al. (2011b); Mascheroni and Ólafsson (2014); OCED (2011); UNICEF (2012).
[71] For example, mobile phones are widely used in many countries to share and 'normalize' the experience of viewing often extreme or violent pornography, and also because children seek access in

Children from low- and middle-income countries are less likely to use the Internet from home, and are more likely to go online from cybercafés, where they are at greater risk of encountering inappropriate images and online and offline solicitation. Lack of parental awareness and knowledge, difficult economic conditions and under-developed regulatory frameworks can further exacerbate potential risks and the likelihood of harm.[72]

Moreover, the more that children gain digital footprints[73] via their school, parent or medical or welfare databases of various kinds, the more their safety can be at risk of harm even if they themselves lack access to the digital environment.[74] The risks of harm range widely from new safety risks associated with the rise of 'hackable' 'Internet of Toys' or forms of algorithmic bias to long-established forms of bullying, harassment and sexual abuse now extending online; they also vary in severity from upsetting but manageable hostilities to persistent victimization or life-threatening sexual abuse.[75]

Research in the global South is beginning to complement that already available and compelling in the global North.[76] For example, in South Africa, Samuels et al. found that girls, and those who live 'in metropolitan and urban areas are significantly more likely to experience some form of online violence than those living in rural areas.'[77] In addition, there was found to be significant overlap in the risk factors associated with both on and offline violence risk factors in offline violence. Exposure to violence, alcohol, drugs and weapons were all strongly related to both the victims and perpetrators of online violence.[78]

From pilot data in South Africa, Argentina, the Philippines and Serbia, Byrne et al.[79] found that:

- Between a fifth (of 9- to 17-year-olds in South Africa) and three-quarters (of 13- to 17-year-olds in Argentina) reported feeling upset about something that happened online.

- One third of 9- to 17-year-olds in Serbia reported being treated in a hurtful way by their peers, online or offline, although in South Africa and the Philippines only a fifth said this had happened to them.

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internet cafes where abusive adults may prey on children in unsupervised circumstances (Banaji et al., 2018; Berríos et al., 2015; Cook et al., 2012; Samuels et al., 2013).

[72] UNICEF (2012, p. 95).

[73] Digital footprint refers to the permanence, searchability, and traceability of one's information online (Third et al. 2014, p.41).

[74] For instance, ECPAT International (2015) has argued that 'many of the children who are at highest risk of being subjected to sexual exploitation online are not connected to the Internet.'

[75] Bannink et al. (2014); Bhat et al. (2013); Holloway and Green (2016); Livingstone (2014); Lupton and Williamson (2017); Rallings (2015); see also BEUC (2017).

[76] See Internet Safety Technical Task Force (2008); ITU (2022); Livingstone et al. (2015c); OECD (2011); Rallings (2015); UNSRSG (2016); Webster et al. (2012); among others.

[77] Samuels et al. (2013, p. 32).

[78] Samuels et al. (2013, p. 36).

[79] Byrne et al. (2016).

- In qualitative research, children mentioned a wide range of problematic issues that concern them in relation to the digital environment, including internet scams, pop-up adverts that were pornographic, hurtful behaviour, unpleasant or scary news or pictures, discrimination, harassment (including sexual harassment by strangers) and people sharing too much personal information online.

- About a third of 9- to 17-year-old internet users in the Philippines and up to twice that number in Argentina and Serbia had seen online sexual content, while a small minority reported some kind of online sexual solicitation – being asked for sexual information, to talk about sex or to do something sexual.

As the below quotations demonstrate, children interviewed in those countries report a wide range of upsetting experiences online:[80]

"Racism, xenophobia and killings." (South Africa, open-ended survey question)

"Frequently having older strangers inviting me, seeing nude adverts." (South Africa, open-ended survey question)

"I once experienced a stranger asking for 'my price' – meaning, how much would it cost the stranger for them to have a sexual activity." (boy aged 15–17, the Philippines)

"I experienced being bashed by my classmates in Facebook and it hurt a lot!" (girl aged 12–14, the Philippines)

"A stranger once tried to chat with me asking for my photos and sending his own nude photos to me." (girl aged 12–14, the Philippines)

"[My friend] typed free xxx porn dot com, entered into something. He told me, 'Close your eyes, turn around, it will be something, you'll see a surprise'. When I turned around he started it and women started screaming." (boy aged 11, Serbia)

Children do not always see threats in the same terms that adults do: European research shows children to be particularly upset by online cruelty to children or animals, as well as being worried by online kidnappers, viruses and a wide range of other concerns.[81] This highlights the need for child-centred definitions and for children's insights and experiences to more directly inform research, policy and practice efforts.

