

RECONCEPTUALIZING THE RIGHT TO EDUCATION IN THE DIGITAL AGE: A HUMAN RIGHTS AND CONSTITUTIONAL ANALYSIS

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Abstract

The concept of the right to education during the digital era has been redefined through the following argument: meaningful digital access now constitutes a meaningful element of educational equality under international human rights law and domestic constitutional systems. The fast pace of digitalization of education has changed the process of conveying and receiving knowledge to make it accessible beyond real classroom boundaries and international boundaries. Nevertheless, the COVID-19 crisis revealed the instability of this change: although technologically developed countries retained a steady educational process with the help of online learning, millions of students in the Global South became deprived of it because of the lack of infrastructure, the inability to afford connectivity, the lack of access to devices, and a low level of digital literacy. Such circumstances have enhanced the already existing disparities and have brought about a new form of discrimination in education. Informed by the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights, the study places digital connectivity in the 4A framework of availability, accessibility, acceptability and adaptability and explains how progressive achievement needs the states to keep up with the technological realities in the provision of education. The paper discusses the dynamic international standards, compares constitutional and statutory strategies in different jurisdictions, and assesses Pakistan as a case study of how states with well-established constitutional commitments and consistent policy and implementation failures. These barriers are structural, economic, legal, and socio-cultural barriers such as gendered exclusion and privacy harms, which are impediments to digital educational equity. The paper finishes with an agenda of the rights-based reform, which suggests that constitutional acknowledgement of access to digital technologies in the educational fields should be guaranteed, that consistent legislation and institutional alignment should be established, that affordability measures should be fostered, that universal connectivity plans and digital literacy programs should be put in place, and that the privacy and ethical usage of educational technologies should be effectively governed.

INTRODUCTION

The educational sector's entire perspective, from content to the methods of conveying concepts, has been revolutionized in the twenty-first century (Beare et al., 2021). It has led to a thorough purification of numerous traditional instructional methods and systems. The learning process, once restricted to classrooms and traditional pedagogical approaches, has transcended national and regional boundaries (Dussel et al., 2020). It is a nonstop process of evolution that is generating novel platforms and methods of acquiring knowledge without any form of discrimination or barriers. Despite the fact that rapid transformation is driven by innovation, it has also had significant implications for human rights and the law (Bonina et al., 2021). As a fundamental human right that was established in the past, it has expanded beyond the scope of schools and educators. Although technological tools and digital infrastructure enable modern education to be accessible to all individuals, it remains within reach (Faturoti et al., 2022).

The true potential and delicacy of digital education system was actually exposed during COVID-19 pandemic. Remarkable transformation of learning process through online medium took place at nations with strong technological foundations but millions of students in the Global South were left behind due to poor infrastructure, unaffordable internet access, and limited digital literacy (Adedoyin et al., 2023). This widening digital divide disclosed the pressing human rights concern and need of policy decisions to bridge the gap of two extreme sides of world (Nishat et al., 2024). Therefore, the United Nations Educational, Scientific and Cultural Organization (UNESCO) declared, equitable access to digital tools and the internet as essential to fulfill the aims of Article 26 of the Universal Declaration of Human Rights (UDHR) and Article 13 of the International Covenant on Economic, Social and Cultural Rights (ICESCR) (Szoszkiewicz et al., 2025).

This paper emphasizes that digital inclusion is a must being central component of the right to education in international as well as constitutional law. A wide range of legal and institutional

reforms are required for the transition from physical to virtual learning environments along with technological investment. On the one hand, digital exclusion, in the modern context, is one of the new forms of discrimination in education that continues to create discrepancies between individuals, communities, and countries (Helsper et al., 2021). The main aims of the current research are as follows: first, it explores the standardization of the right to education as an international human right in the environment of global digital transformation, second, it focuses on comparative constitutional and statutory approaches that integrate or oppose digital accessibility as the part of the educational right (Voronkova et al., 2023); and third, it approximates how developing countries, especially Pakistan, can make national systems of laws consistent with international promises to provide equitable and meaningful digital connectivity (Yaseen et al., 2025). The article is based on the doctrinal approach to law, which is enhanced by the comparative approach.

It blends international treaties, constitutional laws, precedents, and academic observations to interpret the duties of states in guaranteeing digital access as a facet of educational equity (Sule et al., 2024). The structure proceeds as follows: Section 3 deals with the theoretical and legal foundations of the right to education; Section 4 analyzes the progression of this right in the digital era; Section 5 provides comparative perceptions from around the Globe, including Pakistan as a case study; Section 6 pinpoints existing challenges and policy gaps; and Section 7 offers recommendations for incorporating digital education into human rights administrative structures (Li et al., 2025).

2. Theoretical and Legal Framework

Among the most valuable rights in international human rights' laws, right to education is not only recognized as an independent prerogative but also provides foundation for other civil, political, economic, and cultural rights (Veriava et al., 2020). As education enlightens individuals about power of their rights to participate profoundly in

democratic life, and conduce to social and economic development but digital age, has extended the theoretical approach of this right and states are compelled to revise conventional understandings of how-to chive equitable and effective access to education (Karatsiori et al., 2023).

2.1. The Normative Fundamentals of the Right to Education

The Universal Declaration of Human Rights (1948), affirms in Article 26 that “everyone has the right to education.” Subsequently, this right was expanded in Article 13 of the International Covenant on Economic, Social and Cultural Rights (ICESCR) (1966), which makes it compulsory for states to make education available, accessible, acceptable, and adaptable, a framework commonly referred to as the “4A scheme”, expressed by former UN Special Rapporteur Katarina Tomaševski (Márquez et al., 2023). These parameters entail states to guarantee not just the existence of educational institutions but also their comprehensiveness, quality, and significance to progressing social and technological contexts. These principles have over time been enlarged by world legal systems; the European Convention on Human Rights (Protocol 1, Article 2) and the African Charter on Human and Peoples Rights (Article 17) state that education is a universal right, and Convention on the Rights of the Child (1989) conceives education as an instrument of human development and equality (Meix-Cereceda et al., 2020). Constitutional provisions in South Asia that acknowledge education as a basic right like Article 25-A of the Constitution of Pakistan recognize international and domestic interests in comprehensive development (Hassan et al., 2024).

2.2. Evolving Conceptions in the Digital Age

The dawn of digital transformation era has deeply altered the nature of educational access. In modern societies, digital tools, starting from broadband internet to educational software and online podiums, are now essential to learning which has included the right to digital access as a must for significant input in educational processes (Akour et al., 2022). Therefore, international

organizations such as UNESCO and the United Nations Human Rights Council (UNHRC) emphasize that access to digital infrastructure is vital to the enjoyment of educational rights and freedoms (Benedeket al.,2025)

This developing version bring into line with the principle of “progressive realization” under Article 2(1) of the ICESCR, which accommodates states to constantly increase access to education in response to social and technological change. Digital exclusion, however, results in failure of progressive realization, because it stops individuals of the means to enjoy the benefits of education in its modern way. United Nations Secretary-General’s 2020 report on digital cooperation affirms, “digital connectivity is not a luxury it is a necessity for the realization of human rights.” (Bilková et al. 2020).

2.3 Digital Education as a Human Right

Courts in countries like South Africa, India, and Kenya have deduced that it is the duty of the State to provide education through technological means where necessary for effective learning. For instance, The Indian Supreme Court, in *Re: Distribution of Essential Supplies and Services during Pandemic* (2021), observed that “access to online learning facilities is indispensable for ensuring educational continuity, particularly during emergencies”.

Digital education is meticulously linked to the rules of non-discrimination and equality in Articles 2 and 26 of the ICCPR (Šmigová et al., 2024). Limited access to technology and the internet specific injures women, rural populations, and marginalized groups, expanding existing inequalities. Therefore, assuring digital access is a legal as well as moral imperative under the doctrine of substantive equality (Du et al.,2020)

2.4 Theoretical Integration: Human Dignity and Digital Justice

Actually, inclusion of digital excess in right of education is deeply rooted with the principle of human dignity. As Amartya Sen’s capability approach and Martha Nussbaum’s human development theory suggest, education is not simply instrumental but amounts to human

freedom. Without digital inclusion, people cannot learn, communicate, or join the knowledge economy, which limits their independence and personal growth (Carbone et al., 2025).

Digital justice now refers to equal digital accessibility as a significant element of equality. It requires the states not only to offer the infrastructure but ensure technology is affordable, accessible to persons with disabilities, language-focused, and aided by digital literacy programs. Therefore, digital education goes beyond learning itself as it includes justice, equality, and participation (Hankerson et al., 2020).