As has also been found elsewhere,[82] online risks are correlated and can compound the resulting harm:[83]

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[80] See Byrne et al. (2016).
[81] See Smahel and Wright (2014); see also Livingstone et al. (2014a).
[82] Livingstone et al. (2012).
[83] Relatedly, a Turkish study by Erdur-Baker (2010, p. 121) of 14- to 18-year-olds found that, 'regardless of gender differences, the relationships between being a cybervictim and cyberbully are

The relationship between sexting and cyberbullying becomes most apparent when the consequences of failing to comply with requests for photos are explored. Failing to concede to such requests could result in other forms of bullying.[84]

As Livingstone et al.[85] conclude in their recent review of research in the global South,

> While the correlations across risks, and across victim and perpetrator positions, complicate the interventions needed, they serve to remind of the complexities that can surround experiences of risk in children's lives; thus simplistic or decontextualised interventions must be avoided.

ii. Responses to risks in the digital environment

The digital environment is being mobilised to intervene in or work to alleviate children's exposure to risk of harm. For example, the Child Protection Partnership (CPP), a project of the International Institute for Child Rights and Development (IICRD), advocates for a Circle of Rights process within programme implementation; see also Moraba, an award-winning mobile game designed for UN Women to educate young audiences in a South African township about gender-based violence.[86] Children are clear that more should be done to protect them:

> "Kids these days have easy access and there's a lot of inappropriate things out there that they should not be seeing." (girl aged 16, Australia)

> "Radio stations or televisions [should] reduce their broadcasting of explicit videos with sexual content and vulgar words." (boy aged 17, Malaysia)

> "We do not have protection from various forms of violence in the virtual internet network, especially when we talk about cyberbullying." (girl aged 14, Brazil)

> "Because bullying spreads outside the school yard through cyberbullying." (boy aged 16, France)

In the RErights consultation, children talked knowledgeably about the range of risks they might potentially encounter online.[87] The risk of seeing inappropriate content was often expressed in relation to violent content or disturbing footage from real-life situations such as scenes of war, schoolyard fighting, poverty and starvation. For example, a 14-year-old boy from Thailand reported that, "a challenge is violent

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significant and much stronger than the relationships between cyber and traditional bullying. This result suggests that the same adolescents who are victims are also bullies in cyber-environments.'
[84] Samuels et al. (2013, p. 35).
[85] Livingstone et al. (2017).
[86] Broadband Commission for Digital Development (2015).
[87] See also Smahel and Wright (2014).

content."[88] Other children also express concern at seeing adult content, and more specifically, violence and pornography, and often call for adult support in strengthening their own coping strategies rather than for outright bans or imposed restrictions.[89]

In sum, in many countries there is growing evidence of children's risk of privacy-related, violent and sexual harms on digital networks and platforms. No wonder that there is a growing clamour for educational, regulatory and parental intervention to reduce the risk of harm children face online.

It is presently unclear how much the evidence suggests that 'offline' risks of harm are now occurring online or instead, that there is a genuine increase in the overall incidence of harm to children. Many experts believe the digital environment is primarily a new location for risk of harm rather than a means of exacerbating it significantly.[90] It also seems likely that, since the digital environment records and enables the rapid distribution of records of many human activities, the harms long experienced by children have become newly visible, thereby demanding attention and redress. In this respect, the digital may have a key role to play in regulating forms of abuse that have previously been difficult to identify, let alone address. But there is no doubt that a host of professionals including law enforcement, helplines, medical services and digital media providers themselves are grappling with online risk of harm to children on a scale that they lack the resources to cope with.[91]

A coherent framework identifying the key roles to be played by different actors is greatly needed and increasingly called for. But often this focuses only on protection and safety, making it all the more vital that consideration is given to children's rights in a holistic manner. Equally vital is that children's own voices shape the framework developed.[92]

d. Family environment and alternative care

i. Parental responsibilities

Most research on how the digital environment is used and managed by families has been conducted in the global North where – albeit to varying degrees – the heterosexual, nuclear family is the dominant family structure. There is an urgent need for guidance about how the digital environment can support the rights of children living in a diverse array of family structures. This is relevant to UNCRC Articles 5 (parental responsibilities and evolving capacities of the child), 7 (parental care), 18 (state assistance to parents), 20 (alternative care) and 40 (juvenile justice).

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[88] Quoted in Third et al. (2014, p. 40).
[89] Byrne et al. (2016); Livingstone et al. (2012); Third et al. (2014).
[90] Finkelhor et al. (2015).
[91] Aoyama and Talbert (2010); Dinh et al. (2016); Finkelhor et al. (2015); Inhope.org (no date); UNSRSG (2016); Virtual Global Task Force (no date).
[92] Third et al. (2014, p. 42).

Evidence suggests that many families fear the risks of harm that the digital environment poses to their children. At the same time, parents hold out considerable hopes that the digital environment will deliver opportunities they may otherwise struggle to provide, helping to overcome disadvantage or generally preparing their children for a digital future. Parental ambivalence and anxiety can result in inconsistent, privacy-invading or overly restrictive parenting practices, especially given the widespread conviction (not necessarily supported by evidence) that children are more digitally literate than adults, seemingly able to challenge, transgress or evade parental controls.[93] Children themselves are often quick to point to a generation gap that impedes family communication about the digital environment:[94]

> "The biggest challenge is that adults don't trust us." (boy aged 16, Malaysia)

> "A generation gap prevents teenagers to communicate effectively with parents and grandparents." (girl aged 16, Trinidad and Tobago)

> "It's harder for parents to guide their children because they can do things on the internet without the awareness of the parents." (girl aged 17, Belgium)

There is, therefore, a need for evidence-based guidance about the digital environment for families, and for professionals who support children and their families, especially guidance that eschews a heavily protectionist for an empowering approach.[95]

Research is beginning to identify optimal parental mediation strategies to maximize online opportunities and minimize risk of harm, but these are yet to inform the awareness of most parents.[96] As a result, the digital environment frequently becomes a site for the contestation of intra-familial power relations, seen as a hindrance to, rather than a support for, strong family ties and wise parenting in children's best interests.

In the global North there is evidence that, with increasing institutional and government support for awareness-raising initiatives over time, parents and carers are increasing their efforts to support their children online in ways that are beneficial.[97] In response, as parents shift from punitive to constructive responses to reports from their children of experiences of online risks of harm, relations of trust are improving.[98] This, in turn, strengthens the ability of states to rely on parents to foster their individual child's best interests online in ways appropriate to their evolving capacity, as long as states and industry provide the needed tools, mechanisms and other resources to parents and in their regulation and monitoring of the digital environment.[99]

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[93] Ito et al. (2008).

[94] See also Third et al. (2017); Third and Moody (2021).

[95] CRIN (no date); Green (2012); Livingstone and O'Neill (2014); OECD (2012a); Powell et al. (2010); CRIN (2014); Hashish et al. (2014).

[96] Hasebrink et al. (2009); Livingstone and Helsper (2008); Livingstone et al. (2011b); McDonald-Brown et al. (2017). Specific suggestions for policy and practice appropriate to diverse global contexts can be found in UNICEF (2017).

[97] See Helsper et al. (2013).

[98] Livingstone el al. (2017); Lwin et al. (2008).

[99] See OECD (2012b).

On the other hand, provision to support parents is often lacking, even in wealthy countries. Moreover, it is in such countries that the leading edge of technological innovation may infringe children's rights in ways that the public (parents, experts, welfare professionals, the state) is inevitably slow to anticipate, recognize or redress. In relatively wealthy countries, too, we often see the leading edge of social innovation – very young internet users, highly immersed users, parents sharing images of children online – again, in ways that society lacks resources to evaluate or intervene in.

ii. Changing family relations

In consultation, children note that the digital environment can be crucial for maintaining their relationships with family – both nuclear and extended.[100] This is particularly the case for children living in diasporic communities or, although evidence is sparse, among migrants and refugees:[101]

> "Using Skype so I can contact my family overseas, in Malta, and be able to talk to them and keep them updated with what's happening in our country and what's going on in theirs." (girl aged 15, Australia)

Yet some consider that the digital environment may impede meaningful time spent with family:

> "When my family gets together for dinner there is no communication. We're all on tablets, phones. This is a problem… We don't talk much as much as we do before." (boy aged 17, Malaysia)

While parents and carers are struggling to manage the digital environment in the lives of their children, the situation for children living outside the biological nuclear family can be particularly challenging. For example, for children living in care homes or institutions, regulations often prevent children from accessing the digital environment for their own safety, notwithstanding the cost to their social integration.