3. The Right to Education in the Digital Era – Global and Comparative Perspectives

The digital inclusion has triggered a paradigm change in the adjudication of right to education in different jurisdictions. Although the traditional legal frameworks have been based on the importance of formal education and literacy, the modern world requires a review that includes the digital availability, technological skills, and online inclusion as the essential elements of educational equity (George et al., 2024). Here, a comparative examination of the approach of different states to these issues will be provided, outlining the global trends, legal developments, and existing gaps.

3.1 Global Developments and International Instruments

The modern international law considers digital access to be an inseparable part of the right to education. In the UNESCO Convention against Discrimination in Education of 1960, non-inclusion grounded on social or economic status was expressly forbidden, but the UNESCO Recommendation on Open Educational Resources (2019) encouraged states to provide equitable access to digital learning materials and infrastructure (Duerawee et al., 2025).

The UN Committee on Economic, Social and Cultural rights (CESCR) has presented the requirement of states in making education in a technologically relevant and inclusive manner through General Comments No. 13 (1999) and No. 25 (2020). General Comment No. 25 directly

links access to digital to the right to enjoy the fruits of scientific advancement (Mann et al., 2020).

The inclusion and equitable quality education and promotion of lifelong learning opportunities to all people is affirmed by the Sustainable Development Goals (SDGs) in Goal 4. Target 4.a incorporates the digital dimension and requires the effective learning environments, such as access to the information and communication technologies (ICTs) (Smith et al., 2020). All these promises make the digital access not only a developmental objective but also a legal extension of the right to education (Sule et al., 2024).

3.2 Comparative Legal Perspectives: The Global North

In many developed countries, digital rights in education have evolved from policy goals to enforceable legal commitments. The European Union's Digital Education Action Plan (2021–2027) supports strong digital learning systems and digital literacy, whereas countries like Finland and Estonia recognize internet access as a constitutional social right essential for education (Simbo et al., 2025).

In Canada, the CRTC (Canadian Radio-television and Telecommunications Commission) classified broadband as a “basic telecommunications service” in 2016, extending educational rights into the digital sphere. In the United States, although education is not a constitutional right, programs like E-Rate ensure schools and libraries have affordable internet access (Revnicek et al., 2024). Together, these measures mark a legal shift toward viewing connectivity as integral to the right to education. However, even in high-income nations, inequalities in affordability, regional access, and digital skills persist (Puaschunder et al., 2024).

3.3 Comparative Legal Perspectives: The Global South

In the Global South, though developing countries are still facing major barriers like poor infrastructure, high costs, and weak policy implementation but many are adopting rights-based approaches to digital inclusion (Resha et al., 2021).

In India, the Supreme Court (2021) in *Re: Distribution of Essential Supplies and Services during Pandemic (2021)* affirmed that access to online education is part of the constitutional right to education under Article 21-A, and that digital exclusion violates equality and dignity. South Africa's Constitutional Court in cases such as *Governing Body of the Juma Masjid Primary School v Essay NO (2011)* has likewise recognized the state's duty to create conditions for realizing educational rights, extended through the Digital and ICT Strategy for Education policy (2020–2025) (Bandopadhyay et al., 2025).

In Kenya, the Basic Education (Amendment) Act (2017) made ICT integration a legal obligation, while Brazil's *Marco Civil da Internet (2014)* declared internet access a fundamental right. Together, these examples show a growing recognition that digital education is essential to equality and human development, even amid resource constraints.

3.4 The Case of Pakistan: Legal Commitments and Policy Gaps

Pakistan is a case of the mismatch between constitutional rights and internet access. Article 25 A ensures children between the ages of five and sixteen receive free and compulsory education (amended in 2010 by 18th Amendment), but does not provide any references to digital access.

There are policies like National Education Policy (2017) and Digital Pakistan Policy (2018) which acknowledge the importance of ICT in education, but they fail to provide enforceable digital rights. This gap became apparent during the COVID 19 pandemic when the rural and low-income students were mostly left out of the online-learning process. The provincial-level efforts, such as the Smart Schools Programme in Punjab and Digital Skills Strategy in Khyber Pakhtunkhwa (2021), are still

good but not properly coordinated on the federal level.

To meet its international duty as stipulated in the International Covenant on Economic, Social and Cultural Rights (ICESCR) and SDG 4, Pakistan needs to embrace a rights-based national agenda that will ensure that all learners have affordable connectivity, equal access and digital literacy.