For children without parents or adequate alternative forms of care, the digital environment may be yet more elusive, isolating them from their peers or sources of confidential help.[102] For children living in abusive or violent homes, the digital environment may become part of the problem rather than the solution. For example, consider the impact of the digital environment on adopted children and their families, where traditional efforts at protecting children's privacy rights from their sometimes-abusive or problematic birth parents have become highly confused and almost impossible to implement. This is, in part, because children themselves may use the digital environment to exercise their right to know and contact their birth family, and

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[100] See also, Third et al. (2017); Third and Moody (2021).
[101] See also www.enacso.eu/news/migrant-minors-and-the-internet-a-report-by-save-the-children-italy/
[102] Wilson (2016).

because the courts and social workers that have long sought to oversee children's best interests have been disintermediated by digital networks.[103]

e. Disability, basic health and welfare

With particular relevance for UNCRC, Articles 23 (children with a disability), 24 (right to health) and 39 (recovery from trauma), in the global North policy-makers, practitioners and researchers have long debated the potentially negative impacts of media on children's rights to a healthy life. These debates unfold in the context of broader concerns about the adverse effects of sedentary lifestyles on growing rates of obesity and associated health risks.

i. Balancing costs and benefits

On the 'costs' side of the scales, several problems are gaining attention, including the potential consequences of the fact that children are exposed and susceptible to the marketing of fast-food and calorie-intense, low-nutrient food and beverages and, secondly, that the more time children spend online, the less time they have to engage in activities that promote exercise and healthy eating and sleep patterns, undermining their capacity to establish lifestyle behaviours early in life that promote both their immediate and long-term right to a healthy life.[104] In addition, a sizeable body of research, policy and practice has addressed the potentially addictive qualities of the digital environment – framed primarily as a mental health risk – centring in particular on children's gaming and social media practices.[105] Also of longstanding concern is the effect of exposure to advertising on diet and other consequences for children's wellbeing,[106] including the evidence (albeit contested) of the influence of violent media content on children's aggression and fear,[107] and of sexual/pornographic content on children's sexual development, self-esteem and the formation of sexual norms (e.g. regarding consent, respect or sexual practices).[108]

In parallel, on the 'benefits' side of the scales, emerging research demonstrates that the digital environment can powerfully support children's health and wellbeing.[109] An emerging evidence base suggests that, under certain circumstances, the digital environment – and in particular, biometric devices – can foster positive approaches to eating, exercise, sleep and a range of other physical and mental health practices[110] as can online social support and forms of therapy support those with mental health

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[103] See Aroldi and Vittadini (2017).
[104] See, for example, Brown & Bobkowski (2011); Chassiakos et al (2016).
[105] See resources from the Center on Media and Child Health at http://cmch.tv/. Indeed, in early 2018, the World Health Organisation proposed the inclusion of excessive gaming in the revised version of *The International Classification of Diseases*. See https://www.theguardian.com/games/2018/feb/05/video-gaming-health-disorder-world-health-organisation-addiction
[106] Castro and Osório (2013); Polak (2007).
[107] See Gentile et al. (2004); Strasburger et al. (2012); Ybarra et al. (2008).
[108] See Peter and Valkenburg (2006); Wolak et al. (2007).
[109] Third et al. (2021).
[110] See, for example, Cummings et al. (2013).

difficulties.[111] The digital environment is also playing a role in protecting children's rights to a healthy life in the face of major health epidemics in the global South, as it did in places around the world during the COVID-19 pandemic.. For example, UNICEF's text messaging platform, U-Report, has played a key role in enabling children to access much-needed sexual health information in settings where cultural taboos prevent them from seeking such information from parents and carers. Evidence shows that this platform is building awareness and promoting healthy sexual practices in countries where HIV is an ongoing population health challenge.

More simply, as children gain access to the digital environment, they seek all kinds of information, including health information, relishing the immediacy and confidentiality that the internet can provide. The Global Kids Online project found, for instance, that around a fifth of 12- to 14-year-olds and 43% of 15- to 17-year-olds in South Africa looked for health information online at least every week (rising to over two-thirds in Argentina and some other countries). Much of the available research on online opportunities to gain health information concern adolescents' preferred means of learning, asking whether they want to receive health information through the digital environment. Less research evaluates whether they actually learn from online sources, let alone whether what they learn is beneficial.[112]

Indeed, as Livingstone et al.'s review shows,[113] many efforts to provide health information to children in poor countries struggle or fail because of insufficient attention to the information children actually seek or need, because of an often state-led preference for providing basic medical information without child-centred interpretation or attention to the social contexts of young people's lives. Nonetheless, despite such opportunities, the potential for the digital environment to support children's right to a healthy life across a range of contexts and settings has been inadequately explored and acted on to date. As Burns et al. argue:

> There is an urgent need to capitalise on technologies to promote access to online self-directed wellness management and the development of best-practice models that provide seamless and continuous support and care across online and offline services.[114]

ii. Exploring the future potential for wellbeing

Researchers are currently evaluating a range of apps and biometric devices for their benefits for both physical and mental health.[115] Once the evidence is in, it will be important to promote the health benefits and to engage children in developing initiatives to encourage children globally to exercise their right to a healthy life. At present, they tend to reflect the negative perceptions they hear from adults and the mass media:

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[111] Burns et al. (2013).
[112] Livingstone et al. (2017).
[113] Livingstone et al. (2017).
[114] Burns et al. (2013, p. 5).
[115] Hides et al. (2014).

> "Health may deteriorate if too much time is spent in front of computers, tablets or smartphones." (girl aged 15, Malaysia)

> "[If the digital environment disappeared], I would be healthier because I would get outside more often." (girl aged 16, Australia)

> "When we get addicted to our digital devices, we tend to stay up all night playing a game, watching movies, chatting with friends or simply listening to music, and that is really bad for our health." (girl aged 14, Malaysia)

While children do not necessarily explicitly connect the digital environment with benefits for their mental health and wellbeing, they say that, 'by engaging with digital media they learn new skills and develop their talents; they become informed citizens of the world who can contribute meaningfully to their communities; and they foster friendships, family ties, and a sense of community and belonging',[116] all of which is critical to their resilience and wellbeing.[117]

The digital environment also provides opportunities for more isolated, marginalized or non-dominant children to be included by engaging in peer relations and social life on their own terms. The 'Growing Up Queer' project found that the digital environment provides a vital source of information and support for LGBTQI young people who, due to entrenched social stigma and practices of discrimination, are more likely to develop long-term mental health difficulties and engage in alarming rates of suicidal ideation.[118] The work of the Young and Well Cooperative Research Centre[119] demonstrates that the digital environment can powerfully support a diverse range of children's mental health and wellbeing.[120] They can be especially important in connecting children who live with a disability, serious illness or chronic disease with their peers, minimizing their social isolation, enabling them to develop the necessary social and technical skills to engage with the social world,[121] and fostering their economic participation in ways that give substance to the fuller expression of their rights.

The digital environment can provide such children with continuity through periods of absence from school or social activities, yielding benefits for their educational and other rights:

> "If you're sick, you can get homework… So you don't really miss a day at school, because of technology you can just ask a friend or even a teacher" (girl aged 16, Trinidad and Tobago).

These ideas are supported by the stories of children like Kartik Sawhney,[122] and the practice-based knowledge of youth-facing organizations such as Soronko Solutions in Ghana and Livewire.org.au in Australia, suggesting that organizations working in the

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[116] Third et al. (2014, p. 9).
[117] See also Third et al. (2017); Third and Moody, (2021).
[118] See Cole and Griffiths (2007); Robinson et al. (2014); Subrahmanyam and Greenfield (2008).
[119] www.youngandwellcrc.org.au
[120] Lala et al. (2014).
[121] Third and Richardson (2010).
[122] Quoted in Third et al. (2014, p. 69).

disability and chronic illness support sectors should be encouraged to work with such children to further explore how to implement digital environment initiatives that enhance their rights.

However, such claims about the possibilities for the digital environment to foster strength, resilience and wellbeing in children must be weighed against a body of research that demonstrates that some children encounter serious challenges to their wellbeing online. As noted earlier, research shows that those children who are most vulnerable offline are often those who are most vulnerable online.[123] This calls for careful, proportionate and holistic assessment of the need for protection and support, as well as for tech-savvy training and awareness on the part of the specialist organizations that work with children with special needs.

Equally, it is vital that states target resources for specifically vulnerable groups rather than spreading them (too) thinly across entire populations or worse, applying safety-led restrictions to the majority even though they are really for the intended benefit of a minority. As Samuels et al. conclude from their research on cyberbullying and sexual harassment in South Africa:

> Interventions aimed at reducing levels of online violence should target at-risk youths in general and not simply those who frequently make use of social and digital media.[124]

As with online opportunities, the consequences of online risks in terms of actual harms are heavily dependent on the child's maturity and resilience on the one hand, and on their circumstances and resources on the other.[125] In relation to the digital environment, too little attention is paid to children's best interests and evolving capacity, with both public and private bodies tending to treat 'children' or worse, internet 'users', as if all were the same in relation to their rights and needs in the digital environment.

f. Education, leisure and cultural activities

i. Formal schooling

Children around the world see the digital environment first and foremost as a pleasurable and valued form of leisure, and as a resource of huge potential for learning. Learning, here, includes formal, informal and non-formal education, whether in or out of school, to supplement school provision or to compensate for its limits or absence, to support a given curriculum or to learn something interesting or valuable for the child that is entirely unrelated to school, in support of developing them to their full potential. The digital environment thus have consequences for, especially, UNCRC Articles 28 (education), 29 (educational goals, including in relation to rights), 31 (leisure, play and culture) and 42 (knowledge of rights).