3.5 Synthesis: Toward Global Convergence

Across the Global North and South, there is developing agreement that digital access is a state responsibility under the right to education. However, legal progress differs: developed countries emphasize digital skills and lifelong learning, while developing nations focus on infrastructure and affordability. Bridging this gap demands global cooperation and recognition that digital education is a legal right and matter of human dignity, not a privilege (Beall et al., 2022). Comparative trends indicate that more countries will soon insert digital rights into education laws, court rulings, and constitutions. The future of education lies not in expanding classrooms but in building digital bridges that make learning accessible to all, regardless of location or income (Celeste et al., 2022).

4. Challenges and Barriers to Digital Educational Equity

Although digital education is now seen as part of the right to education, major economic, technological, and legal barriers still exist. These hurdles highlight the global digital divide, where unequal access to technology leads to unequal learning opportunities. Overcoming these barriers is crucial to make digital inclusion a real, enforceable human right rather than just a policy goal.

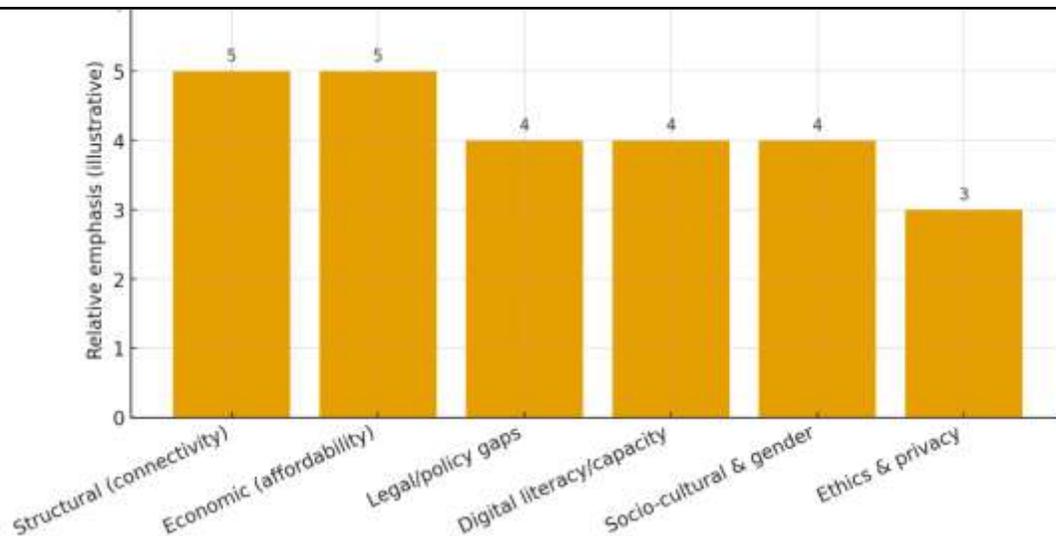


Figure 1: Conceptual summary of major barriers to digital educational equity highlighted in the study

4.1 Structural Barriers: Access and Connectivity

The biggest obstacle to digital education equality is unequal access to technology and the internet. As of 2023, about 2.6 billion people remained offline, mostly in low- and middle-income countries. Rural areas, women, and marginalized groups are the most affected group. Many governments have not treated internet access as a basic public service, leading to poor investment in digital infrastructure. This neglect reinforces old educational inequalities, now shaped by technology (Hughes et al., 2025).

4.2 Economic Barriers and Affordability

Even where internet is accessible, high costs block access. Families in low-income countries may spend up to 10% of their income on mobile data but still unable to make online learning possible. Public schools often lack resources for free devices or funded access.

Without government support and intervention, such as subsidies, free online learning platforms, or device programs, digital education remains a privilege for the wealthy, violating the principle of equality under Article 2 of the ICESCR (Kim et al., 2020).

4.3 Legal and Policy Gaps

Still many countries though legally protect the right to education but not the right to digital access. This shows weak grip of state and turns digital infrastructure into an optional goal. Few nations have effective legal frame work for ensuring digital access to education, and international agreements like the ICESCR depend on voluntary compliance. As a result, strong policies exist in theory but are rarely implemented in practice (Sun et al., 2020).