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[123] See, for example, Livingstone et al. (2011a).
[124] Samuels et al. (2013, p. 36).
[125] Livingstone et al. (2011a, 2012).

But, as the prominent failures of such high-profile initiatives as the One Laptop per Child amply illustrate, providing access to the digital environment alone is not enough.[126] Not only is access to the digital environment vital for many child rights, but their provision must also be accompanied with digital literacy education and training for children, teachers and parents, along with a host of related forms of support and expertise. Several recent evidence reviews assert the growing importance of the digital environment for children's learning and education.[127] These generally support the recommendation that states should:

- Incorporate the digital environment within schools constructively, wisely, and with appropriate curriculum development, teacher training and technical support.[128]

- Embed critical digital literacy education across school subjects to create a 'digital thread' throughout the process of learning.[129]

- Use the digital environment to overcome rather than reinforce barriers or misunderstandings between home and school, and formal and informal learning sites.[130]

- Ensure that the digital environment is used fairly in education, including to transcend or compensate for or work around traditional forms of discrimination, to alleviate inequalities and exclusions.[131]

- Persuade established educational authorities to rethink how the digital environment can support interest-driven learning to suit the motivation, needs and best interests of each child.[132]

- Conceive of digital literacy (or digital citizenship or digital environment) education broadly, to include imaginative, critical, civic and creative skills and literacies that include, but go far beyond, online safety.[133]

- Conduct independent evaluations of digital environment interventions so that best practice can be shared and mistakes learned from rather than perpetuated.

It is clear from the evidence that children seek to use the digital environment to support their education, but there remain many barriers. For example, the Global Kids Online study, including research in Argentina, Serbia, South Africa and the Philippines, found that children in countries where access to the internet is limited for reasons of connectivity or cost are less confident in their digital skills, especially younger children and those from poorer countries. They also receive less support from

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[126] James (2010); Kraemer et al. (2009).
[127] Byrne et al. (2016); Frau-Meigs and Hibbard (2016); OCED (2012b).
[128] See Frau-Meigs and Hibbard (2016); Third et al. (2014).
[129] Hobbs (2011); NCCA (2007a); see also Davidson and Goldberg (2009); NCCA (2007b).
[130] See Buckingham (2006).
[131] See Greenhow and Lewin (2015); Henderson (2011); Mardis (2013); Sinclair and Bramley (2011).
[132] See Vickery (2014).
[133] Myers et al. (2013).

parents and carers since these, too, lack skills (e.g. parents and carers in South Africa are as skilled as children aged 12–14).[134] Just what should be taught is often unclear. Leung and Lee found even in their study of 9- to 19-year-olds in Korea that:

> In information literacy, they were generally very competent with publishing tools but were not social-structurally literate, especially in understanding how information is socially situated and produced.[135]

Some years ago, based on a literature review and case studies in China, India and Vietnam, Lim and Nekmat concluded that:

> The acquisition and transmission of media literacy skills can have significant effects beyond merely equipping people with the skills to consume and produce media content. Vested with these skills, the youths trained in these programmes became considerably more empowered in their ability to express themselves, raise societal awareness about issues that concerned them, and also found themselves growing and developing as individuals … media literacy programmes that focus on empowerment and democratic participation are arguably more sustainable than those that focus only on skills. Such programmes will be more appealing to participants, and given the focus on nurturing the complete individual, participants are also more likely to be committed to the programme.[136]

A host of initiatives around the world now seek to rise to these challenges, some community-based rather than top-down, some incorporating strategies to respond to local needs as well as government imperatives, a few independently evaluated so as to learn from past mistakes and share good practice.[137] Ironically, the more states invest in technology to support education, the more excluded or discriminated against become those children who lack access to education, educational technology or digital literacy education. Those with access are clear about the benefits; those who lack access are clear about the problem, looking to their government for redress:

> "The government should provide communication devices at our school." (boy, Egypt)

> "Digital media contributes to education... Imagine all that is there in front of you on the net, to research, to learn." (girl, Brazil)

The RErights platform, along with other international projects, seeks not only to promote children's discussion of their rights, but also their awareness of their rights, the ability to articulate these, and the competencies to enact them. In other words, an important part of education is to learn about their rights (Article 42), and the digital environment can also help here:

> "Because of the internet children can now look up what their rights are." (girl aged 17, Belgium)

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[134] See Byrne et al. (2016).
[135] Leung and Lee (2012, p. 130).
[136] Lim and Nekmat (2008, pp. 273–4).
[137] AkiraChix (no date); GSMA (2014); Nethope Solutions Center (2015); Rijsdijk et al. (2011).

> "From the digital technology children and children can form an organization e.g. UNICEF to discuss our rights as children." (girl aged 17, Malaysia)

> "[The] right to access information online to complete my homework is an important right in the digital age." (girl aged 17, Malaysia)

However, children also note that many schools block websites – in particular, social media sites – suggesting that educational institutions are far from making the most of digital opportunities, with efforts to ensure protection conflicting with and often undermining efforts to promote provision and participation rights. In the UK the 5Rights initiative has engaged children in innovative deliberative discussions to debate their rights online and to contribute to finding solutions to their infringement.[138]

ii. Informal learning and leisure

Children's pleasure in the digital environment is often regarded negatively by adult society, despite children's right to leisure and play as part of living a full life and developing their full potential. Given that evidence shows that children's digital leisure time activities enhance their skills base and expose them to a wider variety of opportunities,[139] it is critical that children's rights are foregrounded within popular and policy debates to shift adult thinking. In short, despite the various pitfalls and a history of struggling or failed initiatives, the digital environment can support education and education can support digital environment engagement, but evidence-based guidance is greatly needed to ensure investments are well founded.

During leisure time, children use the internet to expand their learning beyond the school curriculum, in ways that research shows can open up new learning pathways, support skills, engage the disaffected and support wider inclusion:[140]

> "I have learnt how to bake, various baking techniques." (girl aged 16, Trinidad and Tobago)

> "I learnt to make these clay dolls on YouTube." (boy aged 8, Colombia)

> "I like creating apps, what I like is that we can create new things." (boy aged 16, Malaysia)

> "There are numerous games and contents for kids to play and use in their spare time." (girl aged 16, Serbia)

In line with trends in user-generated content, some children reported engaging in creative content production in their leisure time, highlighting their right to expression.

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[138] Coleman et al. (2017).
[139] Ito et al. (2009, 2013); Livingstone and Helsper (2007).
[140] See Cilesiz (2009); Ito et al. (2013); Third et al. (2014); Walton (2009); among others.

By providing an avenue for children to create content and share with others, the digital environment may be seen to be fostering their right to expression. Yet:

> Although digital access and literacy is growing apace, the evidence shows that many of the creative, informative, interactive and participatory features of the digital environment remain substantially underused even by well-resourced children.[141]

This is partly a problem of digital literacy.[142] However, it is also problematic that there are few incentives for services to host and support children's content, to do so in the public interest rather than for profit; and the wider adult society often does not value or attend to children's contributions in the digital environment.

3. Conclusion

In this chapter, we have discussed the relation between children's rights and the digital environment in three distinct but interlinked ways, focusing on:[143]

- Children's uses of the digital environment: questions of child rights here tend to prioritize the 'right' to (and barriers in accessing) digital devices, content and services.

- Children's rights in digital environments: the focus here is on enhancing ways in which children can enact their rights in online spaces, and overcoming the ways in which their rights are infringed or violated in a host of digital, networked and online spaces.

- Children's rights in the digital age: here the most ambitious challenges arise, recognizing that insofar as the digital environment is reshaping many dimensions of society, this raises new prospects for how child rights could be further enhanced or infringed in society.[144]

The digital environment is set to be of growing significance in the future, powerfully reshaping the conditions of and possibilities for children's rights. It is vital that the power of the digital is harnessed to deliver the Sustainable Development Goals for the broadest population possible, maximizing opportunities for children both in the here-and-now and as future adults while preventing infringement to their rights, again, both in the present and in the future. It is equally vital that children's voices are heard in the expert debates that too often unfold 'above their heads'. How can this happen? The report of the Day of General Discussion (DGD) by the UN Committee on the Rights of the Child set out the distinct roles and responsibilities of relevant stakeholders needed to take responsibility for children's rights in relation to the digital

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[141] Livingstone et al. (2014b, p. 4).

[142] We focus on digital literacy to emphasise the importance of children's critical understanding of a changing and complex digital environment. See also UNESCO (no date), Buckingham (2006), Hobbs (2011) and Nascimbeni et al. (2019).

[143] See Third and Collin (2016).