4.4 Digital Literacy and Capacity

Access to devices and internet alone is not enough but people also need digital skills. In high-income countries, 85% of schools teach digital literacy, as compared to less than 30% in poorer nations. Teachers and students often lack training to use technology effectively and efficiently. Curriculum reforms, teachers' training, and digital skills education for all learners from all walks of life are truly needed (Fietz et al., 2023).

4.5 Socio-Cultural and Gender Inequality

Cultural and gender barriers also limit access to digital learning. Globally, women are 20% less likely to use mobile internet, and up to 50% less likely in South Asia. In countries like Pakistan, girls in rural areas face multiple hindrances such

as non-availability of devices, limited connectivity, lack of skills, and social restrictions. This violates Article 10 of CEDAW, which guarantees equal educational opportunities for all (Jamil et al., 2021).

4.6 Ethical and Privacy Concerns

The growth of digital education raises new ethical issues, including the privacy of the data and artificial intelligence biases. Both personal data about students are often collected without the necessary precautions, which violates the privacy rights guaranteed by Article 17 of the International Covenant on Civil and Political Rights (Khan et al., 2024). Unregulated AI use in the educational setting can precondition the creation of unfair or biased results. Therefore, state-level officials must develop clear laws that will ensure the safe, fair, and open utilization of digital learning tools. Moreover, there is an increasing use of AI in the evaluation and monitoring process, which increases the concerns with the biases and transparency of the algorithms. Without detailed regulatory frameworks, which emphasize responsibility and justice, the digital learning technologies can only reinforce the inequality instead of alleviating it. As such, the ethical care of educational technology ought to be considered as a part and parcel of the human-rights obligations of a country, not as a fringe matter (EDIFY et al., 2024).

In short, these structural, economic, legal, and cultural barriers show that digital education must be treated as a matter of justice, equality, and legal right. Without synchronizing, rights-based actions, digital progress may extend existing inequalities instead of reducing them.

5. Towards a Rights-Based Framework for Digital Learning Access

The digital revolution in education requires a corresponding shift in legislation and policy thinking. States must refrain from treating digital education as a mere policy option but to and recognize it as a human rights' obligation. A legal framework should combine constitutional guarantees, legislation, and international commitments into a coherent system that ensures accountability, equality, and justice (Satria et al., 2025)

5.1 Reframing Digital Education as a Human Right

Access to digital learning is now an established essential part of the right to education, rather an optional add-on. Under the ICESCR, "education must be available, accessible, acceptable, and adaptable" (Stone et al., 2020). Hence such standards cannot be met today without digital tools and connectivity.

- **Availability** requires online platforms and digital content.
- **Accessibility** demands affordable internet and devices.
- **Acceptability** ensures quality and inclusive content.
- **Adaptability** allows flexible systems that can respond to crises like COVID-19.

Thus, states must clearly include digital access in their constitutions, education laws, and ICT policies to close the gap between traditional and digital education rights.

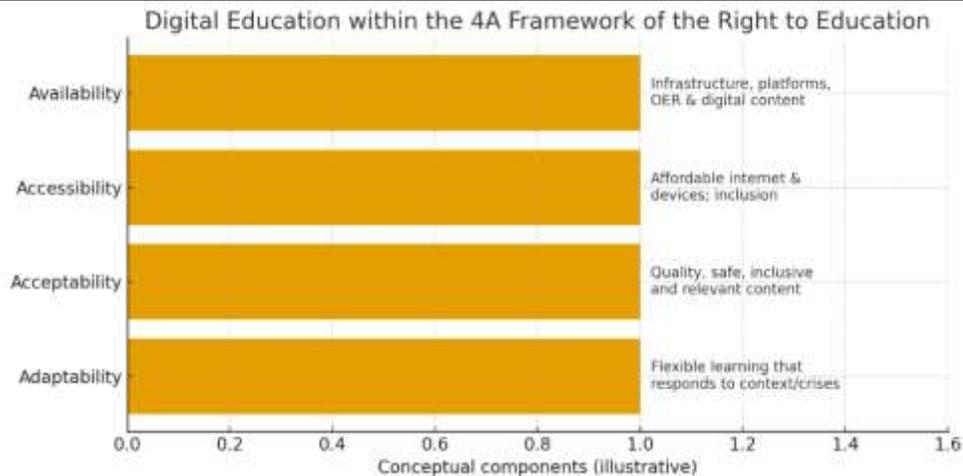


Figure 2: Digital education mapped onto the 4A framework (availability, accessibility, acceptability, adaptability).