[144] See Lievrouw and Livingstone (2006); Livingstone and Bulger (2014); Livingstone and Third (2017).

environment, demanding that 'States should also ensure regular monitoring of implementation and assessment of legislation and policies.'[145] Particularly, it urged that:

> States should recognize the importance of access to, and use of, digital media and ICTs for children and their potential to promote all children's rights, in particular the rights to freedom of expression, access to appropriate information, participation, education, as well as rest, leisure, play, recreational activities, cultural life and the arts… In addition, States should ensure that equal and safe access to digital media and ICTs, including the Internet, is integrated in the post-2015 development agenda … [and] States should adopt and effectively implement comprehensive human rights-based laws and policies which integrate children's access to digital media and ICTs and ensure the full protection under the Convention and its Optional Protocols when using digital media and ICTs.[146]

However, the global community is still far from realizing the potential of the digital environment to support children's rights. Many states struggle to recognize children as agents and rights-holders with a significant stake in the digital world, undermining their ability to fulfil their fundamental duty of care to children in the digital environment. On the one hand, too many children are being exposed to significant harm. On the other hand, a protectionist mentality often inhibits states' capacity to realize the expansive possibilities for the digital to support children's rights. This is compounded by a lack of rigorous and actionable evidence to support effective policy and interventions, particularly in the global South. Crucially, states are not yet adequately equipped with the necessary frameworks and guidance to enable them confidently to drive effective digital policy and practice that balances children's protection from harm with nurturing the opportunities for children.

The difficulties for states include coordinating the multiple relevant stakeholders across the public, private and third sectors, and the fact that the digital environment has consequences across the full range of children's rights. Both the physical and informational infrastructures that underpin digital environments are proprietary, owned significantly by powerful multinational corporations whose interests are commercial and which, while not beyond the law or, indeed, the UNCRC, [147] are difficult for individual states to regulate. Thus the move towards the digital environment is substantially led by commercial developments rather than those framed in terms of children's best interests:

> 'The global corporate players through new gadgets, schemes, and advertisement, as well as the government, through rhetoric and development

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[145] OHCHR (no date b, p. 19).

[146] OHCHR (no date b, pp. 18–19).

[147] It is helpful when considering children's rights to refer to UNCRC General Comment No. 18 on state obligations regarding the impact of the business sector on children's rights: 'The Committee recognizes that duties and responsibilities to respect the rights of children extend in practice beyond the State and State-controlled services and institutions and apply to private actors and business enterprises. Therefore, all businesses must meet their responsibilities regarding children's rights and States must ensure they do so. In addition, business enterprises should not undermine the States' ability to meet their obligations towards children under the Convention and the Optional Protocols thereto' See Committee on the Rights of the Child (2013)

schemes, are raising normative expectations to be part of global markets that are impossible to meet in their rural location with infrastructural limitations.' (Pathak-Shelat and DeShano, 2014, p. 998)

Even in relatively privileged countries in the global North, uncertainties, problems and confusions are accumulating about how to ensure (or even recognize) the best interests of the child as they apply in relation to the digital and the wider world now being shaped by the digital environment. The pressing questions confronting the global policy and practice community include:

- How can the digital be mobilized to support (and not infringe) the full range of children's rights, for all children globally, including the most vulnerable or disadvantaged?
- How can we foster children's protection from harm online while simultaneously empowering them to maximize the opportunities of growing connectivity?
- What is the role of states in ensuring children's rights in the digital age, and how can they work with other stakeholders in this task?

If society is to support children to better realize their rights using the digital environment, this will require a concerted effort. The time is right for the global policy and practice community to address these questions, to meet the challenges of children's rights in relation to the digital environment and to meet the demands of a future in which 'the digital' will play an ever more integral role in the lives of children and adults around the world. There is a growing body of initiatives around the world which suggests ways in which policy and practice can respond constructively to these challenges and thereby meet the specific needs of children and communities in diverse contexts.[148]

The coming decade is likely to be crucial in the global public and commercial shaping of digital environments. At stake is identifying, anticipating and addressing the global relevance of the UNCRC in 'the digital age', by and across geographic regions, and encompassing all dimensions of children's lives. In early 2021, the UN Committee on the Rights of the Child formally adopted UNCRC General Comment 25[149] on children's rights in relation to the digital environment, which provides principled and evidence-based guidance for states about how to realise the aims and ambitions of the UNCRC in the context of the growing importance of digital technology in the lives of children around the globe. It is hoped that General Comment 25 will both legitimise and augment the groundswell of activity across diverse contexts to address children's rights in relation to the digital environment. Indeed, if society can seize the opportunities, the digital environment will surely constitute a powerful tool for delivering on the promise of the Convention. If society should fails in this effort, the digital environment threatens to undermine children's rights on a significant scale. We thus suggest attention to both the opportunities and risks of harm for children's rights is of critical urgency.

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[148] See Cortesi et al (2015) and UNICEF (2017).
[149] CRC General Comment No.25 Children's Rights in Relation to the Digital Environment, CRC/C/GC/25.

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