5.2 Constitutional and Legislative Reforms

True recognition starts with constitutional inclusion of such rights. Some countries, such as Finland, Estonia, and Costa Rica, already describe internet access as a legal right (EDIFY et al., 2024). In Pakistan, this could be achieved by amending Article 25-A by including “equitable access to educational technologies and digital resources.” Such a reform would make governments responsible for funding digital infrastructure and literacy programs and give it considerable importance (Khan et al., 2024).

A dedicated Digital Education Act should then define standards for online learning, protect data privacy, and monitor implementation, integrating with existing laws like the Pakistan Telecommunication (Re-organization) Act 1996 and PECA 2016 (Ali et al., 2023).

5.3 Policy Coherence and Institutional Coordination

Digital education requires cross cooperation of multiple ministries handling education, IT, telecommunications, and human rights. Establishing a National Digital Education Council could ensure coordination and alignment with global frameworks like UNESCO’s ICT Competency Framework for Teachers (Jamil et al., 2021).

At the international level, collaboration with UNESCO, ITU, and the World Bank can support

capacity-building and technical assistance, fulfilling obligations under Article 2(1) of the ICESCR.

5.4 Ensuring Affordability and Universal Connectivity

Digital inclusion is contingent with affordability. Governments should treat broadband and digital devices as public goods. Mechanisms such as Universal Service Funds (USFs) can be used to expand school connectivity and teacher training in underserved areas.

In Pakistan, the Universal Service Fund Company could broaden its role to support educational projects. Tax exemptions, zero-rated educational platforms, and partnerships with telecom providers can further reduce costs and move toward universal and meaningful connectivity (Junod et al., 2025).

5.5 Digital Literacy and Capacity Building

Now a days, digital literacy has become a core life skill. Education systems must entrench digital competencies across all levels, and teachers must be trained to integrate technology effectively and efficiently. Without skilled educators, digital tools remain underused. According to UNESCO’s 2023 report, “teacher readiness is key to equitable digital education”. Governments should therefore, fund continuous professional training

and establish clear competency standards (Matli et al., 2020).

5.6 Regulation, Privacy, and Ethics

Expanding digital education demands strong oversight to protect students' rights. States should create independent authorities to monitor data privacy, AI fairness, and ethical standards in educational technology. Adopting global standards such as the OECD Privacy Guidelines and GDPR principles confirms accountability. Procurement of educational technologies should also include human rights impact assessments to maintain transparency and trust (Khan et al., 2024).

5.7 Judicial and Accountability Mechanisms

Courts and oversight bodies can play a vital role in turning policy promises into enforceable rights. Strategic litigation, as seen in India and South Africa, can push governments to extend digital learning to marginalized groups.

National Human Rights Institutions, ombudspersons, and parliamentary committees should monitor compliance and address digital exclusion effectively. This ensures that digital education rights are implemented, not symbolic. An established right of digital education requires shifting from fragmented policies to an integrated legal system. By embedding digital inclusion into constitutional, legislative, and policy structures, states can turn connectivity from privilege into a right, grounded in dignity and equality (Herrera et al., 2020).

Conclusion

The digital revolution has radically changed the delivery process as well as conceptualization of education. Modern education occurs within virtual environments and online communities and makes online access an indisputable condition of being a member of modern society. The right to education in accordance with Article 26 of the Universal Declaration of Human Rights and Article 13 of the International Covenant on Economic, Social and Cultural Rights needs to adapt to the digital reality. Educational exclusion can be manifested by denial of internet

connectivity or being digital illiterate. There is empirical evidence that the right to education can only be achieved in the presence of digital inclusion. The COVID 19 pandemic revealed a digital divide in the world, showing how nations with poor digital infrastructure were unable to continue learning and thus turned a technological gap into a human-rights crisis. Countries like Finland, Estonia and South Korea are examples of how understanding of the constitutional and legislative protection of digital access can be enforced. On the other hand, such states as Pakistan face the structural and policy challenges with sound constitutional bases; the Amendments, especially, Articles 25-A, 14 and 19-A need to be made so that the rights to education were applicable to the digital realm. Pakistan needs to transform reforms beyond proclamation and bring to solidify commitments. The right to digital education can be realised by strong legislative initiatives, judicial interpretation and coordinated policy action, i.e. by the Digital Education Act and national funding policy tools.

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